



KRAMER ELECTRONICS LTD.

USER MANUAL

MODEL:

VM-5HDxIn
1:5 3G HD-SDI DA

P/N: 2900-300213 Rev 1

VM-5HDxIn Quick Start Guide

This page guides you through a basic installation and first-time use of your **VM-5HDxIn**. For more detailed information see the **VM-5HDxIn** user manual, the latest copy of which can be downloaded from <http://www.kramerelectronics.com>.

Step 1: Check what's in the box

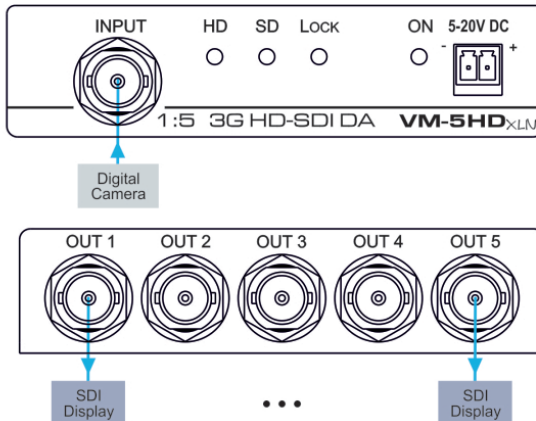
- VM-5HDxIn** 1:5 3G HD-SDI DA
- Power adapter
- 4 Rubber feet
- 1 Quick start guide
- 1 User Manual



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 input and outputs - see Section 5

Switch off the power to all devices before connecting them to your **VM-5HDxIn**.



When connecting AV equipment to the **VM-5HDxIn** we recommend you use high quality Kramer cables for best performance.

Step 3: Connect the power adapter

Connect the supplied power adapter to the **VM-5HDxIn** and to the mains supply.



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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 Matrix 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.

Congratulations on purchasing your Kramer DigiTOOLS® **VM-5HDxIn 1:5 3G HD-SDI DA** which is ideal for the following typical applications:

- SDI production studios for signal distribution and equalizations
- Broadcast studios for on-air operation and SDI field production
- Using with SDI video sources such as professional digital cameras

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).

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)
- 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-5HDxIn 1:5 3G HD-SDI DA** away from moisture, excessive sunlight and dust



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

3 Overview

The Kramer **VM-5HDxIn 1:5 3G HD-SDI DA** is a high performance 1:5 distributor for SDI video signals. It accepts one input, equalizes and reclocks it, and distributes the signal to five identical outputs.

The **VM-5HDxIn**:

- Supports up to 400m cable equalization (400m for SD signals, 220m for 1.5Gbps HD signals, and 200m for 3Gbps HD signals)
SD means an NTSC or PAL compatible video format consisting of 480 (NTSC) or 576 (PAL) lines of interlaced video. HD means a video format consisting of 720 lines of progressive video or 1080 lines of interlaced or progressive video
- Operates at up to 2.97Gbps, enabling it to be used for standard definition, high definition and the new 3G high definition serial digital video signals (SD/HD SDI)
- Passes ancillary digital information, such as, embedded audio, Teletext, and time code) during the blanking period
- Is SMPTE 292M, 259M and 424M compliant and supports data rates of 270Mbps, 1483.5Mbps, 1485Mbps and 2970Mbps
- Provides automatic, multi-rate equalization and reclocking for losses typical with long runs of 75Ω co-axial cable up to 400m
- Features LEDs to indicate the SDI resolution (SD or HD)

The **VM-5HDxIn** is housed in a Kramer DigiTOOLS® enclosure and can run on between 5 and 20V DC.

4 Defining the VM-5HDxIn 1:5 3G HD-SDI DA

Figure 1 defines the front and rear panels of the **VM-5HDxIn**.

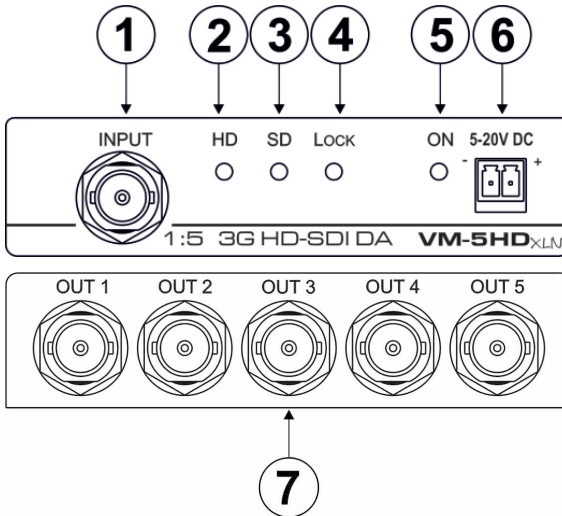


Figure 1: VM-5HDxIn 1:5 3G HD-SDI DA Front Panel

| # | Feature | Function |
|---|-------------------------------|--|
| 1 | INPUT BNC Connector | Connect to an SDI source |
| 2 | HD LED | Lights blue when the SDI signal is HD |
| 3 | SD LED | Lights green when the SDI signal is SD |
| 4 | LOCK LED | Lights green when the VM-5HDxIn has detected the input signal and is able to lock on the signal |
| 5 | ON LED | Lights green when receiving power |
| 6 | 5-20V DC 2-pin Terminal Block | Connect to the power adapter |
| 7 | OUT 1 ~ OUT 5 BNC Connectors | Connect to the SDI acceptors (from 1 to 5) |

5 Connecting the VM-5HDxIn



Always switch off the power to any device before connecting it to your **VM-5HDxIn**. After connecting your **VM-5HDxIn**, connect its power and then switch on the power to the other devices.

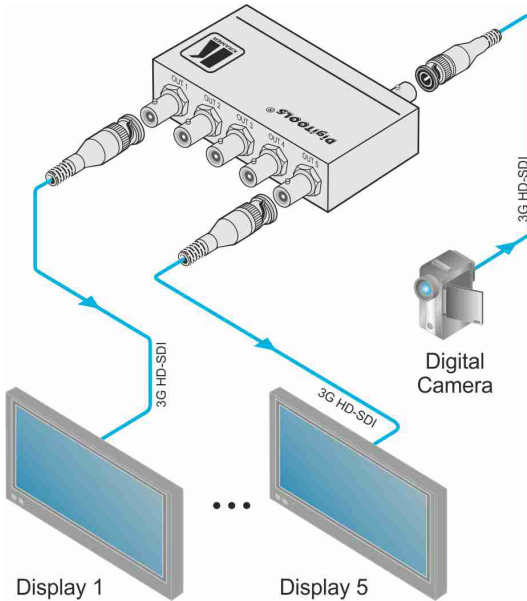


Figure 2: Connecting the VM-5HDxIn 1:5 3G HD-SDI DA

To connect the VM-5HDxIn as illustrated in the example in [Figure 2](#):

1. Connect an SDI video source (for example, a digital camera) to the INPUT BNC connector.
2. Connect up to five SDI video acceptors to the OUT 1 to 5 BNC connectors (for example, SDI displays).
3. Connect the power adapter to the power socket and connect the adapter to the mains electricity (not shown in [Figure 2](#)).

6 Technical Specifications

| | |
|---------------------------|--|
| INPUT: | 1 SMPTE-259M/292M/424M serial video/75Ω on a BNC connector |
| OUTPUTS: | 5 equalized and reclocked SMPTE-259M/292M/424M outputs/75Ω on BNC connectors |
| MAXIMUM DATA RATE (-3dB): | 3Gbps |
| MAX. OUTPUT LEVEL: | 800mVpp /75Ω |
| COUPLING: | AC |
| POWER SOURCE: | 5-20V DC, @5V 280mA, @12V 130mA, @20V 80mA |
| 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: | 9.9cm x 8.0cm x 2.5cm (3.9" x 3.15" x 1.0") W, D, H. |
| WEIGHT: | 0.2kg (0.44lbs.) approx. |
| ACCESSORIES: | Power supply, mounting bracket |

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.

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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.

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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.

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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.

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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.

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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



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Rev: 1