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**Kramer Electronics, Ltd.**

# **USER MANUAL**

**2 Channel Audio Mixer**

**Model:**

**102MX**

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



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## **1 INTRODUCTION**

Congratulations on your purchase of this Kramer mixer. 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 mixers, such as the one you have just purchased, Kramer also offers a full line of high quality distribution amplifiers, switchers, processors, interfaces, controllers and computer-related products.

This manual includes configuration, operation and option information for the 102MX – 2 channel Audio Mixer.

### **1.1 A Word on Audio Signal Mixing and Microphones**

Audio signals have many different levels and formats. Signal levels may be Line levels, Mic levels, or Balanced Audio Levels (DAT levels) and are a function of the source and acceptors used in a system. The signals may have different numbers of channels - single channel monophonic ("mono"), dual channel stereophonic ("stereo"), etc. The audio may be either an analog signal or a digital signal. To compare or mix two audio signals, they should be first brought to the same format and level.

Audio mixing is a very useful tool to enhance sound. Audio mixing is used everywhere - in production, stage, presentation, live broadcast, etc.

Microphones are devices, which convert the sound waves of speech and music into electrical voltages and are live sources of audio signals (vs. pre-recorded material). There are two basic types of microphones - dynamic microphones, which are passive, and condenser microphones, which are active and need electrical voltage to function.

Microphone-level signals should be pre-amplified prior to further use, as the electric voltage generated is very small.

### **1.2 Factors Affecting Quality of Results**

There are many factors affecting the quality of results when signals are transmitted from a source to an acceptor:

- ☒ **Connection cables** - Low quality cables are susceptible to interference; they degrade signal quality due to poor matching and cause elevated noise levels. They should be of the best quality.
- ☒ **Sockets and connectors of the sources and acceptors** - So often ignored, they should be of highest quality, since "Zero Ohm" connection resistance is the target. Sockets and connectors must also match the required impedance. Cheap, low quality connectors tend to rust, thus causing breaks in the signal path.
- ☒ **Amplifying circuitry** - Must provide quality performance when the desired end result is high linearity, low distortion and low noise operation.
- ☒ **Interference from neighboring electrical appliances** - They can have an adverse effect on signal quality. Balanced audio lines are less prone to interference, but unbalanced audio should be installed far from any mains power cables, electric motors, transmitters, etc. even when the cables are shielded.

## 2 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.

## 3 UNPACKING AND CONTENTS

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

- ☒ 102MX
- ☒ DC wall transformer (power supply)
- ☒ This User Manual
- ☒ Kramer concise product catalog/CD
- ☒ Rubber feet
- ☒ Mounting brackets

### 3.1 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.

- ❑ **VM-50A** – is a high quality 1:5 distribution amplifier for stereo audio signals. It accepts one stereo input and distributes the signal to five identical outputs using RCA connectors. The **VM-50A** is typically used for unbalanced stereo audio sources such as VCR's, portable cassette and CD players, computer sound cards, etc., but can also distribute a balanced mono signal using adapter cables made from parts available at most electronic component stores. The looping connectors can be used as an additional output in some applications, and can be used to create larger systems. The **VM-50A** operates stand-alone, or is the perfect companion to other Kramer "**VM-50**" series products like the **VM-50V** video DA, or the **VM-50YC** s-Video DA. A 12VDC power supply is included for typical operation, but the optional **VA-50P** can power as many as six Kramer products requiring 12VDC. The **VM-50A** is rugged, dependable, and is housed in a convenient desktop sized enclosure which can also be rack mounted using the **RK-50R** kit which holds two units in two vertical spaces of a standard 19" rack.
- ❑ **VM-50H** - is a high quality 1:5 stereo headphone distribution amplifier using 1/4" TRS connectors. It accepts one stereo headphone or line input source, and distributes it to five identical outputs, providing each output with an independent level control. Apart from its standard use, the **VM-50H** can also drive low impedance headphones or five sets of small loudspeakers. It has a mono switch designed to ensure that a mono input signal is routed to both sides of the headsets, and can deliver 10 identical mono outputs instead of five stereo outputs. The **VM-50H** comes with an external 12VDC power supply for typical operation, but the optional **VA-50P** can power up to six Kramer products requiring 12VDC. It is housed in a rugged desktop enclosure but, using the **RK-50R** kit, two can be rack mounted in two vertical spaces of a standard 19" rack.
- ❑ **4x4A** - is a simple, high quality 4x1 stereo audio switcher and a 1:4 distribution amplifier. It accepts four stereo audio inputs, and distributes the selected input to 4 outputs. The machine uses 3.5 mm mini phone connectors, and is therefore perfectly suitable for PC-generated multimedia and presentation applications. A 12V power supply is provided, but the optional **VA-50P** can power up to six Kramer devices requiring 12VDC. The **4x4A** is part of the Kramer TOOLS family of compact, high quality, and cost effective solutions for a variety of applications.

## 4 GETTING TO KNOW YOUR 102MX

The Kramer **102MX** is a high performance audio mixer for small studio and presentation applications. The **102MX** mixes two audio signals - a stereo line level signal with either a monophonic microphone or a line level signal. The microphone can be either a Condenser Mic, requiring DC operating voltage, or a dynamic Mic, selectable by the user. On top of that, a Talk-Over function may be enabled by the user, which will mute the line input when the microphone detects sound. The **102MX** has three controls – Mic/Line level, Line 2 Level and Master Level. It is ideal for small studios as well as for presentation applications. A 12V power supply is included. The **102MX** is part of the Kramer TOOLS family of compact, high quality, and cost effective solutions for a variety of applications.

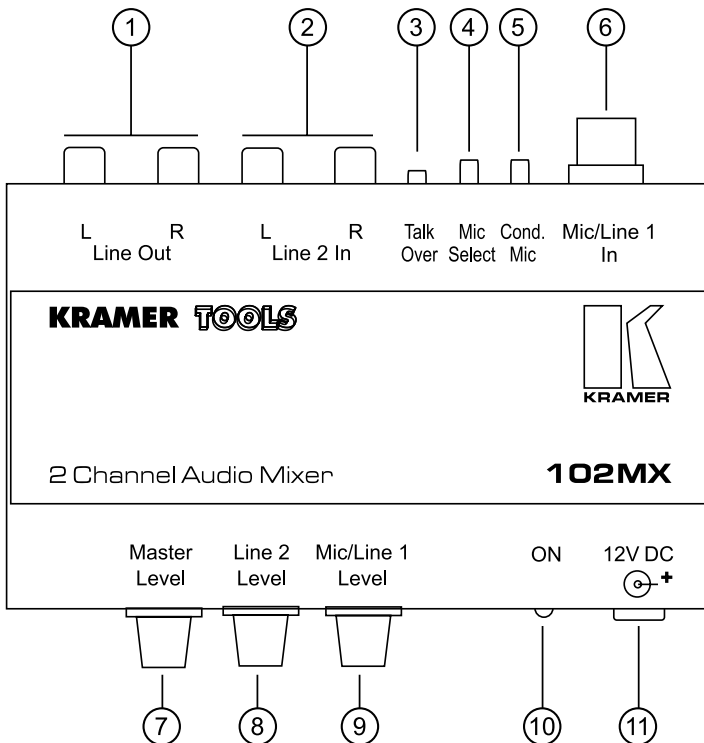


Figure 1: 102MX Front/Rear Panel Features



**Table 1: 102MX Front/Rear Panel Features**

No.	Feature	Function
1	<b>Line OUT</b> connectors	Stereo Audio line level outputs on RCAs.
2	<b>Line 2 In</b> connectors	Stereo Audio line level input #2 on RCAs.
3	<b>TALK-OVER</b> switch	Activates the TALK-OVER function when pressed.
4	<b>MIC Select</b> switch	Selects for INPUT 1 Mic level signals when pressed. When released, selects for input #1 line level signals (mono).
5	<b>COND MIC</b> switch	When pressed, selects the Mic as Condenser type, applying power to the Mic. When released, selects the Mic as Dynamic type.
6	<b>MIC/LINE 1 In</b> socket	The input socket for audio source #1 that can be either a line-level signal or a MIC level signal.
7	<b>Master LEVEL</b> button	Controls the mixed signal output level.
8	<b>LINE 2 LEVEL</b> button	Controls the LINE 2 input level.
9	<b>Mic/LINE 1 LEVEL</b> button	Controls the Mic/LINE 1 Input level and the TALK OVER sensitivity
10	<b>ON LED</b>	Glowes when power is supplied to the machine.
11	<b>12 VDC</b> Power connector	The socket for the 12VDC power source (wall transformer, battery, etc.)

## **5 INSTALLATION**

### **5.1 Rack Mounting**

The 102MX mixer may be rackmounted in a standard 19" (1U) EIA rack assembly using an optional rack adapter kit (the RK-T1 for mounting three Kramer Tools in a 19", 1U rack space or the RK-T3 for mounting up to 8 Kramer Tools in a 19", 3U rack space). The machine may be table-top or wall mounted using the adapters and screws provided.

## 6 CONNECTING TO AUDIO DEVICES

Audio sources and output devices may be connected to the mixer through the Microphone/Line socket or the appropriate RCA type connectors.

## 7 USING THE MIXER

### 7.1 Turning on the Machine

- ☒ 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 signal 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 adapter from the socket.
- ☒ When power is applied to the machine via the 12VDC socket at the proper polarity, the machine will turn “on”, and the ON LED will glow.

### 7.2 Operation

1. Connect the audio sources to be mixed. Connect either a mono line source or a microphone to input #1.
2. Connect the second Stereo Audio Source to be mixed to Line 2 IN sockets.
3. Connect the audio acceptor to the LINE OUT sockets.
4. Connect an appropriate 12VDC source to the DC socket of the **102MX**. Observe polarity. The ON LED will light.
5. Using the MIC SELECT switch, select whether the source at input #1 is line level or a microphone. When the switch is pressed-in, the Microphone is selected.
6. If you use a Condenser Mic that needs power for operation, press in the COND. MIC switch. If you use a Dynamic Mic or a line level source, the switch should be in the released position (un-pressed).
7. If you need the TALK OVER function, press the TALK OVER switch in. When the TALK OVER function is activated, the **102MX** automatically inserts the microphone signal when you talk into it, fading out the audio source at Line 2 In. The Mic/Line 1 level control knob is used to change the Mic level at the output as well as the TALK OVER circuitry sensitivity. Some experimentation is needed in order to find the right level control settings suitable for the system. Note: when the TALK OVER function is activated, the machine becomes an automatic fader instead of a Mic-Line mixer.
8. Set the Master Level control button to mid travel.





9. Operate source and acceptor(s).
10. Adjust the other two controls (Line 2 Level and Mic/Line 1 level).
11. Readjust master level control if needed.

## 8 SPECIFICATIONS

**INPUTS:** Mic/Line 1: 10mV/1.6k $\Omega$ , 1Vpp/10k $\Omega$ , on 6.5 mm phone connector.  
Line 2: 1Vpp/10k $\Omega$ , Stereo, on RCAs.

**OUTPUTS:** Line level, stereo, up to 5.6Vpp on 150  $\Omega$  on RCAs.

**BANDWIDTH:** Exceeding 100 kHz.

**CONTROLS:** Mic/Line 1 Level, Line 2 Level, Master Level rotary controls.  
Condenser/Dynamic Mic, Line/Mic, Talk-Over selections switches.

**GAIN RANGE:** -12dB to 68.5 dB (Mic); -12dB to +8.8dB (Line1)  
-12dB to +14dB (Line 2).

**DIFF. PHASE:** <0.05 Deg.

**THD + NOISE:** 0.018%.

**2<sup>nd</sup> HARMONIC:** 0.002%.

**S/N RATIO:** 69 dB.

**POWER SOURCE:** 12 VDC, 40 mA.

**DIMENSIONS:** 12cm x 7.5cm x 2.5cm (4.7" x 2.95" x 0.98", W, D, H.).

**WEIGHT:** 0.25 kg. (0.55 lbs.) approx.

**ACCESSORIES:** Power supply, mounting bracket.

**OPTIONS:** Model VA-50P power supply with six 12VDC outlets.

## 9 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, disconnect the machine from the power source and then reconnect it to reset the machine.*

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

## 9.1 Power and Indicators

Problem	Remedy
No Power	<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's cover.</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>

## 9.2 Audio signal

Problem	Remedy
<b>No signal from the Microphone</b>	<ol style="list-style-type: none"> <li>1. Confirm that the microphone is connected firmly and its switch (if it has one) is in the ON position.</li> <li>2. Confirm that the Mic select switch is pressed-in.</li> <li>3. Confirm the you have selected the right microphone setting – Condenser or Dynamic.</li> <li>4. Release the TALK OVER button, turn the Mic/Line 1 level control clockwise and set the Master level control midways.</li> <li>5. Check the acceptor and confirm that any other device in the signal path have the proper input and/or output selected.</li> </ol>
<b>No audio at the output device, regardless of input selected</b>	<ol style="list-style-type: none"> <li>1. Confirm that your sources and output device are turned on and connected properly.</li> <li>2. Confirm that any other amplifiers in the signal path have the proper input and/or output selected. Pay special attention to input amplifiers that may be built into your acceptor.</li> <li>3. Check the level controls of the <b>102MX</b> and turn clockwise if needed.</li> </ol>



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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".

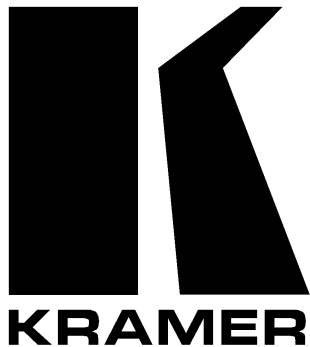
**CFR-47** FCC Rules and Regulations:

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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