

USER MANUAL

MODEL:

VM-22H

2x1:2 HDMI Switcher/DA



Contents

Introduction	1
Getting Started	1
Overview	3
Typical Applications	3
Defining the VM-22H 2x1:2 HDMI Switcher/DA	4
Mounting VM-22H	5
Connecting the VM-22H	6
Acquiring the EDID	7
Technical Specifications	8

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!

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-22H to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

Achieving 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-22H** away from moisture, excessive sunlight and dust.

Safety Instructions



Caution:

- This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.
- For products with relay terminals and GPIO ports, please refer to the permitted rating for an external connection, located next to the terminal or in the User Manual.
- There are no operator serviceable parts inside the unit.



Warning:

- Use only the power cord that is supplied with the unit.
- To ensure continuous risk protection, replace fuses only according to the rating specified on the product label which located on the bottom of the unit.

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

Congratulations on purchasing your Kramer **VM-22H 2x1:2 HDMI Switcher/DA**. The **VM-22H** is a distribution amplifier for HDMI™ signals. The unit reclocks and equalizes one of two selectable input signals and distributes it to two identical outputs.

In particular, the **VM-22H** features:

- A maximum data rate of 6.75Gbps (2.25Gbps bandwidth per graphic channel).
- I-EDIDPro™ Kramer Intelligent EDID Processing™, an intelligent EDID handling and processing algorithm that ensures Plug and Play operation for HDMI systems.
- Kramer Equalization & re-Klocking™ Technology that rebuilds the digital signal integrity to travel longer distances.
- 3D pass-through.
- HDMI support for Deep Color, x.v.Color™, Lip Sync, CEC.
- HDCP compliance.
- Selected input and active output LED indicators.

Typical Applications

VM-22H is ideal for the following typical applications:

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

Defining the VM-22H 2x1:2 HDMI Switcher/DA

This section defines the VM-22H.

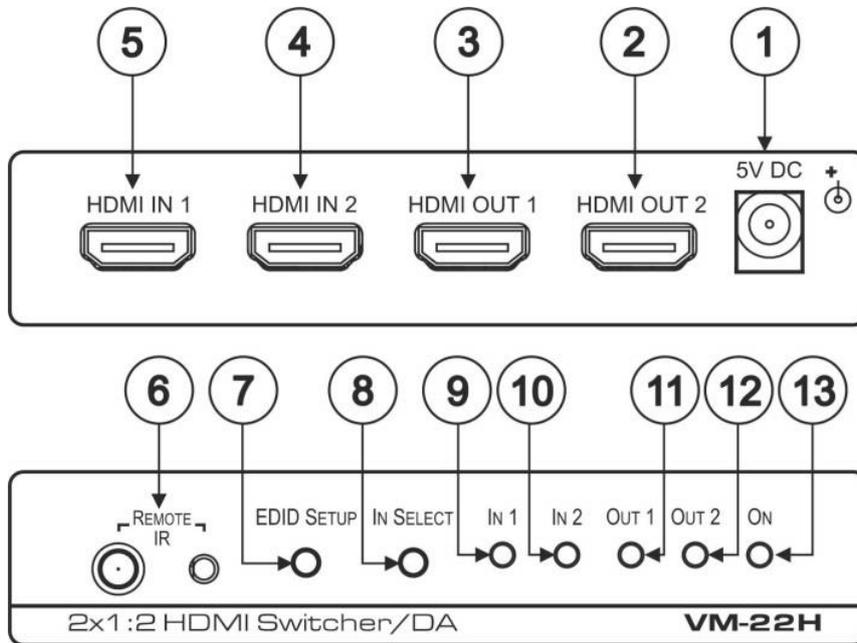


Figure 1: VM-22H 2x1:2 HDMI Switcher/DA

#	Feature	Function
1	5V DC	+5V DC connector for powering the unit.
2	HDMI OUT2 Connector	Connects to the HDMI acceptor 2.
3	HDMI OUT1 Connector	Connects to the HDMI acceptor 1.
4	HDMI IN 2 Connector	Connects to the HDMI source 2.
5	HDMI IN 1 Connector	Connects to the HDMI source 1.
6	REMOTE IR	The yellow LED illuminates when receiving signals from the infrared remote control transmitter.
7	EDID SETUP Button	Press briefly to determine the type of EDID stored in the non-volatile memory. Press and hold to select the desired EDID setup and then release to acquire EDID (see Acquiring the EDID on page 7).
8	IN SELECT Button	Press to select the input. The relevant IN LED illuminates.
9	IN 1 LED	Illuminates when input 1 is selected.
10	IN 2 LED	Illuminates when input 2 is selected.
11	OUT 1 LED	Illuminates when output 1 is connected and active (also illuminates or blinks during EDID setup, see Acquiring the EDID on page 7).
12	OUT 2 LED	Illuminates when output 2 is connected and active (also illuminates or blinks during EDID setup, see Acquiring the EDID on page 7).
13	ON LED	Illuminates when receiving power.

Mounting VM-22H

This section provides instructions for mounting **VM-22H**. Before installing, 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.

**Caution:**

- Mount **VM-22H** before connecting any cables or power.

**Warning:**

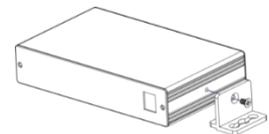
- Ensure that the environment (e.g., maximum ambient temperature & air flow) is compatible for the device.
- Avoid uneven mechanical loading.
- Appropriate consideration of equipment nameplate ratings should be used for avoiding overloading of the circuits.
- Reliable earthing of rack-mounted equipment should be maintained.

To mount the VM-22H on a rack

Mount the unit in a rack using the recommended rack adapter
(see www.kramerav.com/product/VM-22H)

To mount the VM-22H on a table or shelf

- Attach the rubber feet and place the unit on a flat surface.
- 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-22H

Connecting the VM-22H



Always switch off the power to each device before connecting it to your **VM-22H**. After connecting your **VM-22H**, connect its power and then switch on the power to each device.

To connect the **VM-22H** as illustrated in the example in [Figure 2](#):

1. Connect the HDMI source (for example, a DVD player) to the HDMI IN 1 connector.
2. Connect the HDMI source (for example, a DVD player) to the HDMI IN 2 connector.
3. Connect the HDMI OUT connectors to up to two HDMI acceptors, as follows:
 - HDMI OUT 1 connector to an LCD TV.
 - HDMI OUT 2 connector to a plasma display.
4. Connect the 5V DC power adapter to the power socket and connect the adapter to the mains electricity.
5. Press the EDID SETUP button to acquire or change the EDID information (see [Acquiring the EDID](#) on page 7).

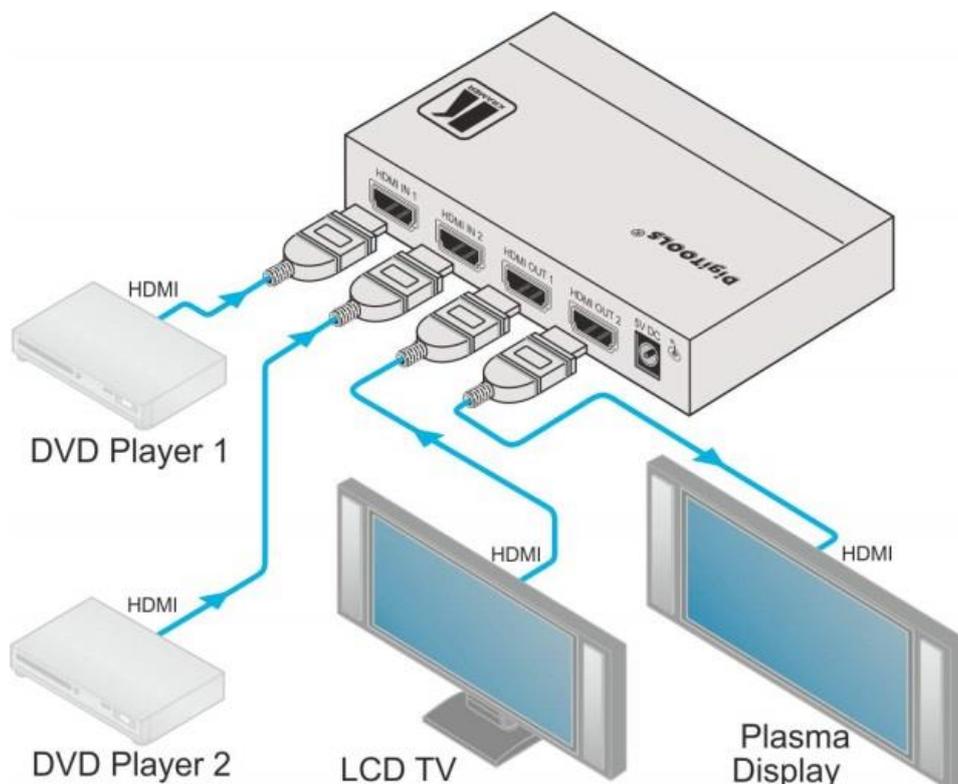


Figure 2: Connecting the **VM-22H** 2x1:2 HDMI Switcher/DA

Acquiring the EDID

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

Initially, the **VM-22H** operates with the factory default EDID. This lets you connect the power before connecting one of the acceptors or sources.

You can acquire the EDID from:

- One output (the relevant output illuminates).
- The default EDID (both output LEDs blink).
- Two connected outputs, the auto-mix mode (both output LEDs illuminate).



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.

When pressing the EDID SETUP button briefly, the OUT LEDs indicate which type of EDID was last acquired. If the:

- OUT 1 LED illuminates, the OUT 1 EDID is stored in the non-volatile memory.
- OUT 2 LED illuminates, the OUT 2 EDID is stored in the non-volatile memory.
- OUT 1 and OUT 2 LEDs blink, the Default EDID is stored in the non-volatile memory.
- OUT 1 and OUT 2 LEDs illuminate, the Auto-Mix EDID is stored in the non-volatile memory.

To acquire the EDID, do the following:

1. Connect the power.
2. Connect the output or outputs from which you want to acquire the EDID.
3. Press and hold the EDID SETUP button to select the desired EDID.
The OUT LEDs illuminate in the following cycle: OUT 1, OUT 2, both flash (default) and both illuminate (auto-mix).
4. Release the button when reaching the desired set up.
The EDID is now acquired.



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

Technical Specifications

INPUTS:	2 HDMI connectors
OUTPUTS:	2 HDMI connectors
MAX. DATA RATE:	6.75Gbps (2.25Gbps per graphic channel)
COMPLIANCE WITH HDMI STANDARD:	Supports HDMI and HDCP
CONTROLS:	EDID SETUP button, input select button
INDICATOR LEDs:	IN 1, IN 2, OUT 1, OUT 2, and ON LEDs
POWER CONSUMPTION:	5V DC, 910mA
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 7.15cm x 2.44cm (4.7" x 2.8" 0.96") W, D, H
WEIGHT:	0.3kg (0.67lbs) approx.
INCLUDED ACCESSORIES:	Power supply, bracket installation kit, infrared remote control transmitter
OPTIONS:	HDMI/HDMI male-to-male cables
Specifications are subject to change without notice at http://www.kramerelectronics.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 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

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 APPLICABLE 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 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, 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.



P/N:



2900-000663

Rev:



4



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 website where updates to this user manual may be found.

We welcome your questions, comments, and feedback.

The terms HDMI, HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing Administrator, Inc. All brand names, product names, and trademarks are the property of their respective owners.