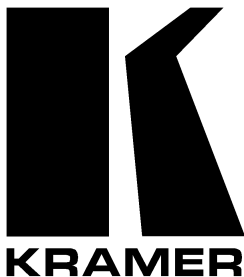


Kramer Electronics, Ltd.



USER MANUAL

Model:

VM-312

Multi-Format Video/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 Groups¹, which are clearly defined by function.

Congratulations on purchasing your **VM-312 Multi-Format Video/Audio Distributor**, which is ideal for:

- Multi-format presentation applications that require a preview option
- Stage and educational applications
- Video studios that need Multi-format signal distribution

The package includes the following items:

- **VM-312 Multi-Format Video/Audio Distributor**
- Power adapter (12V DC input)
- This user manual²

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 cables³

3 Overview

The Kramer **VM-312** is a high performance multi-format distributor for component video, composite video, s-Video and unbalanced stereo audio signals, all in one box. For each signal, it takes one input, provides correct buffering and isolation, and distributes the signal simultaneously to two identical outputs.

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 the Internet at: <http://www.kramerelectronics.com>

3 The complete list of Kramer cables is on our Web site at <http://www.kramerelectronics.com>

The VM-312:

- Includes one 1:2 composite video distributor on RCA connectors, one 1:2 Y/C distributor on 4p connectors, one 1:2 component video distributor on RCA connectors, and one 1:2 unbalanced stereo audio distributor on 3.5mm mini jack connectors
- Has a video bandwidth exceeding 400MHz, ensuring that it remains transparent in almost any application

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-312 away from moisture, excessive sunlight and dust

4 Your VM-312 Multi-Format Video/Audio Distributor

Figure 1 and Table 1 define the VM-312:

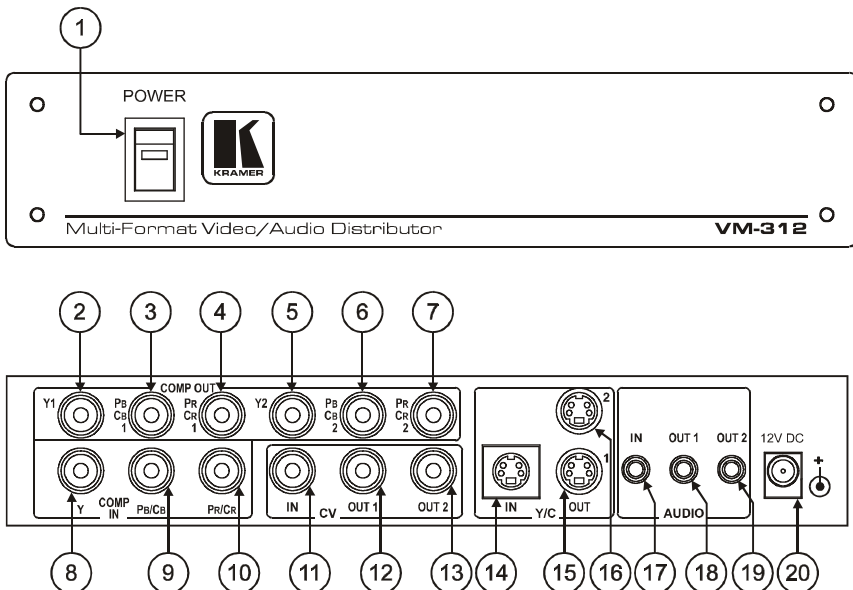


Figure 1: VM-312 Multi-Format Video/Audio Distributor

Table 1: VM-312 Multi-Format Video/Audio Distributor Features

#	Feature		Function
1	POWER Switch		Illuminated switch for turning the unit ON or OFF
2	COMP OUT	Y1 RCA Connector	Connect to the component video acceptor1
3		PB CB 1 RCA Connector	
4		PR CR 1 RCA Connector	
5		Y2 RCA Connector	Connect to the component video acceptor 2
6		PB CB 2 RCA Connector	
7		PR CR 2 RCA Connector	
8	COMP IN	Y RCA Connector	Connect to the component video source
9		PB/CB RCA Connector	
10		PR/CR RCA Connector	
11	CV	IN RCA Connector	Connect to the composite video source
12		OUT 1 RCA Connector	Connect to the composite video acceptors (1 and 2)
13		OUT 2 RCA Connector	
14	Y/C	IN 4p Connector	Connect to the s-Video source
15		OUT 1 4p Connector	Connect to the s-Video acceptors (1 and 2)
16		OUT 2 4p Connector	
17	AUDIO	IN 3.5 Mini Jack Connector	Connect to the unbalanced stereo audio source
18		OUT 1	Connect to the unbalanced stereo audio acceptors (1 and 2)
19		OUT 2 3.5mm Mini Jack Connector	
20	12V DC		+12 DC connector for powering the unit

5 Connecting the VM-312 Multi-Format Distributor

To connect the **VM-312** as illustrated in the example in Figure 2, do the following¹:

1. Connect the component video source and acceptors as follows:
 - Connect a component video source (for example, a betacam video player) to the Y, PB/CB, and PR/CR COMP IN RCA connectors
 - Connect the component video Y1, PB CB 1 and PR CR 1 COMP OUT RCA connectors to a component video acceptor (for example, a plasma display)
 - Connect the component video COMP OUT RCA connectors Y2, PB CB 2 and PR CR 2, to a component video acceptor (for example, a betacam video recorder)
2. Connect the composite video sources and acceptors, as follows:
 - Connect a composite video source (for example, a composite video player) to the CV IN RCA connector
 - Connect the CV OUT 1 RCA connector to a composite video acceptor (for example, a composite video recorder)
 - Connect the CV OUT 2 RCA connector to a composite video acceptor (for example, a composite video display)
3. Connect the s-Video sources and acceptors, as follows:
 - Connect an s-Video source (for example, an s-Video player) to the Y/C IN 4p connector
 - Connect the Y/C OUT 1 4p connector to an s-Video acceptor (for example, an s-Video display)
 - Connect the Y/C OUT 2 4p connector to an s-Video acceptor (for example, a projector)
4. Connect the AUDIO source and acceptors (not shown in Figure 2), as follows:
 - Connect an unbalanced stereo audio source to the IN 3.5mm mini jack connector
 - Connect the 3.5mm mini jack OUT 1 connector to an unbalanced stereo audio acceptor
 - Connect the 3.5mm mini jack OUT 2 connector to an unbalanced stereo audio acceptor
5. Connect the 12V DC power adapter (not shown in Figure 2) to the power socket and connect the adapter to the mains electricity.

¹ You do not need to connect all the outputs

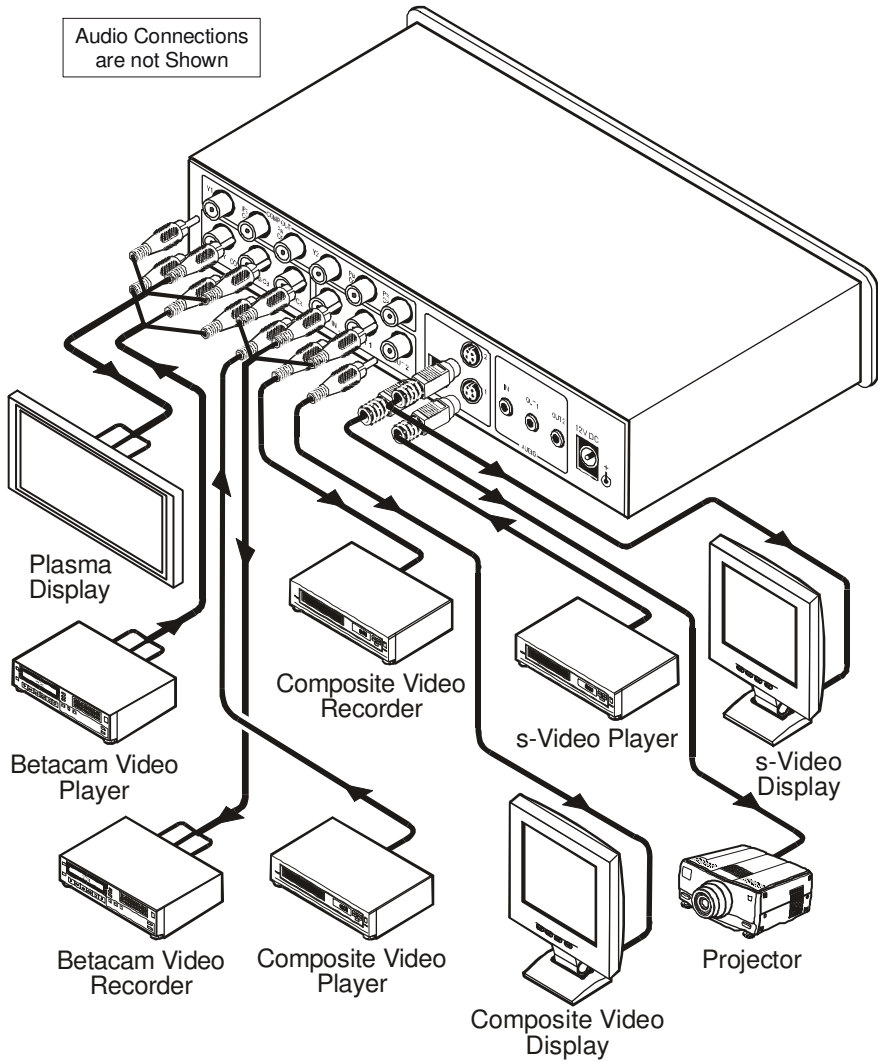


Figure 2: Connecting the VM-312 Multi-Format Distributor

6 Technical Specifications

Table 2 includes the technical specifications:

Table 2: Technical Specifications¹ of the VM-312 Multi-Format Distributor

	CV	COMP (YUV)	Y/C	AUDIO
INPUTS:	1 composite video on an RCA connector 1Vpp/75Ω	1 component video (Y, B-Y, and R-Y) on RCA connectors 1Vpp/0.7Vpp/75Ω	1 s-Video on a 4p connector 1Vpp/0.3Vpp/75Ω	1 stereo unbalanced on a 3.5mm mini jack connector 4dBm/50kΩ
OUTPUTS:	2 composite video on RCA connectors 1Vpp/75Ω	2 component video (Y, B-Y, and R-Y) on RCA connectors 1Vpp/0.7Vpp/75Ω	2 s-Video on 4p connectors 1Vpp/0.3Vpp/75Ω	2 stereo unbalanced on 3.5mm mini jack connectors 4dBm/150Ω
MAX. OUTPUT LEVEL:	1.8Vpp			21Vpp
BANDWIDTH (-3dB):	490MHz	450MHz	420MHz	>100KHZ
DIFF. GAIN:	0.05%			
DIFF. PHASE:	0.03 Deg.			
K-FACTOR:	<0.05%			
S/N RATIO:	75dB			82dB
CROSSTALK (all hostile):	-52dB @ 5MHz, YUV into CV			-45dB video into audio @ 15kHz
COUPLING:	DC			Input: AC; output: DC
AUDIO THD + NOISE:				0.047% @ 1kHz
AUDIO 2nd HARMONIC:				0.001% @ 1kHz
POWER SOURCE:	12V DC, 130mA DC			
DIMENSIONS:	21.5cm x 16.25cm x 4.36cm (8.45" x 6.39" x 1.72"), W, D, H.			
WEIGHT:	1.2 kg. (2.65 lbs.) approx.			
ACCESSORIES:	Power cord			

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.



Caution

Safety Warning:

Disconnect the unit from the power supply before opening/servicing.



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P/N: 2900-000167 REV 1