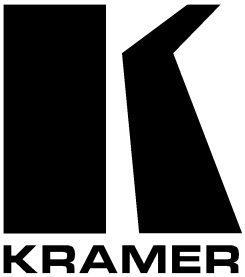
Kramer Electronics, Ltd.



USER MANUAL

Model:

VM-100CA

1:10 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 350-plus different models now appear in 8 Groups[1], which are clearly defined by function.

Congratulations on purchasing your **VM-100CA** *1:10 Video Component / Audio Distributor*, which is ideal for the following typical applications:

- Live broadcasting and editing
- Duplication studios, delivering undiminished quality duplicates

The package includes the following items:

- **VM-100CA** *1:10 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]

3 Overview

The Kramer **VM-100CA** is a high quality 1:10 distributor for component video signals (HDTV compatible), digital audio (S/PDIF) signals, and unbalanced stereo audio signals. In particular, the **VM-100CA**:

- Accepts one component video input and distributes the signal to 10 identical outputs using RCA connectors
- Has a video bandwidth of 450MHz that ensures transparent operation at the highest resolutions

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 at http://www.kramerelectronics.com

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

- Has looping connectors that can be used to connect to a local monitor (or some other component video acceptor), or to create larger systems[1]
- Features trimmers located on the underside that can be used to adjust the component video Level and EQ. settings

In addition, the **VM-100CA**:

- Accepts a digital audio (S/PDIF) input, loops it and distributes it to 10 digital audio (S/PDIF) outputs using RCA connectors
- Accepts an unbalanced stereo audio input, loops it and distributes it to 10 unbalanced stereo audio outputs using RCA connectors
- Features audio level control for the unbalanced stereo audio output
- Is housed in a 19" 2U rack mountable enclosure, and is fed from a 100-264 VAC, 50/60 Hz, 18 VA 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 that may adversely influence signal quality and position your Kramer **VM-100CA** away from moisture, excessive sunlight and dust

4 Your VM-100CA

Figure 1, Table 1, and Table 2 define the front and rear panels of the **VM-100CA** *1:10 Video Component / Audio Distributor*:

1 For example, you can connect two VM-100CA units to make a 1:20 video component / audio distributor (see section 6.2)

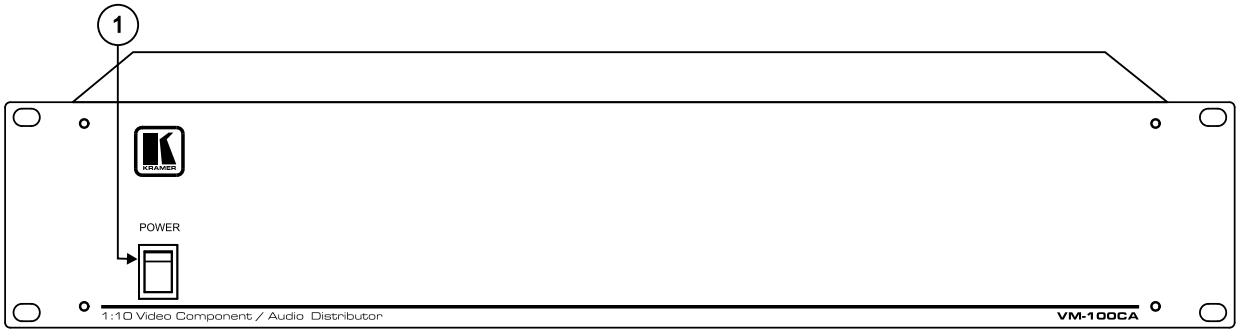


Figure 1: VM-100CA 1:10 Video Component / Audio Distributor Front Panel

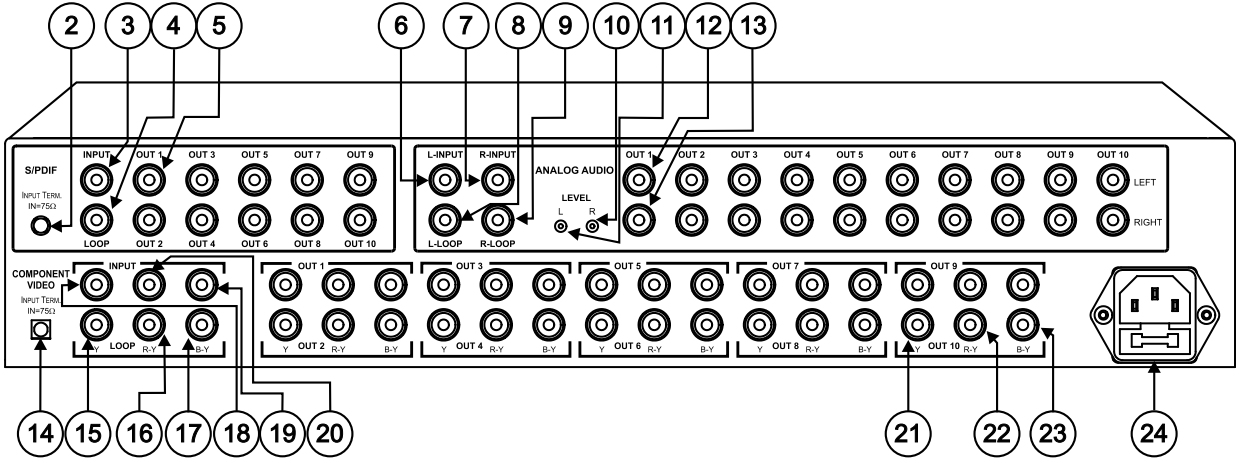


Figure 2: VM-100CA 1:10 Video Component / Audio Distributor Rear Panel

Table 1: Front Panel VM-100CA 1:10 Video Component / Audio Distributor Features

#	Feature	Function
1	*POWER* Switch	Illuminated switch for turning the unit ON or OFF

Table 2: Rear Panel VM-100CA 1:10 Video Component / Audio Distributor Features

#	Feature			Function
2	S/PDIF	INPUT TERM Button		Pushing in selects *75*Ω; releasing selects *Hi-Z*[1]
3		INPUT RCA Connector		Connects to the digital audio source
4		LOOP RCA Connector		For looping the input (if required)
5		OUT RCA Connector		Connects to the digital audio acceptor (from 1 to 10)
6	ANALOG AUDIO	L-INPUT RCA Connector		Connects to the stereo audio (left) source
7		R-INPUT RCA Connector		Connects to the stereo audio (right) source
8		L-LOOP RCA Connector		For looping the input (if required)
9		R-LOOP RCA Connector		
10		R-LEVEL Trimmer		Adjusts[2] the right audio output level
11		L-LEVEL Trimmer		Adjusts[2] the left audio output level
12		LEFT OUTPUT RCA Connector		Connect to the stereo audio (left) acceptors (from 1 to 10)
13		RIGHT OUTPUT RCA Connector		Connect to the stereo audio (right) acceptors (from 1 to 10)
14	COMPONENT VIDEO	INPUT TERM Button		Pushing in selects 75Ω; releasing selects Hi-Z[1]
15		LOOP	Y RCA Connector	For looping the inputs (if required)
16			R-Y RCA Connector	
17			B-Y RCA Connector	
18		INPUT	Y RCA Connector	Connect to the component source
19			B-Y RCA Connector	
20			R-Y RCA Connector	
21		OUTPUT	Y RCA Connector	Connect to the component acceptors (from 1 to 10)
22			R-Y RCA Connector	
23			B-Y RCA Connector	
24	Power Connector with Fuse			AC connector enabling power supply to the unit

1 For looping select Hi-Z

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

Figure 3 and Table 3 define the level trimmers and the EQ. trimmers for Y, B-Y, and R-Y on the underside of the **VM-100CA**:

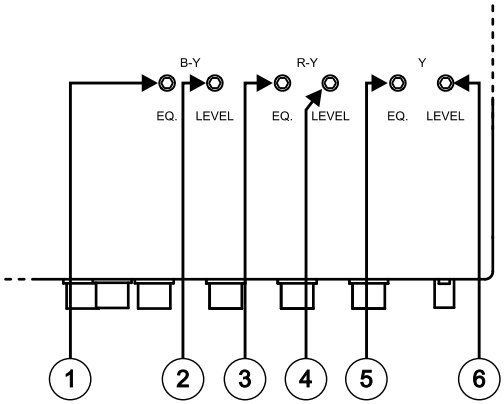


Figure 3: VM-100CA Underside

Table 3: VM-100CA Underside Features

#	Feature	Function
1	B-Y EQ. Trimmer	Adjusts[1] the B-Y cable compensation equalization level
2	B-Y LEVEL Trimmer	Adjusts[1] the B-Y output signal level
3	R-Y EQ. Trimmer	Adjusts[1] the R-Y cable compensation equalization level
4	R-Y LEVEL Trimmer	Adjusts[1] the R-Y output signal level
5	Y EQ. Trimmer	Adjusts[1] the Y cable compensation equalization level
6	Y LEVEL Trimmer	Adjusts[1] the Y output signal level

1 Insert a screwdriver into the small hole and carefully rotate it, trimming the OUTPUT level or EQ level

5 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!!

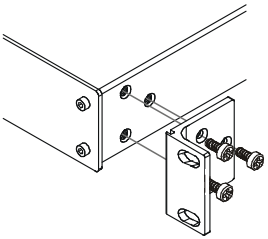
When installing on a 19" rack, avoid hazards by taking care that:

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 the 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-100CA

This section defines how to connect the **VM-100CA**. In particular, how to connect:

- A single unit (*1:10 Video Component / Audio Distributor*), see section 6.1
- Several units, see section 6.2

6.1 Connecting a Single VM-100CA Unit

To connect a single **VM-100CA** unit (*1:10 Video Component / Audio Distributor*) as the example in Figure 4 illustrates, do the following[1]:

1. Connect a component video source (for example, an HDTV satellite receiver) to the COMPONENT VIDEO INPUT RCA connectors, and to the S/PDIF INPUT RCA connector.
2. Connect[2] the:
   - COMPONENT VIDEO OUT 1 RCA connectors to a plasma display, and the S/PDIF OUT 1 RCA connector to an AV-Receiver
   - COMPONENT VIDEO OUT 10 RCA connectors, and the S/PDIF OUT 10 RCA connector to a home theater system
3. Leave the LOOP RCA connectors unconnected, and push in the Input Term buttons to 75Ω.
   Note: if a loop connection is required, for example, to a local monitor, plug it into the COMPONENT VIDEO LOOP RCA connectors and release the Input Term button to Hi-Z.
4. Connect the power cord (not illustrated in Figure 4).
5. If required, adjust[3] the Y, B-Y, and R-Y output signal level and/or the Y, B-Y, and R-Y cable compensation equalization level.

1 Switch OFF the power on each device before connecting it to your VM-100CA After connecting your VM-100CA, switch on its power and then switch on the power on each device

2 You can connect up to 10 component video output connectors to up to 10 component video acceptors. When less than 10 outputs are required, connect only those outputs of the VM-100CA that are required, and leave the other outputs unconnected

3 Insert a screwdriver into the small hole and carefully rotate it, trimming the OUTPUT level or EQ level

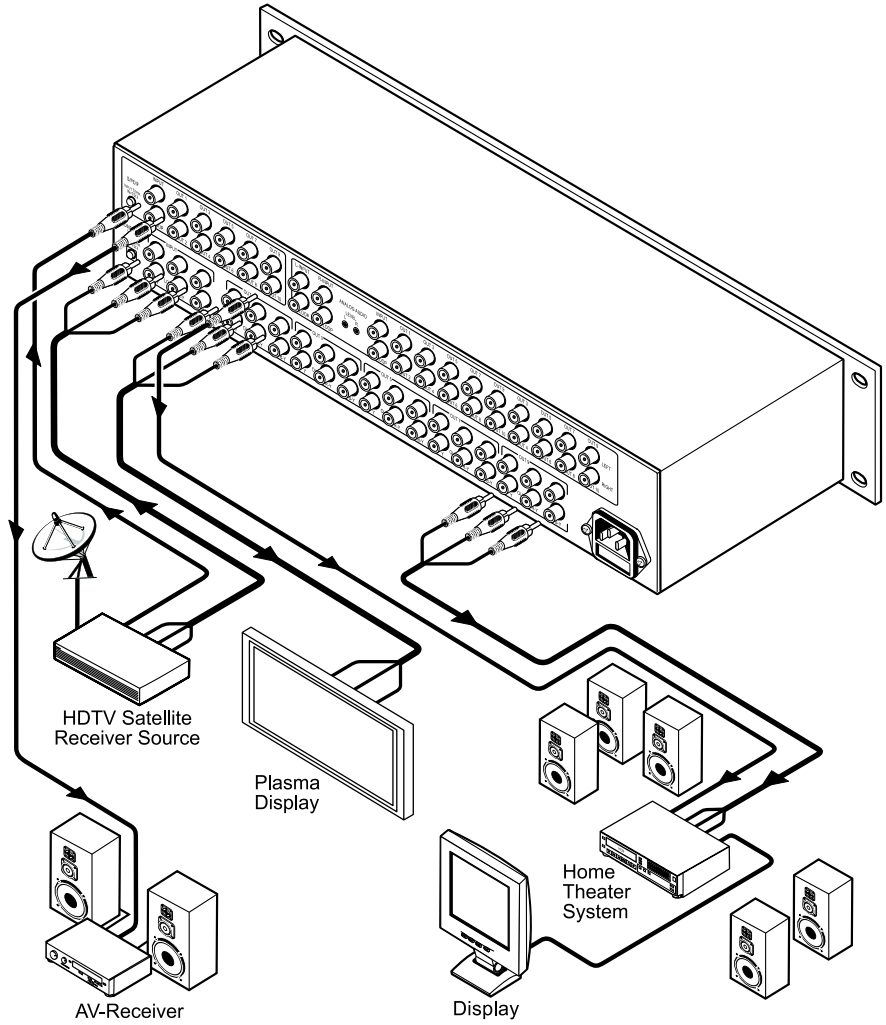


Figure 4: Connecting a VM-100CA Unit

6.2 Connecting Several VM-100CA Units

You can connect several **VM-100CA** units to form an expanded video component / audio distributor. For example, as Figure 5 illustrates[1], connect two **VM-100CA** units to form a 1:20 video component / audio distributor.

To connect several **VM-100CA** units, do the following[2]:

1. Connect a component video source to the COMPONENT VIDEO INPUT RCA connectors on the first **VM-100CA** unit.
2. Connect the COMPONENT VIDEO LOOP RCA connectors on the first **VM-100CA** unit to the COMPONENT VIDEO INPUT RCA connectors on the second **VM-100CA** unit.
3. Release the Input Term button to Hi-Z on the first **VM-100CA** unit, and push in the Input Term button to 75Ω on the second **VM-100CA** unit[3].
4. Connect the COMPONENT VIDEO OUT connectors[4], as follows:
   - On the first **VM-100CA** unit, to component video acceptors 1 to 10
   - On the second **VM-100CA** unit, to component video acceptors 11 to 20
5. Connect both power cords (not illustrated in Figure 5).

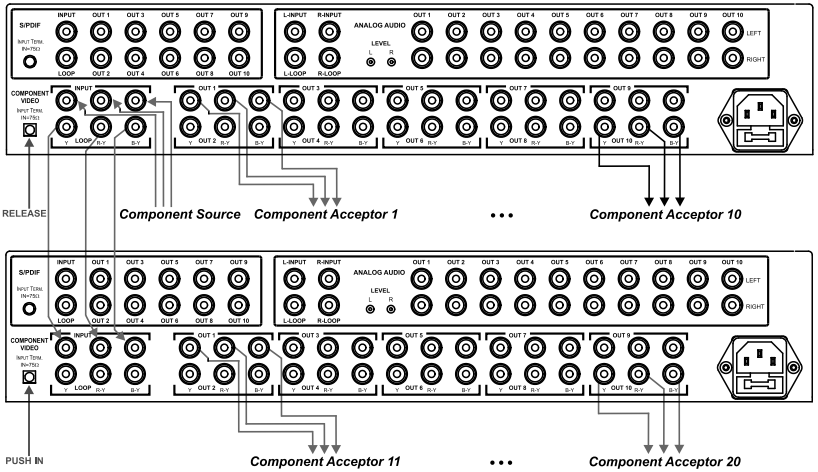


Figure 5: Connecting Several VM-100CA Units

1 Audio connections are not shown in this example

2 Switch OFF the power on each device before connecting it to a VM-100CA unit. After connecting all VM-100CA units, switch on their power and then switch on the power on each device

3 In general, when looping, the Input Term button should be set for Hi-Z for all units except for the last one in the chain

4 When less than the maximum outputs are required, connect only those outputs that are required, and leave the other outputs unconnected

7 Technical Specifications

Table 4 includes the technical specifications:

Table 4: Technical Specifications[1] *of the VM-100CA*

INPUTS:	1 component video (Y, Pb/Cb, Pr/Cr) 1Vpp / 75Ω on RCA connectors 1 digital audio (S/PDIF) 75Ω on RCA connectors 1 unbalanced stereo audio +4dBm (nominal)/50kΩ on RCA connectors	
OUTPUTS:	10 component video (Y, Pb/Cb, Pr/Cr) 1Vpp / 75Ω on RCA connectors 10 digital audio (S/PDIF) 75Ω on RCA connectors 10 unbalanced stereo audio +4dBm (nominal)/150Ω on RCA connectors	
MAX. OUTPUT LEVEL:	VIDEO: 2.5Vpp	AUDIO: 1.8Vpp (S/PDIF); 27Vpp (unbalanced)
BANDWIDTH (-3dB):	VIDEO: 450MHz, Fully Loaded	AUDIO: 333MHz (unbalanced; video compatible)
DIFF. GAIN:	0.03%	
DIFF. PHASE:	0.03 Deg	
K-FACTOR:	<0.05%	
S/N RATIO:	VIDEO: 77dB	AUDIO: 75dB (unbalanced)
CROSSTALK (all hostile):	–51dB (video)	
CONTROLS:	Level: –1dB to +6.4dB; Equalization: 0dB to +7.3dB; Audio: –87dB to +6.1dB	
COUPLING:	VIDEO: DC	AUDIO: Input: AC; Output: DC
AUDIO THD + NOISE:	0.024%	
AUDIO 2nd HARMONIC:	0.002%	
POWER SOURCE:	100-264 VAC, 50/60 Hz; 18 VA	
DIMENSIONS:	19-inch (W), 7-inch (D) 2U (H) rack-mountable	
WEIGHT:	3.7 kg (8.2 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.

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

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P/N: 2900-000109 REV 2