



KRAMER ELECTRONICS LTD.

USER MANUAL

MODEL:

VM-2DH
DisplayPort to DVI/HDMI
Converter

P/N: 2900-300264 Rev 3

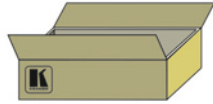


VM-2DH Quick Start Guide

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

Step 1: Check what's in the box

- VM-2DH DisplayPort to DVI/HDMI Converter
- 4 Rubber feet
- 1 Power supply (5V DC)
- 1 Quick Start sheet



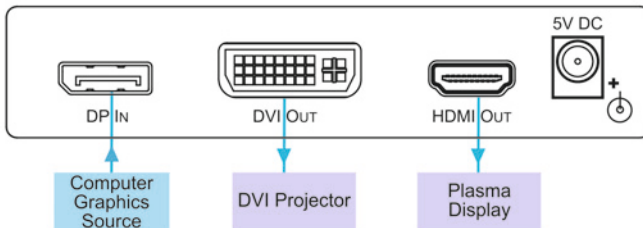
Save the original box and packaging materials in case you need to return your VM-2DH for service.

Step 2: Install the VM-2DH

Attach the rubber feet and place on a table or mount the VM-2DH in a rack (using an optional RK-3T rack mount).

Step 3: Connect the inputs and outputs

Always switch off the power on each device before connecting it to your VM-2DH.



Always use Kramer high-performance cables for connecting AV equipment to the VM-2DH.

Step 4: Connect the power

Connect the 5V DC power adapter to the VM-2DH and plug the adapter into the mains electricity.



Step 5: Operate the VM-2DH

If required, acquire the EDID:

- Connect the output(s) from which you want to acquire the EDID.
- Select the required EDID by pressing and holding the EDID SETUP button to cycle through the options; HDMI OUT, DVI OUT, Auto-Mix and default.
- When you reach the desired setup, release the EDID SETUP button to acquire the EDID.

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1 Introduction

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

Our 1,000-plus different models now appear in 11 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 and GROUP 11: Sierra Products.

Congratulations on purchasing your Kramer **VM-2DH** *DisplayPort* to DVI/HDMI Converter, which is ideal for the following typical applications:

- Multiple screen applications
- Rental and staging

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual



Go to <http://www.kramerelectronics.com> to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Do not secure the cables in tight bundles or roll the slack into tight coils
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality
- Position your Kramer **VM-2DH** 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.



Caution: There are no operator serviceable parts inside the unit

Warning: Use only the Kramer Electronics input power wall adapter that is provided with the unit

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

2.2 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 Kramer **VM-2DH** is a DisplayPort to DVI/HDMI converter and distributor for digital signals that is HDCP (High-Bandwidth Digital Content Protection) compatible. Since high-resolution DVI signals are very sensitive to cable quality and to PCB layout, the **VM-2DH** uses a uniquely designed PCB which includes all buffering, conditioning and amplifying circuitry to provide two high-level output signals.

In particular, the **VM-2DH** features:

- Support for resolutions up to WUXGA, including all HDTV formats
- A maximum data rate of 4.95Gbps (1.65Gbps per graphic channel)
- The DDWG DVI 1.0 standard
- Support for up to eight embedded audio channels
- Built in re-clocking circuitry that regenerates the DVI/HDMI signal so that several units may be cascaded
- A non-volatile read and store memory for the EDID (Extended Display Identification Data) block from one of the outputs, so it can then provide the EDID information to the DisplayPort source even if the display device is not connected
- A default EDID for fast and efficient connection of the unit
- I-EDIDPro™ Kramer Intelligent EDID Processing™—intelligent EDID handling and processing algorithm that ensures Plug and Play operation for DVI/HDMI systems
- A DVI-I connector which is compatible with all types of DVI cables
- State-of-the-art line drivers on both outputs to provide a cost-effective solution for distributing the TMDS signals used for DVI/HDMI

3.1 Defining the VM-2DH DisplayPort to DVI/HDMI Converter

This section defines the **VM-2DH**.

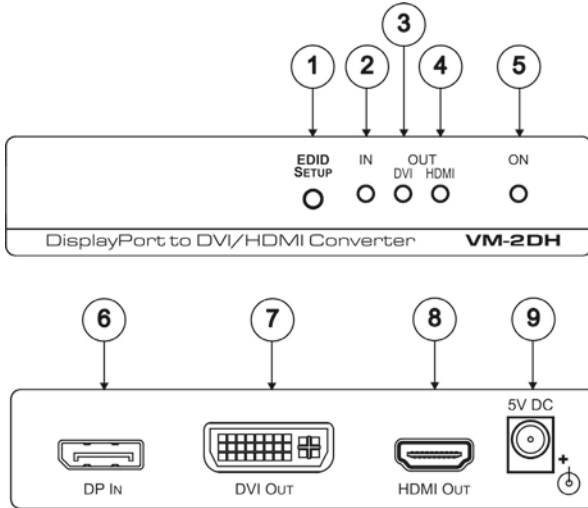


Figure 1: VM-2DH DisplayPort to DVI/HDMI Converter

#	Feature	Function
1	EDID SETUP Button	Press to cycle through the EDID sources and to read the EDID (see Section 4.1)
2	IN LED	Lights green when the input is active; flashes when the input is not valid
3	OUT DVI LED	Lights green when a DVI acceptor output is connected
4	OUT HDMI LED	Lights green when an HDMI acceptor is connected
5	ON LED	Lights green when the unit is powered on
6	DP IN DisplayPort Connector	Connect to the DisplayPort digital source
7	DVI OUT Connector	Connect to the DVI acceptor
8	HDMI OUT Connector	Connect to the HDMI acceptor
9	5V DC	Connect to the 5V DC power adapter, center pin positive

4 Connecting the VM-2DH



Always switch off the power to each device before connecting it to your **VM-2DH**. After connecting your **VM-2DH**, connect its power and then switch on the power to each device.

To connect the **VM-2DH** as illustrated in the example in [Figure 2](#):

1. Connect a computer graphics DisplayPort source to the DP IN connector.
2. Connect the DVI OUT connector to the DVI projector.
3. Connect the HDMI OUT connector to the plasma display.
4. Connect the supplied 5V DC power adapter to the **VM-2DH** and to the mains electricity.
5. Optional—acquire the EDID (see [Section 4.1](#)).

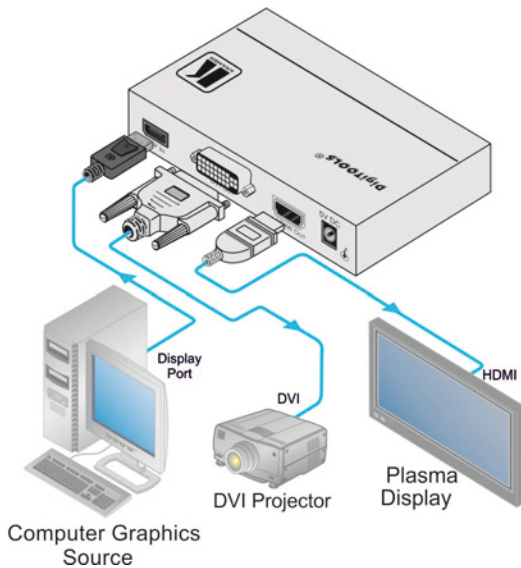


Figure 2: Connecting the VM-2DH DisplayPort to DVI/HDMI Converter

4.1 Acquiring the EDID

Initially the **VM-2DH** operates with the factory default EDID stored in the non-volatile memory. The source reads the EDID from the device when the device is plugged in or powered on.

This is usually done only once when the unit is being set up in an installation. Once acquired, the EDID is saved in non-volatile memory and further acquisition is not necessary.

The VM-2DH reads the EDID, which is stored in the non-volatile memory

The **VM-2DH** provides the ability to acquire the EDID from:

- One output (the relevant output LED lights)
- Two connected outputs in Auto-Mix mode (both output LEDs are lit)
The EDID acquired is a weighted average of all the connected outputs. For example, if several displays with different resolutions are connected to the outputs, the acquired EDID supports all the resolutions, as well as other parameters included in the EDID.
- The initial, default EDID (both output LEDs flash)

Pressing the EDID button briefly causes the output LEDs to indicate the source of the EDID that was last acquired. If the:

- HDMI OUT LED lights, the HDMI OUT EDID was stored
- DVI OUT LED lights, the DVI OUT EDID was stored
- Both OUT LEDs light, the Auto-Mix EDID was stored
- Both OUT LEDs flash, the default EDID is stored

To acquire the EDID:

1. Connect the power.
2. Connect the output(s) from which you want to acquire the EDID.
3. Press and hold the EDID button to select the desired EDID source.

The OUTPUT LEDs light in the following cycle:

- HDMI OUT
- DVI OUT
- Both LEDs (Auto-Mix)

- Both LEDs flash (default)
4. Release the button when reaching the desired EDID source.

The EDID is acquired.

If you set the machine to acquire the EDID from an output that is not connected, the default EDID is acquired.

5 Technical Specifications

INPUT:	1 DisplayPort connector
OUTPUTS:	1 DVI, 1.2Vpp on a DVI Molex 24-pin female connector; DDC signal 5Vpp (TTL); 1 HDMI connector
STANDARDS COMPLIANCE:	Supports DVI 1.1, HDCP and HDMI
MAX RESOLUTION:	Up to WUXGA (1920x1200), 1080p
BANDWIDTH:	4.95Gbps (1.65Gbps per graphic channel)
CONTROLS:	EDID button for selecting and storing EDID information
POWER SOURCE:	5V DC, 800mA
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:	12cm x 7.2cm x 2.4cm (4.7" x 2.8" x 1.0") W, D, H
WEIGHT:	0.3kg (0.67lbs) approx.
ACCESSORIES:	Power supply, mounting bracket
OPTIONS:	RK-3T rack adapter
Specifications are subject to change without notice at http://www.kramerelectronics.com	

LIMITED WARRANTY

The warranty obligations of 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 Does this Coverage Last

Seven years as of this printing; please check our Web site for the most current and accurate warranty information.

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, please visit our web site at www.kramerelectronics.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. 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 on 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.

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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 APPLICABLE 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, please visit our Web site at www.kramerelectronics.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.kramerelectronics.com

E-mail: info@kramerel.com



SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing

P/N: 2900-300264



Rev: 3

