

Kramer Electronics, Ltd.



USER MANUAL

Model:

VM-4HDMI

1:4 HDMI Distributor

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1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront 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! Our 500-plus different models now appear in eight groups¹ that are clearly defined by function.

Congratulations on purchasing your Kramer **VM-4HDMI 1:4 HDMI Distributor**. The **VM-4HDMI** is ideal for:

- Home theater, presentation and multimedia applications
- Rental and staging

The package includes the following items:

- **VM-4HDMI 1:4 HDMI Distributor**
- Power cord
- This user manual²

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
- Use Kramer high performance high resolution cables³

2.1 Quick Start

This quick start chart summarizes the basic setup and operation steps.

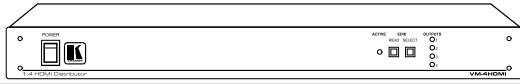
1 GROUP 1: Distribution Amplifiers; GROUP 2: Video and Audio Switchers, Matrix Switchers and Controllers; GROUP 3: Video, Audio, VGA/XGA Processors; GROUP 4: Interfaces and Sync Processors; GROUP 5: Twisted Pair Interfaces; GROUP 6: Accessories and Rack Adapters; GROUP 7: Scan Converters and Scalers; and GROUP 8: Cables and Connectors

2 Download up-to-date Kramer user manuals from our Web site at <http://www.kramerelectronics.com>

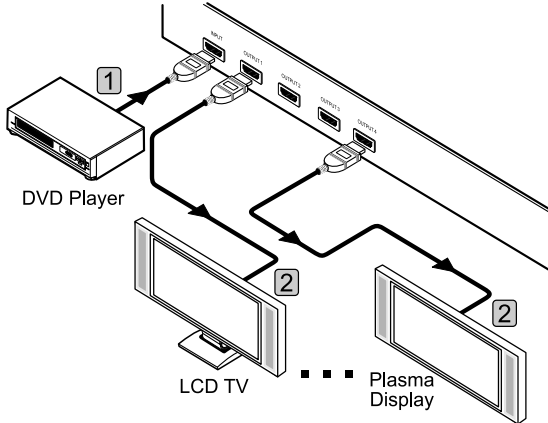
3 The complete list of Kramer cables is on our Web site at <http://www.kramerelectronics.com>

Step 1: Mount the machine - see section 5

Mount the machine in a rack or stick the 4 rubber feet to the underside



Step 2: Connect the input and outputs - see section 6



- 1 Connect the input
- 2 Connect the outputs

Step 3: Turn the power ON

Step 4: Acquire EDID - see section 7

SET THE OPERATION STATE

THE NORMAL OPERATION STATE

Turn the machine ON while pressing the SELECT button

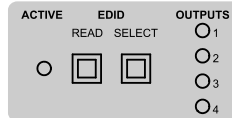
Acquire the EDID from:

- A connected output
- Several connected outputs
- The default EDID

THE SIMPLE OPERATION STATE

Turn the machine ON while pressing the READ button

The default EDID is sent to the input automatically



3 Overview

The Kramer **VM-4HDMI** is a high quality 1:4 HDMI distributor that accepts an HDMI input and distributes the signal to four outputs, allowing one or more of the outputs to be connected to receiving devices, thus making it a versatile, reliable component in a video system. The **VM-4HDMI** distributes signals having resolutions up to UXGA, including all HDTV formats.

In particular, the **VM-4HDMI**:

- Supports up to 2.25Gbps bandwidth per graphic channel¹
- Equalizes and reclocks the data
- Features a default EDID for fast and efficient connection of the unit²
- Can read and store, in non-volatile memory, the EDID³ block from one or more outputs, so it can then provide the EDID information to the HDMI source even if the display device is not connected
- Includes five HDMI connectors, four output status LEDs, an active status LED, as well as EDID read and select buttons

The **VM-4HDMI** is housed in a 19" 1U rack-mountable enclosure, and is fed from a 100-264 VAC universal switching power supply.

3.1 About HDMI

High-Definition Multimedia Interface (HDMI) is an uncompressed all-digital⁴ audio/video interface, widely supported in the entertainment and home cinema industry. It delivers the highest high-definition image and sound quality.

In particular, HDMI⁵:

- Provides a simple⁶ interface between any audio/video source, such as a set-top box, DVD player, or A/V receiver and video monitor, such as a digital flat LCD / plasma television (DTV), over a single lengthy⁷ cable
- Supports standard, enhanced, high-definition video, and multi-channel

1 Suitable for resolutions up to UXGA at 60Hz, and for all HD resolutions

2 The default EDID feature lets you connect the VM-4HDMI without having to connect a display to the output

3 EDID is Extended Display Identification Data

4 Ensuring an all-digital rendering of video without the losses associated with analog interfaces and their unnecessary digital-to-analog conversions

5 HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI licensing LLC

6 With video and multi-channel audio combined into a single cable, the cost, complexity, and confusion of multiple cables currently used in A/V systems is reduced

7 HDMI technology has been designed to use standard copper cable construction at up to 15m

digital audio¹ on a single cable

- Transmits all ATSC HDTV standards and supports 8-channel digital audio, with bandwidth to spare to accommodate future enhancements and requirements
- Benefits consumers by providing superior, uncompressed digital video quality via a single cable², and user-friendly connector
- Is backward-compatible with DVI (Digital Visual Interface)
- Supports two-way communication between the video source (such as a DVD player) and the digital television, enabling new functionality such as automatic configuration and one-button play

HDMI has the capacity to support:

- Existing high-definition video formats (720p, 1080i, and 1080p/60), as well as standard definition formats such as NTSC or PAL

3.2 Defining EDID

The Extended Display Identification Data (EDID³) is a data-structure, provided by a display, to describe its capabilities to a graphics card (that is connected to the display's source). The EDID enables the **VM-4HDMI** to "know" what kind of monitor is connected to the output. The EDID includes the manufacturer's name, the product type, the timing data supported by the display, the display size, luminance data and (for digital displays only) the pixel mapping data.

3.3 Recommendations for Best Performance

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances and position your **VM-4HDMI** away from moisture, excessive sunlight and dust

4 Your VM-4HDMI 1:4 HDMI Distributor

Figure 1 and Table 1 define the **VM-4HDMI 1:4 HDMI Distributor**:

1 HDMI supports multiple audio formats, from standard stereo to multi-channel surround-sound. HDMI has the capacity to support Dolby 5.1 audio and high-resolution audio formats

2 HDMI provides the quality and functionality of a digital interface while also supporting uncompressed video formats in a simple, cost-effective manner

3 Defined by a standard published by the Video Electronics Standards Association (VESA)

Your VM-4HDMI 1:4 HDMI Distributor

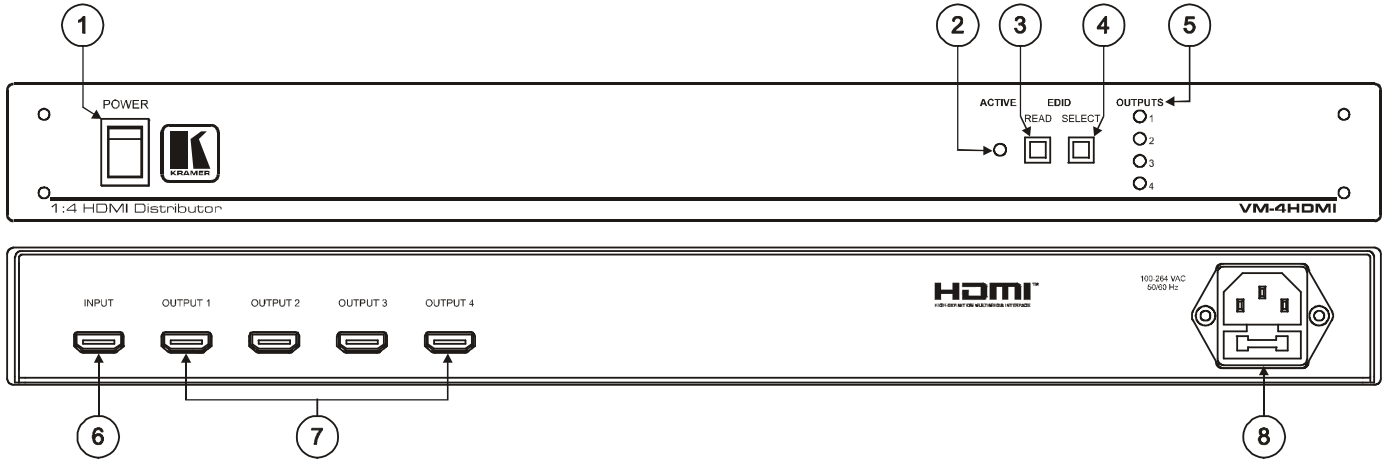


Figure 1: VM-4HDMI 1:4 HDMI Distributor

Table 1: VM-4HDMI 1:4 HDMI Distributor Features

#	Feature	Function	
1	POWER Switch	Illuminated switch for turning the unit ON or OFF	
2	ACTIVE LED	Illuminates when the input is active; blinks when the input is not valid	
3	EDID	READ Button	Press to read the EDID of the selected display
4		SELECT Button	Select the desired display for EDID information
5	OUTPUTS LEDs	LEDs light when an output(s) is connected and active; LEDs blink when selecting EDID (see section 7)	
6	INPUT HDMI Connector	Connects to the HDMI source	
7	OUTPUT HDMI Connectors	Connect to the HDMI acceptors (from 1 to 4)	
8	Power Connector with Fuse	AC connector enabling power supply to the unit	

5 Installing the VM-4HDMI on a Rack

This section describes what to do before installing on a rack and how to rack mount.

Before Installing on a Rack

Before installing on a rack, be sure that the environment is within the recommended range:	
Operating temperature range	+5° to +45° C (41° to 113° F)
Operating humidity range	10 to 90% RHL, non-condensing
Storage temperature range	-20° to +70° C (-4° to 158° F)
Storage humidity range	5 to 95% RHL, non-condensing



CAUTION!!

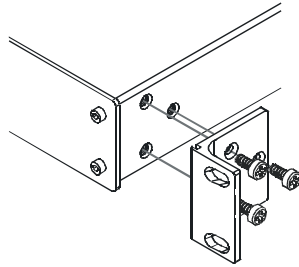
When installing on a 19" rack, avoid hazards by taking care that:

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.

How to Rack Mount

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 that:

- 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 (you can download it at: <http://www.kramerelectronics.com>)

6 Connecting a VM-4HDMI 1:4 HDMI Distributor

To connect the **VM-4HDMI** as a 1:4 HDMI distributor, do the following:

1. Connect an HDMI source (for example, a DVD player) to the INPUT connector.
2. Connect the four OUTPUT connectors¹ to up to four HDMI acceptors, as follows:
 - OUTPUT 1 connector to HDMI acceptor 1 (for example, an LCD TV)
 - OUTPUT 2 connector to HDMI acceptor 2 (for example, a plasma display)
 - OUTPUT 3 connector to HDMI acceptor 3 (for example, a plasma display)
 - OUTPUT 4 connector to HDMI acceptor 4 (for example, a plasma display)
3. Connect the power cord to the mains electricity.
4. Turn ON the POWER.
5. Acquire EDID (see section 7).

¹ As required. Up to 4 outputs can be connected on the VM-4HDMI. Not all outputs need to be connected

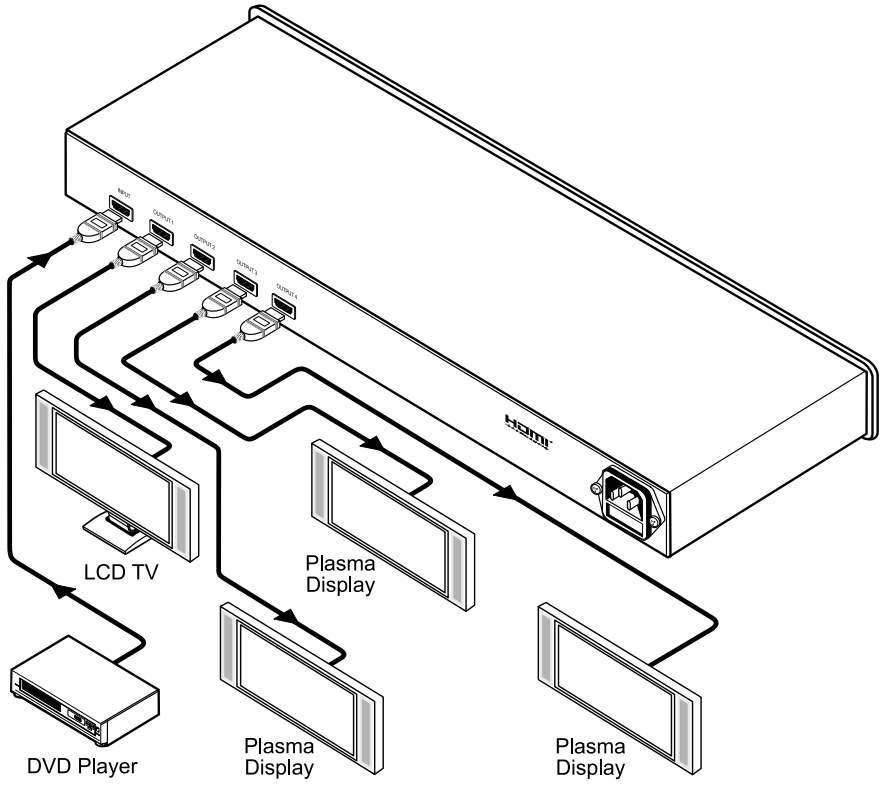


Figure 2: Connecting a VM-4HDMI 1:4 HDMI Distributor

7 Acquiring EDID

The **VM-4HDMI** initially operates with the default EDID. This means that you can turn ON the power before connecting any of the acceptors or the source.

This section describes the two EDID working modes, the:

- Simple mode (see section 7.1)
- Normal mode (see section 7.2)

7.1 The Simple Operation State

In the Simple operation state, the READ and SELECT front panel buttons are disabled, and the default EDID is passed directly to the input.

To enter the Simple Operation State, turn the machine ON while pressing the
READ button.
LEDS 3 and 4 blink three times

7.2 The Normal Operation State

In the Normal operation state, you can toggle between the following working modes:

- Sending the EDID from a selected output to the input (see section 7.2.1)
- Sending the default EDID to the input (see section 7.2.2)
- Sending the auto¹ EDID to the input (see section 7.2.3)

To enter the Normal Operation State, turn the machine ON while pressing the
SELECT button.
LEDS 1 and 2 blink three times

7.2.1 Acquiring the EDID from a Selected Output

To select an EDID from a selected output, do the following:

1. Press the SELECT button, as required, to reach the desired output, which blinks.
2. Press the READ button.
The EDID of the selected output is stored in the non-volatile memory when the READ button no longer illuminates as well as the selected output LED.

¹ The auto EDID is an adjusted calculation of the EDIDs of all the connected outputs

7.2.2 Restoring the Default EDID

To restore the default EDID, do the following:

1. Press the SELECT button several times until the OUTPUT LEDs blink simultaneously.
2. Press the READ button.
The READ button illuminates.
The default EDID is stored in the non-volatile memory when the READ button no longer illuminates as well as the output LEDs.

7.2.3 Acquiring the Auto EDID

To acquire the Auto EDID, do the following:

1. Press the SELECT button several times until the OUTPUT LEDs blink in sequence.
2. Press the READ button.
The READ button illuminates.
The auto EDID is stored in the non-volatile memory when the READ button no longer illuminates as well as the output LEDs.

8 Technical Specifications

Table 2 includes the technical specifications:

Table 2: Technical Specifications¹ of the VM-4HDMI 1:4 HDMI Distributor

INPUT:	HDMI Connector
OUTPUTS:	4 HDMI Connectors
BANDWIDTH:	Supports up to 2.25Gbps bandwidth per graphic channel
COMPLIANCE WITH HDMI STANDARD:	Supports HDMI 1.3 and HDCP
CONTROLS:	SELECT and READ buttons for selecting and storing EDID information
INDICATOR LEDs:	OUTPUTS 1 to 4, and ACTIVE LED
POWER SOURCE:	100-264 VAC, 50/60Hz, 16VA
DIMENSIONS:	19-inch (W), 7-inch (D), 1U (H)
WEIGHT:	2.5kg. (5.5lbs) approx.
ACCESSORIES:	Power cord
OPTIONS:	HDMI/HDMI male-to-male cables

¹ Specifications are subject to change without notice

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed, or on which the WARRANTY VOID IF TAMPERED sticker has been torn, reattached, removed or otherwise interfered with.
3. Damage, deterioration or malfunction resulting from:
 - i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
 - ii) Product modification, or failure to follow instructions supplied with the product
 - iii) Repair or attempted repair by anyone not authorized by Kramer
 - iv) Any shipment of the product (claims must be presented to the carrier)
 - v) Removal or installation of the product
 - vi) Any other cause, which does not relate to a product defect
 - vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

- EN-50081: "Electromagnetic compatibility (EMC);
generic emission standard.
Part 1: Residential, commercial and light industry"
- EN-50082: "Electromagnetic compatibility (EMC) generic immunity standard.
Part 1: Residential, commercial and light industry environment".
- CFR-47: FCC Rules and Regulations:
Part 15: "Radio frequency devices
Subpart B Unintentional radiators"

CAUTION!

Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.

Use the supplied DC power supply to feed power to the machine.

Please use recommended interconnection cables to connect the machine to other components.



For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com, where updates to this user manual may be found. We welcome your questions, comments and feedback.



Caution

Safety Warning:

Disconnect the unit from the power supply before opening/servicing.



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