



KRAMER ELECTRONICS LTD.

USER MANUAL

MODEL:

VM-1H4C

1:4 HDMI Over CAT 5 DA

VM-1H4C Quick Start Guide

This page guides you through a basic installation and first-time use of your **VM-1H4C**. For more detailed information, see the **VM-1H4C** user manual. You can download the latest manual at <http://www.kramerelectronics.com>.

Step 1: Check what's in the box

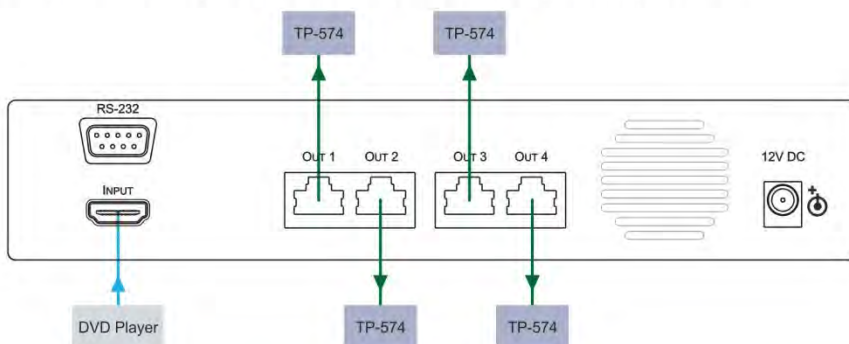
- ☒ **VM-1H4C** 1:4 HDMI Over CAT5 DA
- ☒ Power adapter (12V DC output)
- ☒ 4 Rubber feet
- ☒ 1 Quick start guide
- ☒ 1 User Manual

Save the original box and packaging materials in case your Kramer product needs to be returned to the factory for service.



Step 2: Connect the inputs and outputs

Always switch off the power to all devices before connecting them to your **VM-1H4C**.



For best results, we recommend that you always use Kramer high-performance cables when connecting AV equipment to the **VM-1H4C**.

Step 3: Connect the power

Connect the power adapter to the **VM-1H4C** and plug the adapter into the mains electricity.



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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 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 Switchers; 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.

Thank you for purchasing the Kramer **VM-1H4C** *1:4 HDMI Over CAT 5 DA* which is ideal for:

- Home theater, presentation and multimedia 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
- Use Kramer high performance high resolution cables



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).



Caution: 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

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables to avoid 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 that may adversely influence signal quality
- Position your Kramer **VM-1H4C** away from moisture, excessive sunlight and dust

2.2 Shielded Twisted Pair

Kramer engineers have developed special shielded twisted pair cables to best match our digital twisted pair products; the Kramer: **BC-DGKat524** (CAT 5 24 AWG), the Kramer **BC-DGKat623** (CAT 6 23 AWG cable), and the Kramer

BC-DGKat7a23 (CAT 7a 23 AWG cable). These specially built cables significantly outperform regular CAT 5/CAT 6 /CAT 7a cables.

The **VM-1H4C** supports a range of up to 90m (295ft) at 1080i/SXGA or up to 30m (98ft) at 1080p/UXGA on shielded **BCP-DGKat524** cable; 90m (295ft) at 1080i or up to 70m (230ft) at 1080p/UXGA on shielded **BCP-DGKat623** cable; 100m (295ft) at 1080i or up to 80m (262ft) at 1080p/UXGA on shielded **BCP-DGKat723** cable.

You can daisy-chain up to six DigiKat devices with the maximum overall distance between the first and last devices being cumulative and limited by the cable type used.

2.3 About the Power Provision Feature

Only the **VM-1H4C** needs to be connected to a power source when the devices are within 90m (270ft) of each other – the **VM-1H4C** can provide power to the receiver over the TP cable. This feature applies as long as the cable can carry power and the distance does not exceed 90m on standard TP cable. For longer distances, heavy gauge cable should be used (standard TP cable is still suitable for the video/audio transmission, but not for feeding the power at these distances).

2.4 Defining EDID

The Extended Display Identification Data (EDID) 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-1H4C** 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.

EDID is defined by a standard published by the Video Electronics Standards Association (VESA).

2.5 About HDMI—General Description

High-Definition Multimedia Interface (HDMI) is an uncompressed all-digital audio/video interface, widely supported in the entertainment and home cinema industry. HDMI ensures an all-digital rendering of video without the losses associated with analog interfaces and their unnecessary digital-to-analog conversions. It delivers the maximum high-definition image and sound quality in use today. Note that Kramer Electronics Limited is an HDMI Adopter and an HDCP Licensee.

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

In particular, HDMI:

- Provides a simple 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 lengthy cable
SIMPLICITY - 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
LENGTHY CABLE - HDMI technology has been designed to use standard copper cable construction at up to 15m
- Supports standard, enhanced, high-definition video, and multi-channel digital audio on a single cable
MULTI-CHANNEL DIGITAL AUDIO - 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
- 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 cable, and user-friendly connector
HDMI provides the quality and functionality of a digital interface while also supporting uncompressed video formats in a simple, cost-effective manner
- 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
- Has the capacity to support existing high-definition video formats (720p, 1080i, and 1080p), standard definition formats such as NTSC or PAL, as well as 480p and 576p

3 Overview

The high quality **VM-1H4C** is a distribution amplifier for HDMI and IR signals over TP (Twisted Pair) cable. It reclocks and equalizes the input signal and distributes it to four TP outputs.

More specifically, the **VM-1H4C**:

- Supports up to 4.95Gbps data rate (1.65Gbps per graphic channel)
- Can read and store in non-volatile memory the default EDID or the EDID block from one or a mix of the output display devices, so it can then provide the EDID information to the source even if the display device is not connected
- Features I-EDIDPro™ Kramer Intelligent EDID Processing™ – Intelligent EDID handling & processing algorithm ensures Plug and Play operation for HDMI systems
- Supports 3D Pass-through, x.v.Color™ and uncompressed audio channels (Dolby TrueHD, DTS-HD)
- Is HDCP compliant
- Features LEDs indicating a live input and the active output
- Has a remote IR 3.5mm mini jack that supports bidirectional IR signals
- Is 12V DC fed and is housed in a Kramer Desktop enclosure

4 Defining the VM-1H4C 1:4 HDMI Over CAT 5 DA

The **VM-1H4C** encodes the HDMI and IR signals and transmits them over TP cable to a compatible receiver (for example, the Kramer **TP-574 HDMI/RS-232/IR Line Receiver**).

[Figure 1](#) defines the front and rear panels of the **VM-1H4C**.

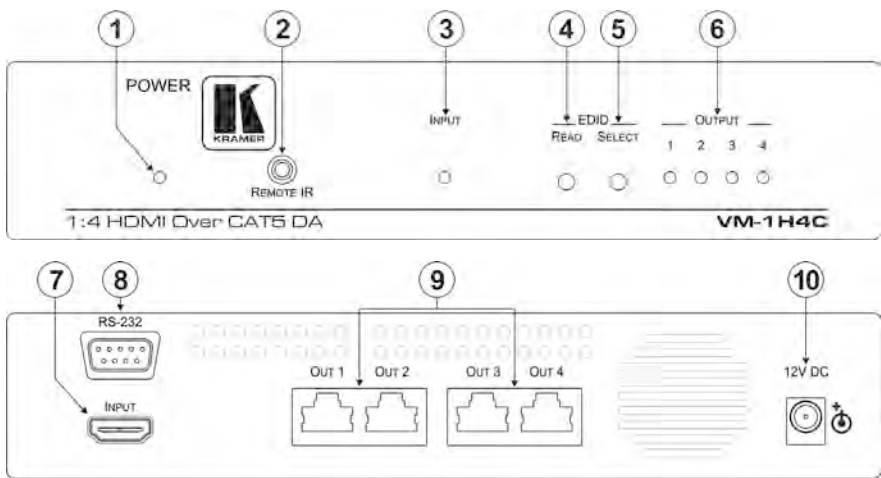


Figure 1: VM-1H4C 1:4 HDMI Over CAT 5 DA Front and Rear Panels

#	Feature		Function
1	POWER LED		Lights green when the unit receives power
2	REMOTE IR 3.5mm Mini Jack		Connect to the remote IR blaster or receiver
3	INPUT LED		Lights green when the input receives a signal
4	EDID	READ Button	Press to capture the EDID from the active output
5		SELECT Button	Press to select the output from which to capture the EDID
6	OUTPUT LEDs		The relevant LED lights green when the output is connected
7	INPUT HDMI Connector		Connect to the HDMI source
8	RS-232 9-pin D-sub Connector		For the use of Kramer service personnel only
9	OUT 1 ~ 4	TP Output RJ-45 Connectors	Connect to the LINE IN RJ-45 connector on the TP receivers, for example, TP-574 (See Section 7)
10	12V DC Power Connector		Connect to the +12V DC power adapter. Center pin positive

5 Connecting the VM-1H4C



After connecting your **VM-1H4C** connect the power adapter.

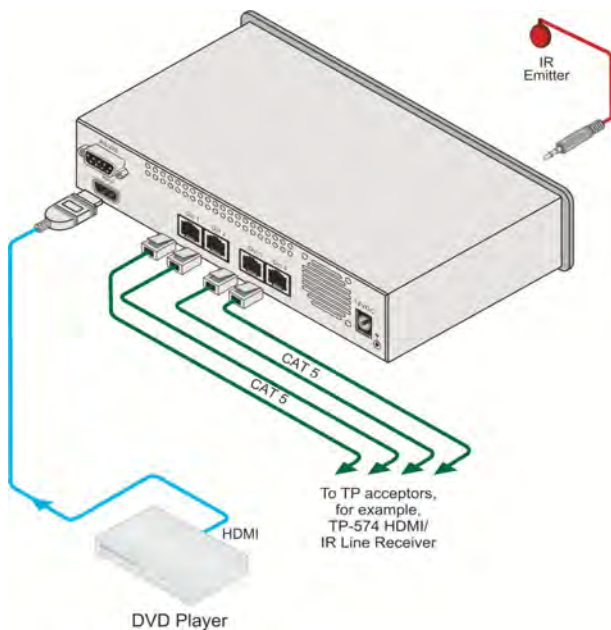


Figure 2: Connecting the VM-1H4C



Warning: Using a TP cable that is incorrectly wired may cause permanent damage to the device

To connect the VM-1H4C as illustrated in the example in [Figure 2](#):

1. Connect the HDMI source (for example, a DVD player) to the Input (HDMI) connector.
2. Connect the TP RJ-45 outputs to up to four TP acceptors (for example, **TP-574**).
3. Connect the front panel remote IR 3.5mm mini jack to the IR device (for example, the IR Blaster).

6 Acquiring the EDID

The **VM-1H4C** is programmed with a default EDID (see [Section 9](#)). This lets you connect the power before having to connect one of the acceptors. To change this default EDID, you must acquire the new EDID from a display device.

You can acquire the EDID from:

- One of the connected outputs (the relevant output LED lights)
- The default EDID (all output LEDs light)
- Up to four connected outputs using the Auto-mix Mode (all output LEDs light in a running pattern)

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.

To acquire the EDID:

1. Connect the output(s) from which you want to acquire the EDID.
2. Press the EDID SELECT button briefly.
The device enters the EDID programming mode.
3. Press the EDID SELECT button repeatedly until the required EDID is indicated based on the patterns described above.
4. Press the EDID READ button.
The relevant LEDs flash in a pattern for a few seconds as follows:
 - Slowly and then no longer lights. The EDID was successfully read.
 - Quickly and then no longer lights. The EDID was not read and the default EDID was stored.

7 Wiring the Twisted Pair RJ-45 Connectors

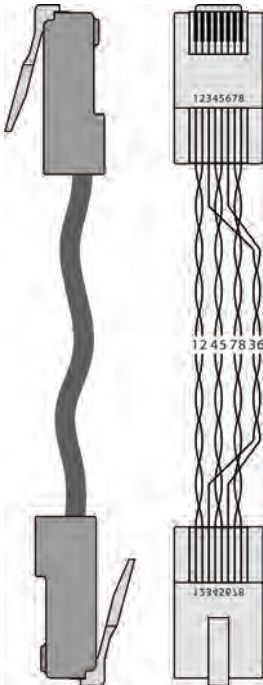
When using STP cable, connect/solder the cable shield to the RJ-45 connector shield. [Figure 3](#) defines the TP pinout using a straight pin-to-pin cable with RJ-45 connectors.



Note, that the cable Ground shielding must be connected/soldered to the connector shield.

EIA / TIA 568B	
PIN	Wire Color
1	Orange / White
2	Orange
3	Green / White
4	Blue
5	Blue / White
6	Green
7	Brown / White
8	Brown
Pair 1	4 and 5
Pair 2	1 and 2
Pair 3	3 and 6
Pair 4	7 and 8

Figure 3: TP Pinout Wiring



Warning: Using a TP cable that is incorrectly wired may cause permanent damage to the device

8 Technical Specifications

INPUTS:	1 HDMI connector 1 IR on a 3.5mm mini jack
OUTPUTS:	4 TP on RJ-45 connectors
BANDWIDTH:	Supports up to 4.95Gbps (1.65Gbps per graphic channel)
COMPLIANCE WITH HDMI STANDARD:	Supports HDMI and HDCP
INDICATOR LEDs:	Power, INPUT, OUTPUT 1, 2, 3 and 4
POWER SOURCE:	12V DC, 2A
OPERATING TEMPERATURE:	0° to +55°C (32° to 131°F)
STORAGE TEMPERATURE:	–45° to +72°C (–49° to 162°F)
HUMIDITY:	10% to 90%, RHL non-condensing
DIMENSIONS:	21.5cm x 16.2cm x 4.4cm (8.5in x 6.38in x 1.7in) W, D, H
WEIGHT:	0.9kg (1.98lbs) approx.
ACCESSORIES:	Power supply
OPTIONS:	HDMI/HDMI male to male cables, RK-1 19" rack adapter

9 Default EDID

The factory default EDID is listed below.

Monitor

Model name..... VM1H4C
Manufacturer..... KRM
Plug and Play D..... KRM0114
Serial number..... 505-707455010
Manufacture date..... 2009, ISO week 10

EDID revision..... 1.3
Input signal type..... Digital
Color bit depth..... Undefined
Display type..... RGB color
Screen size..... 520 x 320 mm (24 0 in)
Power management..... Standby, Suspend, Active off/sleep
Extension blocs..... 1 (CEA-EXT)

DDC/CI..... n/a

Color characteristics

Default color space..... Non-sRGB
Display gamma..... 2.20
Red chromaticity..... Rx 0.674 - Ry 0.319
Green chromaticity..... Gx 0.188 - Gy 0.706
Blue chromaticity..... Bx 0.148 - By 0.064
White point (default).... Wx 0.313 - Wy 0.329
Additional descriptors... None

Timing characteristics

Horizontal scan range.... 30-83kHz
Vertical scan range..... 56-76Hz
Video bandwidth..... 170MHz
CVT standard..... Not supported
GTF standard..... Not supported
Additional descriptors... None
Preferred timing..... Yes
Native/preferred timing.. 1280x720p at 60Hz (16:10)
Modeline..... "1280x720" 74.250 1280 1390 1430 1650 720 725 730 750 +hsync +vsync

Standard timings supported

720 x 400p at 70Hz - IBM VGA
640 x 480p at 60Hz - IBM VGA
640 x 480p at 75Hz - VESA
800 x 600p at 60Hz - VESA
800 x 600p at 75Hz - VESA
1024 x 768p at 60Hz - VESA
1024 x 768p at 75Hz - VESA
1280 x 1024p at 75Hz - VESA
1280 x 1024p at 60Hz - VESA STD
1600 x 1200p at 60Hz - VESA STD
1152 x 864p at 75Hz - VESA ST

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. § 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

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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@kramereel.com



SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing



P/N 2900-300133



Rev 2