Kramer Electronics, Ltd.

KRAMER

USER MANUAL

Model:

VM-50CA

1:5 Video Component / Audio 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[1], which are clearly defined by function.

Congratulations on purchasing your Kramer **VM-50CA** *1:5 Video Component / Audio Distributor*, which is ideal for the following applications:

- Duplication studios
- Broadcasting, production, or presentation systems requiring high quality signal distribution
- Retail outlets or sports bars

The package includes the following items:

- **VM-50CA** *1:5 Video Component / Audio Distributor*
- Power cord
- This user manual[2]

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[3]

2.1 Quick Start

This quick start chart summarizes the basic setup and operation steps.

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1 GROUP 1: Distribution Amplifiers; GROUP 2: Video and Audio Switchers, Matrix Switchers and Controllers; GROUP 3: Video, Audio, VGA/XGA 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 our Web site: http://www.kramerelectronics.com

3 The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com
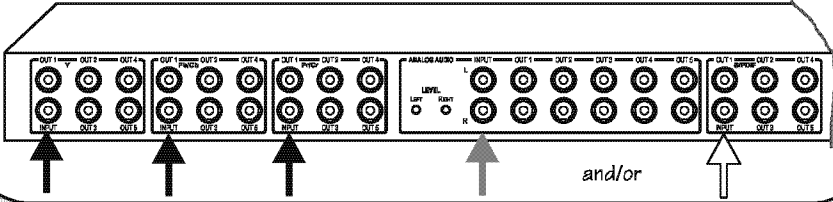
Step 1: Mount the machine - see section 5

Mount the machine in a rack or stick the 4 rubber feet to the underside
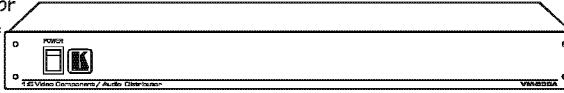
Step 2: Connect the video and the inputs - see section 6

Connect the video and the audio inputs

and/or

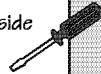**Step 3: Connect the video and the audio outputs - see section 6**
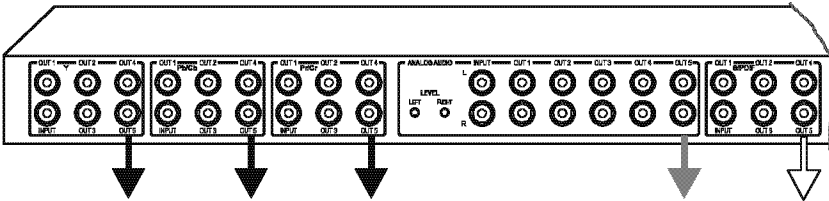
YOU DO NOT HAVE TO CONNECT ALL THE OUTPUTS

Connect the video and audio outputs (from 1 to 5)

Step 4: Turn the power ON

If required:

○ Adjust the component video EQ. and level on the machine underside

○ Adjust the analog audio level on the rear panel

3 Overview

The Kramer **VM-50CA** *1:5 Video Component / Audio Distributor* is a high performance 1:5 distributor for component video signals (HDTV compatible), digital audio (S/PDIF) signals, and unbalanced stereo audio signals.

The **VM-50CA** accepts one:

- Component video[1] signal and distributes the signal to five identical outputs using RCA connectors
- Supports all HDTV resolutions, including 1080p
- Digital audio (S/PDIF) input and distributes it to five digital audio (S/PDIF) outputs using RCA connectors
- Unbalanced stereo audio input and distributes it to five pairs of unbalanced stereo audio outputs, using RCA connectors

In addition, the **VM-50CA** features:

- A video bandwidth of 400MHz that ensures transparent operation at the highest resolutions
- Underside trimmers to control the component video Y, Pb/Cb, and Pr/Cr levels and EQ.
- Audio level control for the unbalanced stereo audio output

The **VM-50CA** is dependable, rugged and fits into one vertical space (1U) of a standard 19" professional rack.

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 that may adversely influence signal quality and position your Kramer **VM-50CA** away from moisture, excessive sunlight and dust

4 Your VM-50CA 1:5 Video Component / Audio Distributor

Figure 1 and Table 1 define the front and rear panels of the **VM-50CA**:

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1 Sometimes called YUV, or Y, B-Y, R-Y, or Y, P_b, P_r, or Y, C_b, C_r
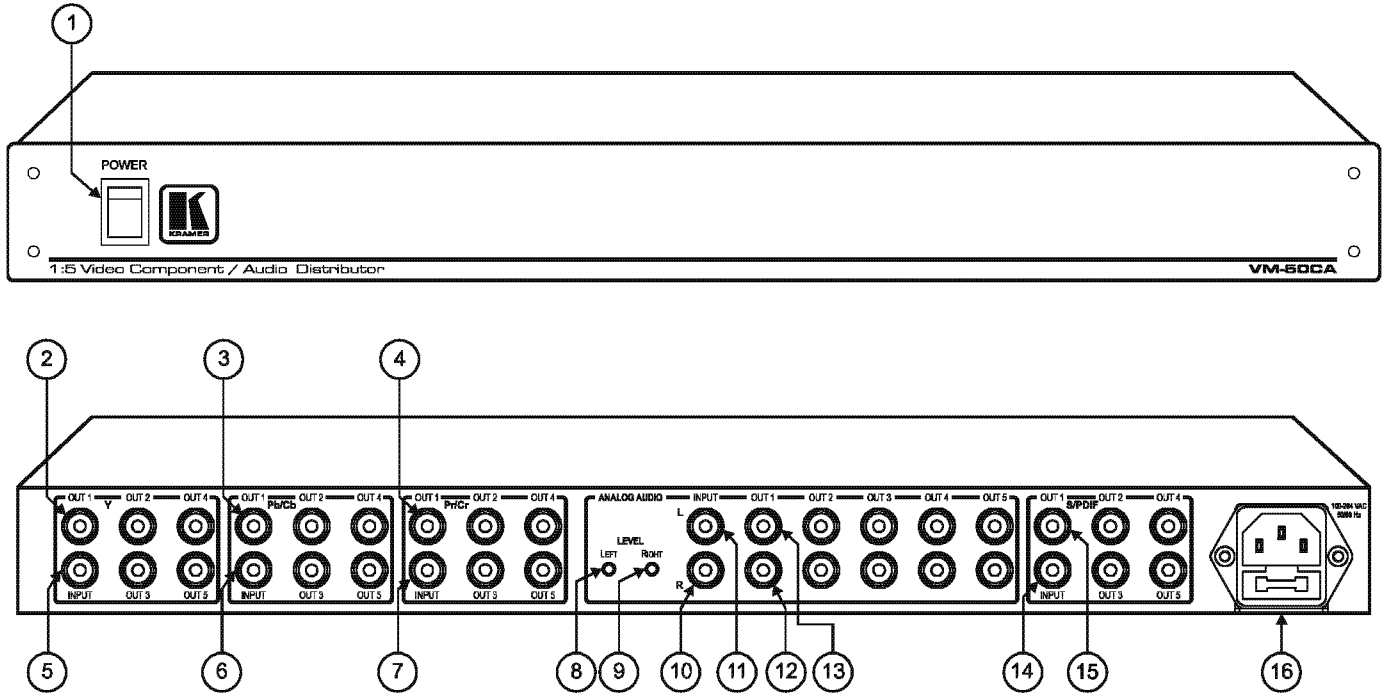
Figure 1: VM-50CA 1:5 Video Component / Audio Distributor

Table 1: VM-50CA 1:5 Video Component / Audio Distributor Features

#	Feature		Function
1	POWER Switch		Illuminated switch for turning the unit ON or OFF
2	OUT	Y RCA Connectors	
3		Pb/Cb RCA Connectors	Connect to the component video acceptors (from OUT 1 to OUT 5)
4		Pr/Cr RCA Connectors	
5	INPUT	Y RCA Connector	
6		Pb/Cb RCA Connector	Connect to the component video source
7		Pr/Cr RCA Connector	
8	ANALOG AUDIO	LEVEL Trimmer	LEFT	Adjust[1] the left audio signal output level
9			RIGHT	Adjust the right audio signal output level
10		INPUT RCA Connector	R	Connect to the right analog audio source
11			L	Connect to the left analog audio source
12		OUT RCA Connectors	R	Connect to the right analog audio acceptors (from OUT 1 to OUT 5)
13			L	Connect to the left analog audio acceptors (from OUT 1 to OUT 5)
14	S/PDIF RCA Connectors	INPUT	Connect to the digital audio source
15		OUT	Connect to the digital audio acceptors (from OUT 1 to OUT 5)
16	Power Connector with Fuse		AC connector enabling power supply to the unit

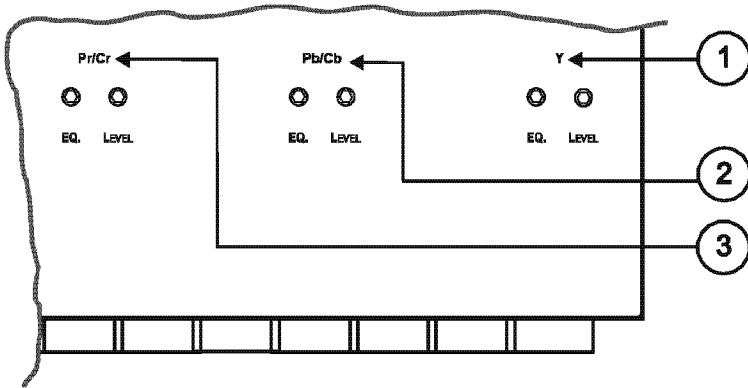The **VM-50CA** underside is illustrated in Figure 2 and defined in Table 2:

Figure 2: VM-50CA Underside View

Table 2: VM-50CA Underside View Features

#	Feature		Function
1	Y	EQ. Trimmer	Adjust[1] the Y cable compensation equalization level
		LEVEL Trimmer	Adjust[1] the Y output signal level
2	Pb/Cb	EQ. Trimmer	Adjust[1] the Pb/Cb cable compensation equalization level
		LEVEL Trimmer	Adjust[1] the Pb/Cb output signal level
3	Pr/Cr	EQ. Trimmer	Adjust[1] the Pr/Cr cable compensation equalization level
		LEVEL Trimmer	Adjust[1] the Pr/Cr output signal level

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1 Insert a screwdriver into the small hole and carefully rotate it, to trim the appropriate level

5 Installing the VM-50CA 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.
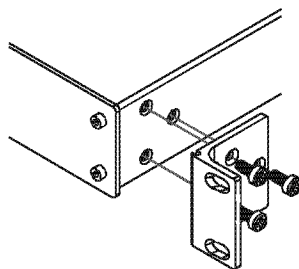
2 Place the ears of the machine against the rack rails, and insert the proper screws (not provided) through each of the four holes in the rack ears.

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)

6 Connecting the VM-50CA

To connect a **VM-50CA** unit as the example in Figure 3 illustrates, do the following[1]:

1. Connect a component video source (for example, an HDTV satellite receiver) to the Y, Pb/Cb, and Pr/Cr IN RCA connectors, and to the S/PDIF INPUT RCA connector.

2. Connect[2] the:

   - Y, Pb/Cb, and Pr/Cr OUT 1 RCA connectors to the component video acceptor (for example, a plasma display), and the digital audio S/PDIF[3] OUT 1 RCA connector to an AV-Receiver

   - Y, Pb/Cb, and Pr/Cr OUT 5 RCA connectors and the digital audio S/PDIF[3] OUT 5 RCA connector to a home theater system

3. Connect the power cord (not shown in Figure 3)[4].

4. If required, adjust[5] the audio level, the Y, Pb/Cb, and/or Pr/Cr output signal level, and/or the Y, Pb/Cb, and/or Pr/Cr cable compensation equalization level.

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1 Switch OFF the power on each device before connecting it to your VM-50CA. After connecting your VM-50CA, switch on its power and then switch on the power on each device

2 You can connect the component video and audio outputs to up to five component video and audio acceptors. When less than five outputs are required, connect only those outputs of the VM-50CA that are required, and leave the other outputs unconnected

3 Alternatively, or in addition, connect the ANALOG AUDIO RCA connectors (not shown in Figure 3)

4 We recommend that you use only the power cord that is supplied with this machine

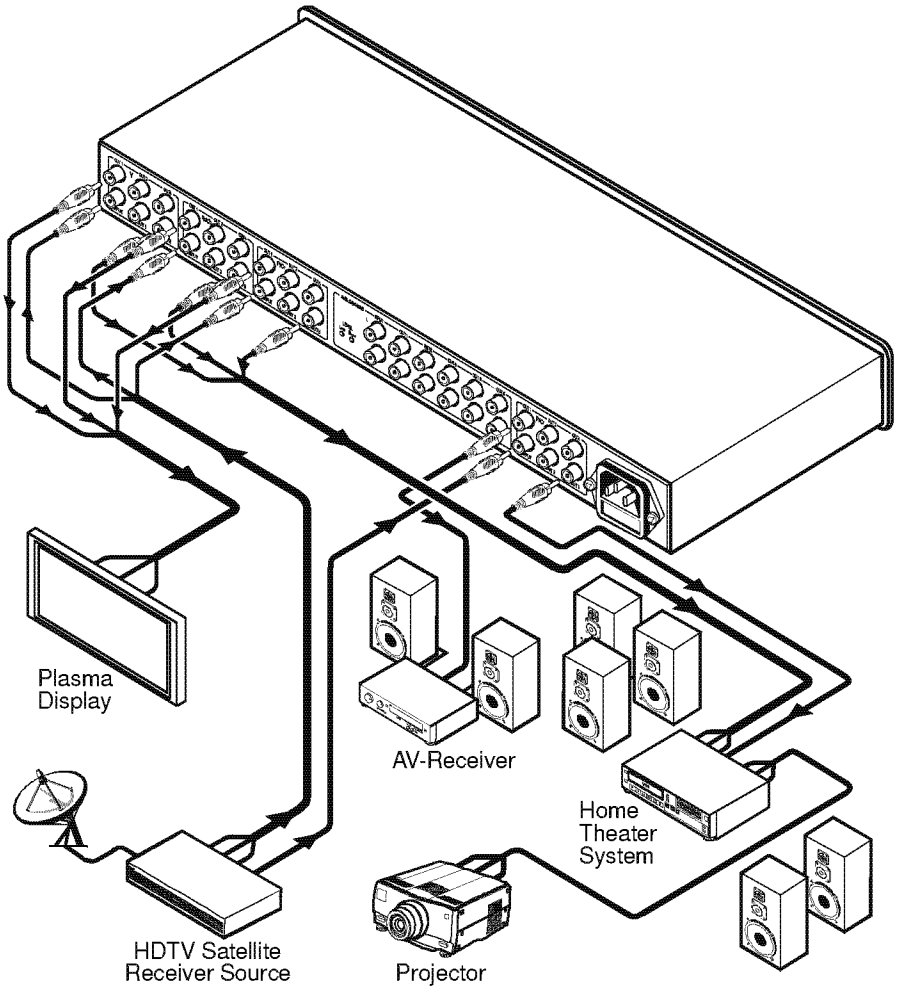5 Insert a screwdriver into the small hole and carefully rotate it, trimming the level

Figure 3: Connecting the VM-50CA 1:5 Video Component / Audio Distributor

7   Technical Specifications

Table 3 includes the technical specifications.

Table 3: Technical Specifications[1] of the VM-50CA

INPUTS:	1 component video (Y, Pb/Cb, Pr/Cr) 1Vpp/0.7Vpp, 75Ω on 3 RCA connectors	
	1 digital audio (S/PDIF) 75Ω on an RCA connector	
	1 analog stereo audio 50kΩ, +4dBm on 2 RCA connectors	
OUTPUTS:	5 component video (Y, Pb/Cb, Pr/Cr) 1Vpp/0.7Vpp, 75Ω on 15 RCA connectors	
	5 digital audio (S/PDIF) on 5 RCA connectors	
	5 analog stereo audio on 4dBm, 150Ω 10 RCA connectors	
MAX. OUTPUT LEVEL:	VIDEO: 2.3Vpp	AUDIO: 1.8Vpp (S/PDIF); 22dBm (analog)
BANDWIDTH (-3dB):	VIDEO: 400MHz, Fully Loaded	AUDIO: 350MHz (S/PDIF); 40kHz (analog)
DIFF. GAIN:	0.08%	
DIFF. PHASE:	0.05 Deg	
K-FACTOR:	<0.05%	
S/N RATIO:	VIDEO: 76dB @5MHz	AUDIO: 90dB (analog)
CROSSTALK (all hostile):		AUDIO: -70dB @15kHz, video into audio
CONTROLS:	Y, Pb, Pr level: –1.2dB to +6.6dB; analog audio level: -67dB to +6.3dB; EQ. @50MHz: 0 to +5.9dB	
COUPLING:	VIDEO: DC	AUDIO: analog: Input: AC; Output: DC; S/PDIF: DC
AUDIO THD + NOISE:	0.015% (analog) @1kHz	
AUDIO 2nd HARMONIC:	0.003% (analog) @1kHz	
POWER SOURCE:	100-240, 50/60Hz, 7VA	
DIMENSIONS:	19-inch (W), 7-inch (D) 1U (H) rack-mountable	
WEIGHT:	2.6kg (5.7lbs.) approx.	
ACCESSORIES:	Power cord	

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1 Specifications are subject to change without notice

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.
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 you 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.

For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com, where updates to this user manual may be found. We welcome your questions, comments and feedback.

Safety Warning:
Disconnect the unit from the power supply before opening/servicing.

Caution