

**Kramer Electronics, Ltd.**



# **USER MANUAL**

**Model:**

**VM-92**

*9x 1:2 Video Distributor*

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## 1 Introduction

Welcome to Kramer Electronics (since 1981): a world of unique, creative and affordable solutions to the infinite range of problems that confront the video, audio and presentation 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 8 Groups<sup>1</sup>, which are clearly defined by function.

Congratulations on purchasing your Kramer **VM-92 9x 1:2 Video Distributor**! It is ideal for:

- Video distribution applications
- Broadcast, presentation and production facilities

The package includes the following items:

- **VM-92 9x 1:2 Video Distributor**
- Power cord
- This user manual<sup>2</sup>

## 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<sup>3</sup>

### 2.1 Quick Start

This quick start chart summarizes the basic setup and operation:

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1 GROUP 1: Distribution Amplifiers; GROUP 2: Video and Audio Switchers, Matrix Switchers and Controllers; GROUP 3: Video, Audio, VGANGA 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 the Internet at this URL: <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 6**

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



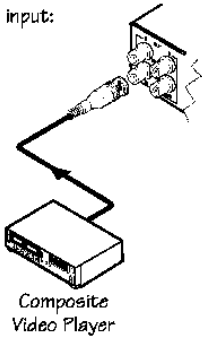
**Step 2: Configure the VM-92 - see section 5**

Configure the VM-92 as a:

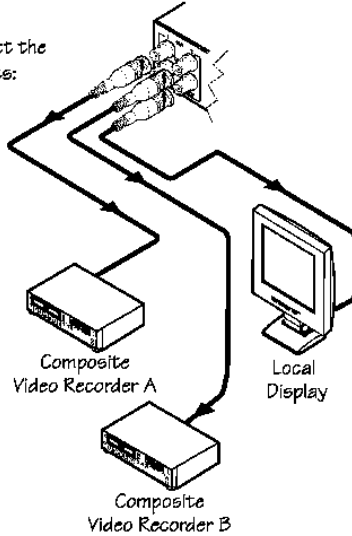
- 9 x 1:2 Composite Video distributor
- 4 x 1:2 s-Video (Y/C) distributor
- 3 x 1:2 Component Video (YUV) distributor
- 3 x 1:2 RGB distributor
- 2 x 1:2 RGBS distributor

**Step 3: Connect the VM-92 - see section 7**

Connect the input:



Connect the outputs:



**Step 4: Turn the power ON**

**Step 5: Set / adjust the underside buttons / controls - see section 4**

Each channel features independent:

- Termination
- EQ. Control



### 3 Overview

The **VM-92** is a high performance universal style video distributor. It can be configured in several different ways, including as a:

- 9 x 1:2 composite video distributor with looping inputs
- 4 x 1:2 s-Video (Y/C) distributor with looping inputs
- 3 x 1:2 component (YUV) distributor with looping inputs
- 3 x 1:2 RGB distributor with looping inputs
- 2 x 1:2 RGSB distributor with looping inputs

Using the loop connectors and termination switches you can interconnect several channels to form various combinations, for example, a 1:18 composite video distributor or a 1:9 s-Video (Y/C) distributor.

In particular, the **VM-92**:

- Is HDTV compatible
- Includes a looping input and two outputs—per channel—all on BNC connectors
  - Features independent termination and EQ. control per channel
  - Has a video bandwidth of 500MHz, ensuring transparent performance even in the most critical applications
  - Is housed in a 19" 1U rack-mountable enclosure and is fed from a 90-264 VAC universal switching power supply

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-92** away from moisture, excessive sunlight and dust

### 4 Your VM-92 9x 1:2 Video Distributor

This section defines the **VM-92 9x 1:2 Video Distributor**:

- Front and rear panels (see Figure 1 and Table 1)
- Underside panel (see Figure 2 and Table 2)

Your VM-92 9x 1:2 Video Distributor

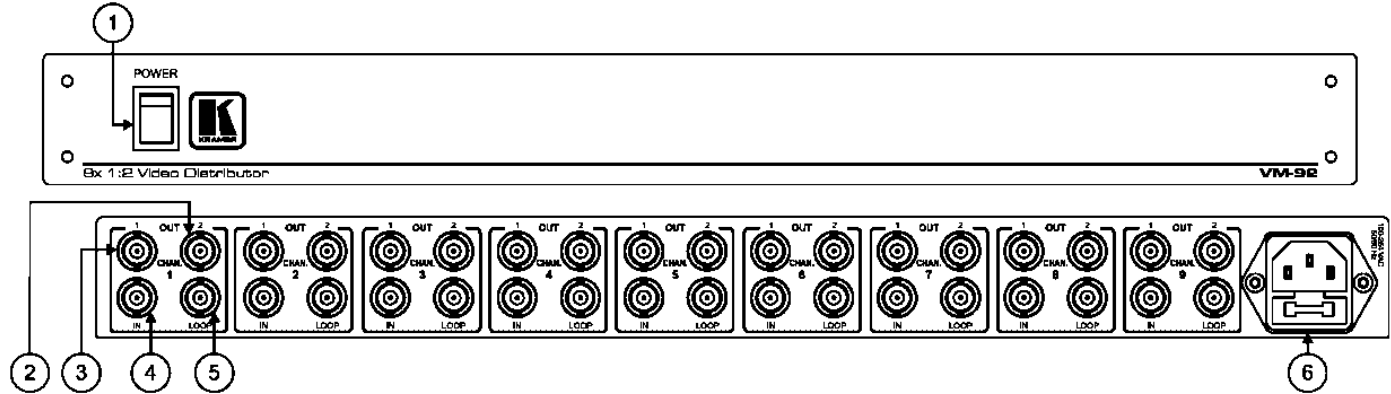
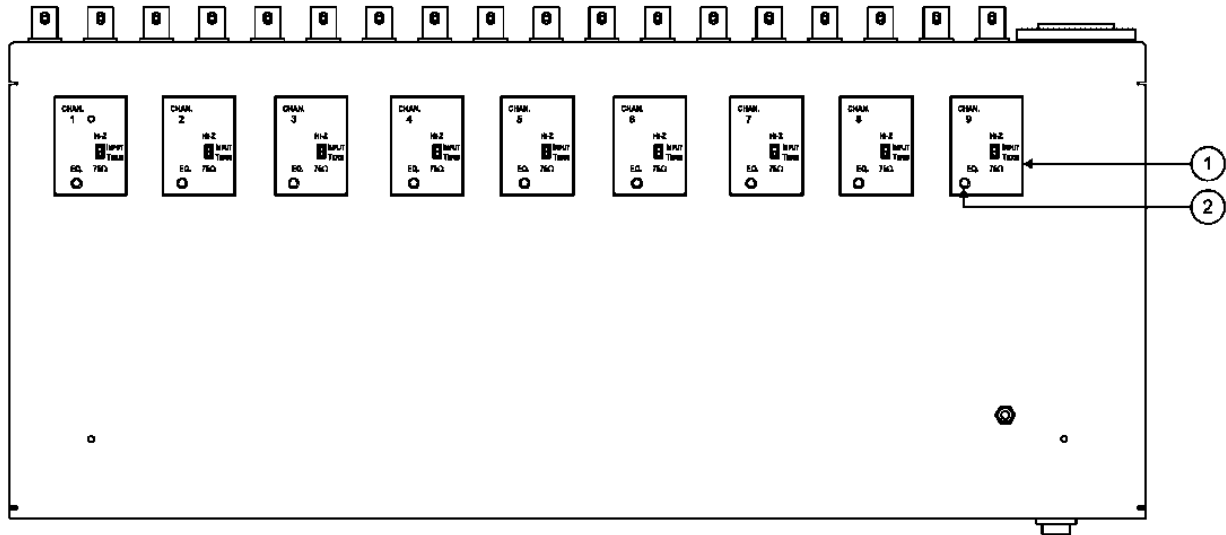


Figure 1: VM-92 9x 1:2 Video Distributor

Table 1: Front and Rear Panel Features of the VM-92 9x 1:2 Video Distributor

#	Feature	Function
1	POWER Switch	Illuminated switch for turning the unit ON or OFF
2	OUT 2 BNC Connector	Connect to the video acceptors (from channel 1 to channel 9)
3	OUT 1 BNC Connector	Connect to the video acceptors (from channel 1 to channel 9)
4	IN BNC Connector	Connect to the video source (from channel 1 to channel 9)
5	LOOP BNC Connector	Connect to an additional unit / local display
6	Power Connector with FUSE	AC connector enabling power supply to the unit

## Your VM-92 9x 1:2 Video Distributor



*Figure 2: Underside of the VM-92 9x 1:2 Video Distributor*

*Table 2: Underside Features of the VM-92 9x 1:2 Video Distributor*

#	Feature	Function
1	<i>INPUT TERM</i> Button <sup>1</sup>	Sliding up selects Hi-Z <sup>2</sup> , sliding down selects 75Ω
2	<i>EQ. Trimmer</i> <sup>1</sup>	Adjusts <sup>3</sup> the video EQ. (equalization) compensation of outputs

<sup>1</sup> Independent controls per channel

<sup>2</sup> For looping select Hi-Z

<sup>3</sup> Insert a screwdriver into the small hole and carefully rotate it to adjust the level

## 5 Configuring the VM-92 9x 1:2 Video Distributor

You can configure the VM-92 in several different ways, including as a:

- 9 x 1:2 or 1:18 composite video distributor, see section 5.1
- 4 x 1:2 s-Video (Y/C) distributor, see section 5.2
- 3 x 1:2 component (YUV) distributor, see section 5.3
- 3 x 1:2 RGB distributor, see section 5.4
- 2 x 1:2 RGBS distributor, see section 5.5

### 5.1 Configuring a 9 x 1:2 Composite Video Distributor

You can configure the VM-92 as a 9 x 1:2 composite video distributor (see Figure 3) or as a 1:18 composite video distributor<sup>1</sup> (see Figure 4).

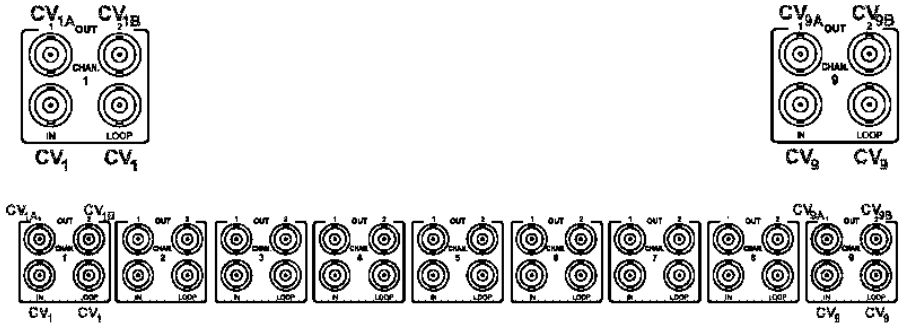


Figure 3: Configuring as a 9 x 1:2 Composite Video Distributor

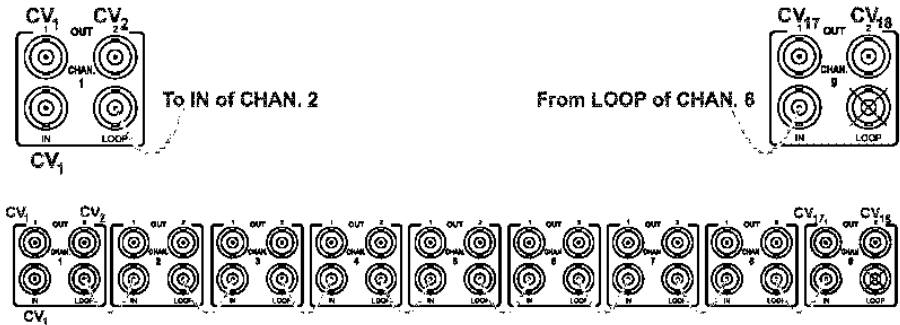


Figure 4: Configuring as a 1:18 Composite Video Distributor

<sup>1</sup> The INPUT TERM buttons are set to 110-7 (for looping) on channels 1 to 8. On channel 9, the button is set to 75Ω.



### 5.2 Configuring a 4 x 1:2 s-Video (Y/C) Distributor

Figure 5 illustrates the VM-92 as a 4 x 1:2 s-Video (Y/C) distributor:

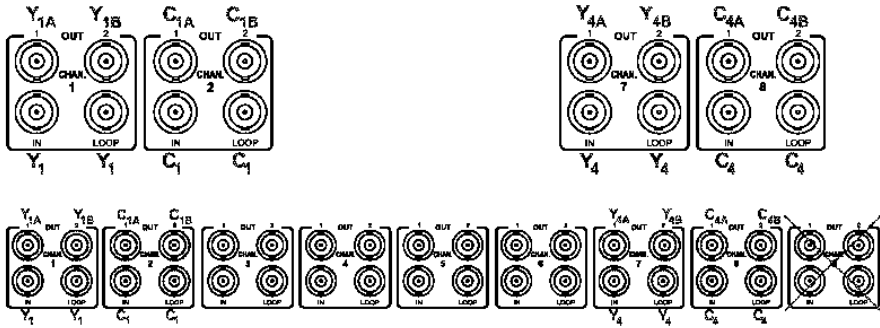


Figure 5: Configuring as a 4 x 1:2 s-Video (Y/C) Distributor

### 5.3 Configuring a 3 x 1:2 Component Video (YUV) Distributor

Figure 6 illustrates the VM-92 as a 3 x 1:2 Component Video (YUV) distributor:

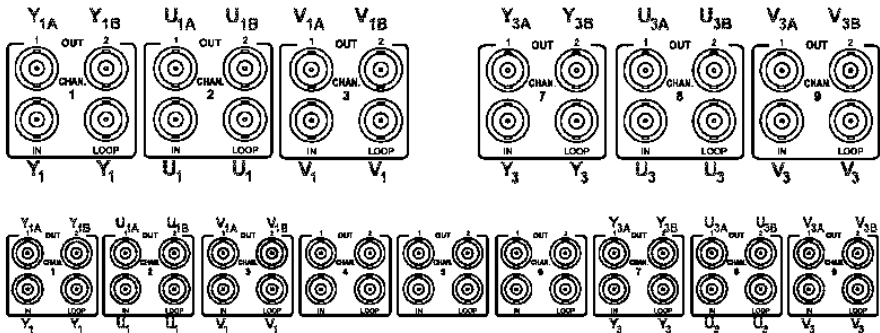


Figure 6: Configuring as a 3 x 1:2 Component Video (YUV) Distributor

### 5.4 Configuring a 3 x 1:2 RGB Distributor

Figure 7 illustrates the VM-92 as a 3 x 1:2 RGB distributor:

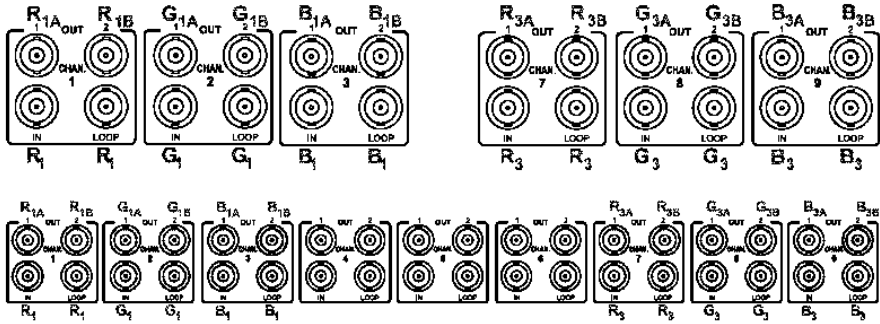


Figure 7: Configuring as a 3 x 1:2 RGB distributor

### 5.5 Configuring a 2 x 1:2 RGBS Distributor

Figure 8 illustrates the VM-92 as a 2 x 1:2 RGBS distributor:

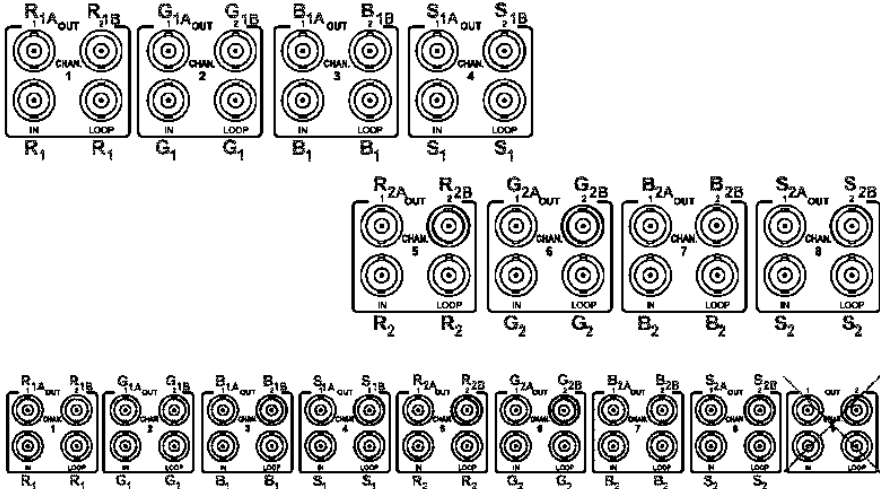


Figure 8: Configuring as a 2 x 1:2 RGBS distributor

## 6 Installing 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 Deg. Centigrade
Operating humidity range	5 to 65% RHL, non-condensing
Storage temperature range	-20 to +70 Deg. Centigrade
Storage humidity range	5 to 95% RHL, non-condensing



### CAUTION!!

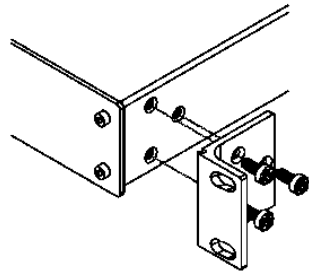
When installing on a 19" rack, avoid hazards by taking care that:

- 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 supply connections other than direct connections to the branch circuit (for example, the use of power strips), 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>)

## 7 Connecting the VM-92 9x 1:2 Video Distributor

This section describes how to connect the **VM-92** as a 9 x 1:2 Composite Video distributor<sup>1</sup>.

To connect the **VM-92**, as the example in Figure 9 shows<sup>2</sup>, do the following<sup>3</sup>:

1. Connect CHAN. 1 as follows:
  - Connect a composite video source (for example, a composite video player 1) to the CHAN. 1 IN BNC connector
  - Connect the CHAN. 1 OUT BNC connectors<sup>4</sup> OUT 1 to acceptor 1A (for example, composite video recorder 1A), and the OUT 2 to acceptor 1B (for example, composite video recorder 1B)
  - Connect a local display to the CHAN. 1 LOOP BNC connector (if required)
2. Connect CHAN. 9 as follows:
  - Connect a composite video source (for example, a composite video player 9) to the CHAN. 9 IN BNC connector
  - Connect the CHAN. 9 OUT BNC connectors<sup>4</sup> OUT 1 to acceptor 9A (for example, composite video recorder 9A), and the OUT 2 to acceptor 9B (for example, composite video recorder 9B)
  - Connect a local display to the CHAN. 9 LOOP BNC connector (if required)
3. Connect the power cord to the mains electricity.

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1 Also see the configuration illustrated in Figure 3

2 Only channels 1 and 9 are illustrated in Figure 9, but you can connect each channel in a similar way

3 Switch OFF the power on each device before connecting it to your VM-92. After connecting your VM-92, switch on its power and then switch on the power on each device

4 As required. Not all outputs need to be connected

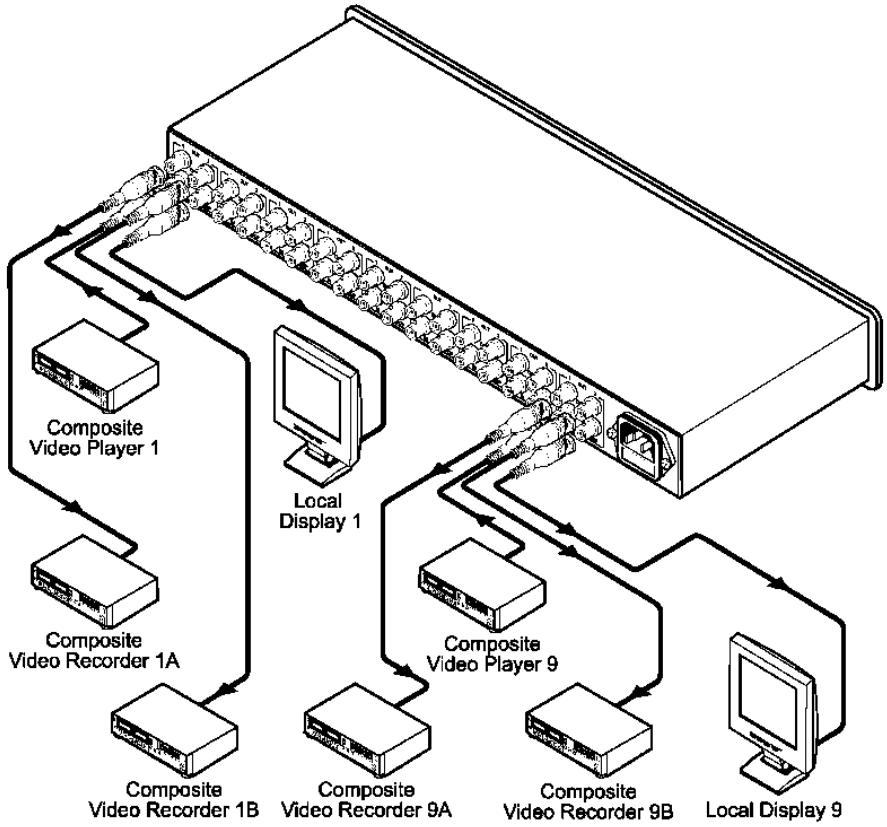


Figure 9: Connecting the VM-92 as a 9 x 1:2 Composite Video Distributor

## 8 Technical Specifications

Table 3 includes the technical specifications<sup>1</sup> of the **VM-92**:

*Table 3: Technical Specifications of the VM-92 9x 1:2 Video Distributor*

INPUTS:	9 independent channels 1 Vpp / 75 Ω on BNC connectors
OUTPUTS:	9 x 2 independent channels 1 Vpp / 75 Ω on BNC connectors 9 Loops (1 per channel) 1 Vpp / 75 Ω on BNC connectors
MAX. OUTPUT LEVEL:	3.3Vpp
BANDWIDTH (-3dB):	500MHz
DIFF. GAIN:	0.03%
DIFF. PHASE:	<0.03°
K-FACTOR:	<0.05%
S/N RATIO:	70dB
CROSSTALK (all hostile):	-53dB
CONTROLS:	EQ.: 0 to 11dB @50MHz
COUPLING:	DC
POWER SOURCE:	90-264VAC, 50 / 60 Hz, 7VA
DIMENSIONS:	19-inch (W), 7-inch (D) 1U (H) rack-mountable
WEIGHT:	2.5 kg. (5.5 lbs.) approx.
ACCESSORIES:	Power cord

<sup>1</sup> Specifications are subject to change without notice

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## 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](http://www.kramerelectronics.com).
2. Any product, on which the serial number has been defaced, modified or removed.
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 your 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.





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**For the latest information on our products and a list of Kramer distributors, visit our Web site: [www.kramerelectronics.com](http://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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**Kramer Electronics, Ltd.**

Web site: [www.kramerelectronics.com](http://www.kramerelectronics.com)

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