



**Kramer Electronics, Ltd.**

# **USER MANUAL**

**Differential Video Line Amplifier**

**Model:**

**123V**

IMPORTANT: Before proceeding, please read paragraph entitled  
"Unpacking and Contents"

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## **1 INTRODUCTION**

Congratulations on your purchase of this Kramer Electronics Differential Line Amplifier. Since 1981, Kramer has been dedicated to the development and manufacture of high quality video/audio equipment. The Kramer line has become an integral part of many of the best production and presentation facilities around the world. In recent years, Kramer has redesigned and upgraded most of the line, making the best even better. Kramer's line of professional video/audio electronics is one of the most versatile and complete available, and is a true leader in terms of quality, workmanship, price/performance ratio and innovation. In addition to the Kramer line of high quality format interfaces, such as the one you have just purchased, Kramer also offers a full line of high quality distribution amplifiers, switchers, processors, controllers and computer-related products. This manual includes configuration, operation and option information for the 123V.

## **2 A WORD ON DISTRIBUTION AMPLIFIERS**

Distribution amplifiers distribute one signal to several users. They vary in the number of inputs, looping capability, number of outputs, operating format, bandwidth and input/output coupling. Distribution amplifiers are used to distribute one video and/or audio source to several video/audio acceptors for simultaneous recording or monitoring one source.

A quality distribution amplifier amplifies the incoming signal (video and audio), pre-compensates the signal for potential losses (resulting from the use of long cables, for example) and generates several identical buffered and amplified outputs. Often, a signal processor is inserted between the source and the distribution amplifier for correction and fine-tuning of the source signal before multiplication, so that all copies are corrected in the same way.

There are many factors effecting signal quality when it is transmitted from a source to an acceptor:

- Source and acceptor signal handling capability. Since different equipment offer different degrees of quality, the final result is determined by the performance of the lowest quality item. Using a low quality source will always result in low quality duplicates.
- The connection cables should be of the best quality you can afford. Low quality cables are susceptible to interference, deteriorate signal quality due to poor matching and cause elevated noise levels.
- Sockets and connectors of the sources and acceptors, so often ignored, should be of best quality, as "Zero Ohm" connection resistance should be assured. Sockets and connectors should match the required impedance (75 ohms is used in video). Cheap connectors tend to rust, causing breaks in the signal path.

- Amplifying circuitry quality is extremely important and should possess high linearity, low distortion and low noise operation.
- The distance between source and acceptors plays a major role in the final result. If long distances (over 15 meters) exist between sources and acceptors - special means should be taken in order to avoid cable loss, such as using higher quality cables or, if necessary, line amplifiers.
- Interference from neighboring appliances can have an adverse effect on signal quality. Balanced audio lines are less prone to interference, but unbalanced audio and video lines, even though the cables are shielded, should be installed far away from mains carrying cables, electric motors, transmitters, etc.
- In some cases, either an induced interference on the cable carrying the signals, or ground loop problems may severely disturb the video image on the screen. To solve this problem, a differential video line amplifier, designed to eliminate the interfering signals, is needed.

### **3 HOW DO I GET STARTED?**

The fastest way to get started is to take your time and do everything right the first time. Taking 15 minutes to read the manual may save you a few hours later. You don't even have to read the whole manual. If a section doesn't apply to you, you don't have to spend your time reading it.

### **4 UNPACKING AND CONTENTS**

The items contained in your Kramer format interface package are listed below. Please save the original box and packaging materials for possible future shipment.

**Amplifier (123V)**

**User Manual**

**DC Power Supply**

**Kramer Concise Product Catalog**

**4 Rubber Feet**

**Mounting Brackets**

#### **4.1 Optional Accessories**

The following accessories, which are available from Kramer, can enhance implementation of your machine. For information regarding cables and additional accessories, contact your Kramer dealer.

- **Rack Adapter** - Used to adapt smaller machines to a standard 1U or 3U rack. One or more machines may be installed on each adapter.

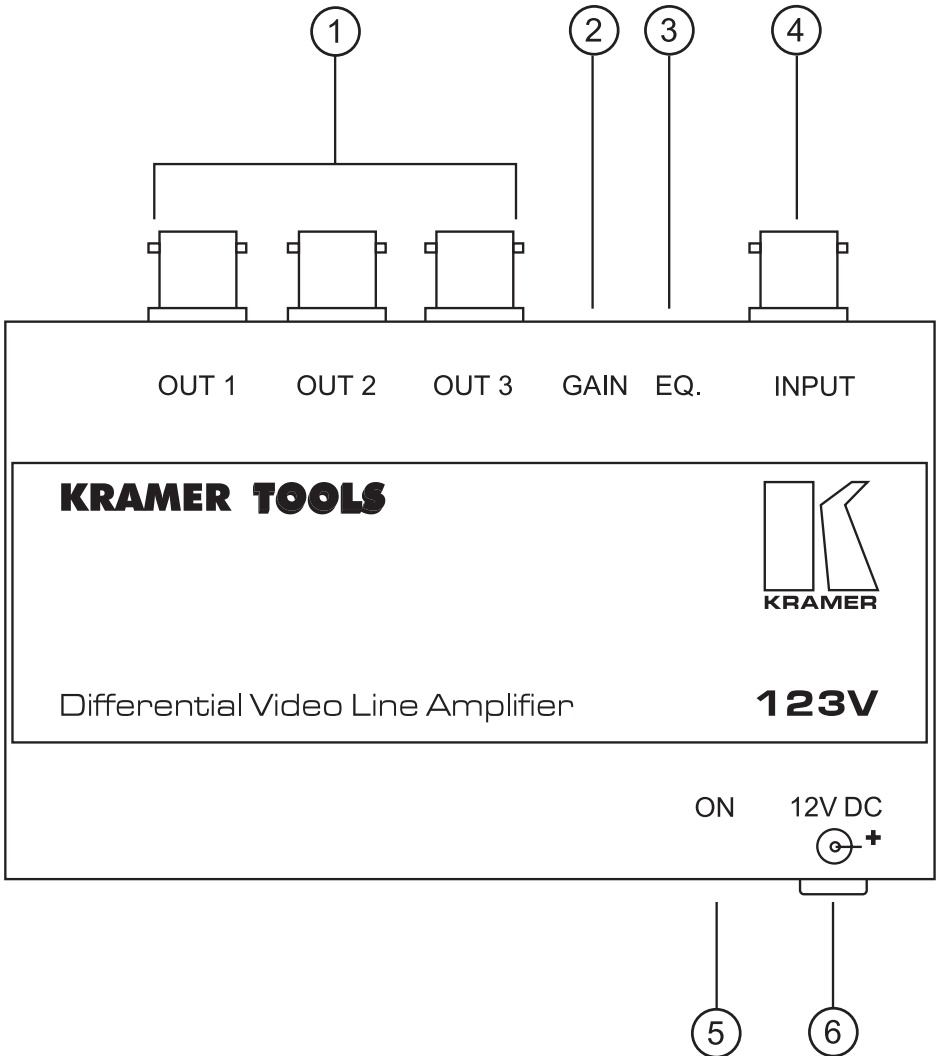
- **105V** - (1:5 Video Distribution Amplifier) can be serially connected between the output of the amplifier and several acceptors for video distribution. The **105V** splits a single video input source into five identical outputs. The **105V** uses an external 12VDC power source, and therefore is suitable for fieldwork as well. The **105V** uses state of the art technology and microchip design, boasting a signal bandwidth of over 200MHz, thus making it suitable for the most demanding applications.
- **SP-11** - (Video/Audio Processor) can be serially connected between the output of the 123V and the acceptor for video control/correction. The machine provides camera control and luminance/white balance correction. It is also capable of performing composite to Y/C conversion and bi-directional Transcoding. The machine allows full control over the video signal: video gain down to full fade, log or linear definition control, log or linear contrast control, color saturation control, black level control, red, green and blue controls and a screen splitter control for “before-after” comparison. The input control is "audio-follow-video".
- **VIDEO TESTER** - A new, unique, patented, indispensable tool for the video professional, the Video Tester is used to test a video path leading to/from an amplifier. By pressing only one touch switch it can trace missing signals, distinguish between good and jittery (VCR sourced) signals, and identify the presence of good signals. Whenever a video signal is missing, because of bad connections, cable breaks or faulty sources, the Video Tester is all you need.

## 5 DIFFERENTIAL VIDEO LINE AMPLIFIER /DA

This section describes the controls and connections of your Video DA. Understanding the controls and connections helps you realize the full power of your machine.

### 5.1 Getting to Know Your 123V

The KRAMER **123V**, one of the KRAMER TOOLS, is a high quality, state-of-the art *Differential Video Line Amplifier* designed for studios, retail outlets, showrooms and other demanding applications. The **123V** splits a single input source into three identical outputs while almost completely isolating the input from the outputs. The **123V** uses special differential amplifying circuitry, eliminating noise and hum problems commonly found in long video lines. The **123V** uses an external 12VDC power source, and is therefore suitable for fieldwork as well. The machine has trimmers for easy adjustment of output video levels and cable equalization.



**Figure 1: 123V Front Panel Features**

**Table 1: 123V Front Panel Features**

	<b>Feature</b>	<b>Function</b>
1.	<b>COMPOSITE OUT</b>	3 BNCs for Composite Video outputs.
2.	<b>GAIN</b>	Output level control trimmer.
3.	<b>EQ.</b>	Cable Compensation control trimmer.
4.	<b>INPUT</b>	Video input BNC.
5.	<b>ON LED</b>	Becomes lit when power is connected.
6.	<b>12VDC feed connector</b>	A DC connector that allows power to be supplied to the unit.

## **6 INSTALLATION**

### **6.1 Rack Mounting**

The Kramer 123V may be rack mounted in a standard 19" EIA rack assembly, using a special TOOLS Adapter. A 1U version hold up to 2 TOOLS while the 3U version hold up to 8 TOOLS. (See section 4.1). To mount the machine, follow the installation instructions enclosed with the rack mount adapter. It can be also table mounted using mounting brackets provided. The device does not require any specific spacing above or below the unit for ventilation.

## **7 CONNECTING TO VIDEO DEVICES**

Video sources and output devices (such as monitors, projectors or recorders) may be connected to the machine through the BNC connector located on the back of the unit.

## **8 USING THE MACHINE**

### **8.1 Turning on the Machine**

#### Notes

The machine should only be turned on after all connections are completed and all source devices have been turned on. Do not attempt to connect or disconnect any video, audio or control signals to the machine while it is turned on!

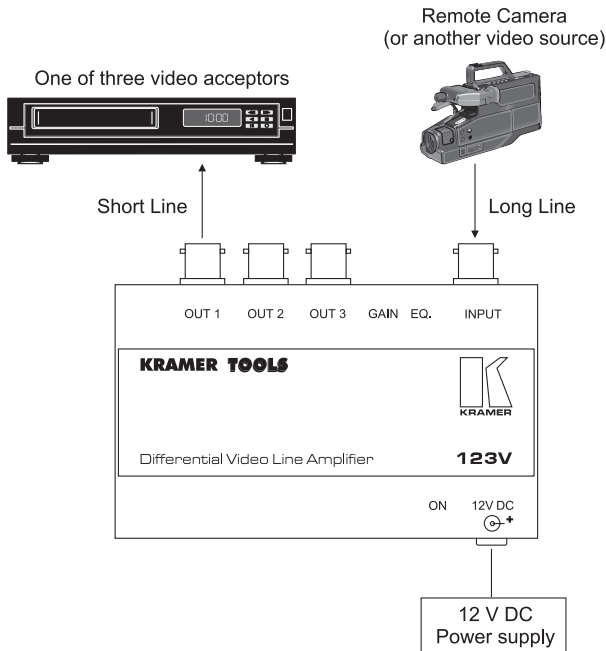
The socket-outlet should be near the equipment and should be easily accessible. To fully disconnect equipment, remove the power cord from the socket.

## 8.2 Operation

- Connect a cable leading from the INPUT connector of the **123V** machine to the output of the video source.
- Connect up to three video acceptors to the OUT sockets of the **123V** machine. Use best available coaxial cables for connection.
- Connect an appropriate 12VDC source to the DC socket of the **123V** machine. Observe polarity. The built-in LED will light.
- Operate source and acceptor(s).
- Adjust the GAIN and EQ. (cable equalization) control trimmers on the **123V** machine *only if necessary*. Those trimmers are preset at the factory for unity gain, so re-adjusting them unnecessarily might upset the signal transparency.

## 9 TYPICAL APPLICATION

Figure 2 shows a typical application of the **123V** for elimination of hum and noise picked up from a long video line or as a result of ground related problems.



**Figure 2: 123V Typical Application**



## 10 TAKING CARE OF YOUR MACHINE

Do not locate your machine in an environment where it is susceptible to dust or moisture. Both of these may damage the electronics, and cause erratic operation or failure. Do not locate your machine where temperature and humidity may be excessive. Doing so may also damage the electronics, and cause erratic operation or failure of your machine. Do not clean your machine with abrasives or strong cleaners. Doing so may remove or damage the finish, or may allow moisture to build up. Take care not to allow dust or particles to build up inside unused or open connectors.

## 11 TROUBLESHOOTING

### NOTES

*Please note that if the output signal is disturbed or interrupted by very strong external electromagnetic interference, it should return and stabilize when such interference ends. If not, turn the power switch off and on again to reset the machine.*

*If the following recommended actions do not result in satisfactory operation, please consult your KRAMER Dealer.*

### 11.1 Power and Indicators

Problem	Remedy
<b>No Power</b>	<ul style="list-style-type: none"> <li>➤ Confirm that power connections are secured at the machine and at the receptacle. Make sure the receptacle is active, outputting the proper voltage.</li> <li>➤ If there is still no power use a Philips screwdriver to remove screws on both sides of the machine and release the panel.</li> <li>➤ Locate the fuse inside your machine. Confirm that the fuse is good by looking for the wire connected between the ends of the fuse. If this wire is broken, replace fuse with another, with the same rating.</li> <li>➤ Install cover and tighten the Philips screws.</li> </ul>

## 11.2 Video Signal

Problem	Remedy
<b>No video at the output device</b>	<ul style="list-style-type: none"> <li>➤ Confirm that your source and output devices are turned on and connected properly. The input of your machine should be of an identical signal format to the output of your source. Signals at the output of your machine should be of an identical signal format as at the input of your display.</li> <li>➤ Confirm that any other device in the signal path have the proper input and/or output selected.</li> <li>➤ Use the Video Tester to test the video path leading to/from your machine (see section 4.1"Video Tester")</li> </ul>
<b>Video level is too high or too dim.</b>	<ul style="list-style-type: none"> <li>➤ Verify that the lines are well matched through 75ohm impedances.</li> <li>➤ Confirm that the connecting cables are of high quality and properly inserted.</li> <li>➤ Check level controls located on your source input device or output display.</li> <li>➤ Adjust, <i>only if absolutely necessary</i>, the video level and/or cable equalization using the LEVEL and EQ. adjustment trimmers of the machine.</li> </ul>

## 12 TECHNICAL SPECIFICATIONS

<b>INPUT</b>	1 Video, Differential, 1Vpp / 75Ω on a BNC connector.
<b>OUTPUTS</b>	3 Video, 1Vpp / 75Ω on BNCs.
<b>VIDEO BANDWIDTH</b>	55 MHz -3dB.
<b>COUPLING</b>	AC.
<b>DIFF. GAIN</b>	0.25%.
<b>DIFF. PHASE</b>	0.35 Deg.
<b>S/N RATIO</b>	-76dB.
<b>K-FACTOR</b>	<0.05%.
<b>MAX. VIDEO OUTPUT</b>	2 Vpp.
<b>POWER SOURCE</b>	12 VDC, 30mA.
<b>WEIGHT</b>	0.3 Kg (approx.), (0.66 Lbs.)
<b>DIMENSIONS</b>	12cm x 7.5cm x 2.5cm (4.7" x 2.95" x 0.98"), (W, D, H.)



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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 three 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:
  - a) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature.
  - b) Product modification, or failure to follow instructions supplied with the product.
  - c) Repair or attempted repair by anyone not authorized by Kramer.
  - d) Any shipment of the product (claims must be presented to the carrier).
  - e) Removal or installation of the product.
  - f) Any other cause, which does not relate to a product defect.
  - g) 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**

Kramer's liability for any defective 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.

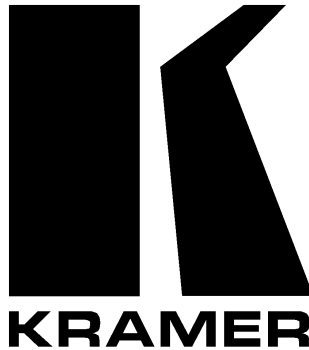
### **NOTICE**

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.



**The list of Kramer distributors appears on our web site:  
[www.kramerelectronics.com](http://www.kramerelectronics.com)  
From the web site it is also possible to e-mail factory headquarters.  
We welcome your questions, comments and feedback.**

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**Kramer Electronics Ltd.**

3 Am VeOlamo Street. Jerusalem 95463, Israel Tel: (972-2)-654-4000.  
Fax: (972-2)-653-5369, E-mail: [kramerel@netvision.net.il](mailto:kramerel@netvision.net.il)