

Kramer Electronics, Ltd.



USER MANUAL

Model:

910

Digital Audio Preamplifier

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1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 1,000-plus different models now appear in 11 groups¹ that are clearly defined by function.

Thank you for purchasing the Kramer **910 Digital Audio Preamplifier**, which is ideal for:

- Professional audio applications
- Sound studios
- Boardrooms and classrooms
- Training applications

Each package includes the following items:

- The **910 Digital Audio Preamplifier**
- Power cord²
- **RC-IR2** remote control transmitter
- Windows[®]-based Kramer control software
- This user manual³

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 cables⁴

1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Products

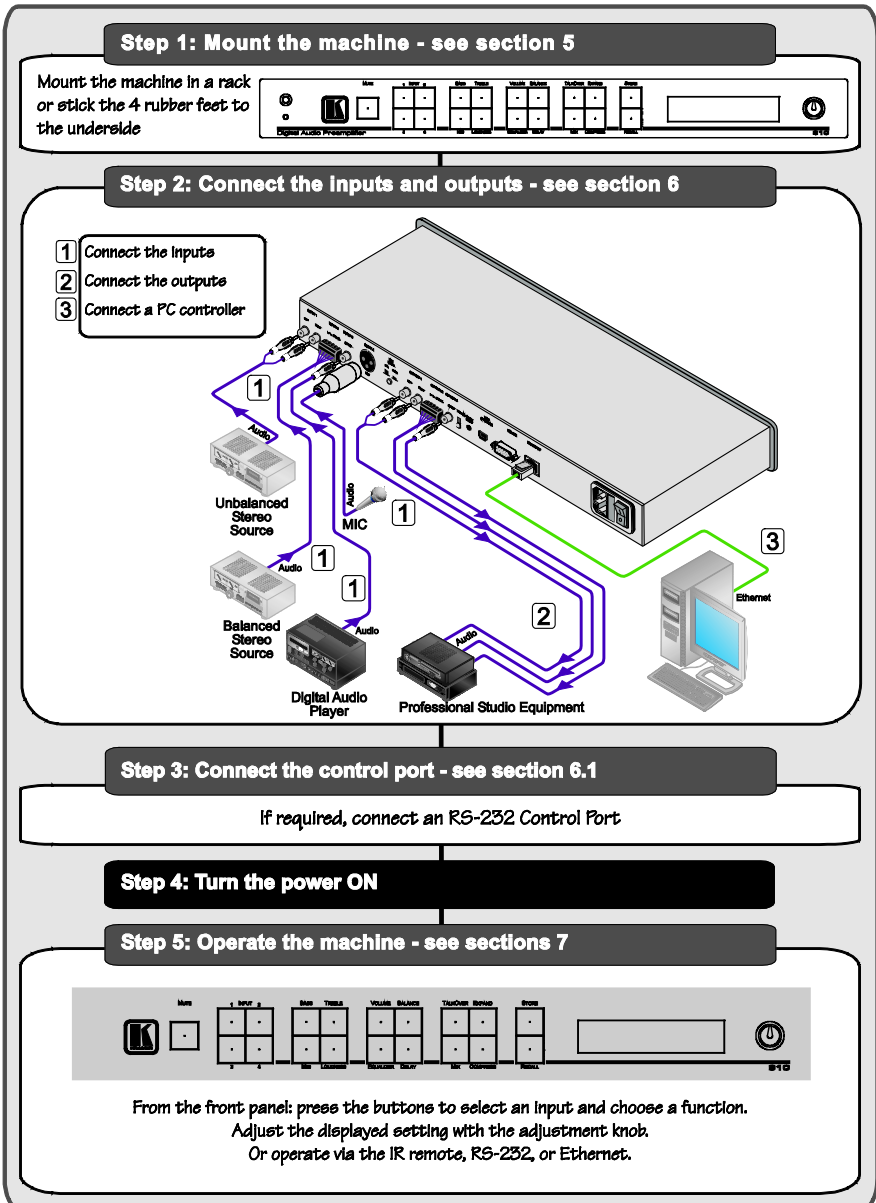
2 We recommend that you use only the power cord supplied with this device

3 Download up-to-date Kramer user manuals from <http://www.kramerelectronics.com>

4 The complete list of Kramer cables is available from <http://www.kramerelectronics.com>

2.1 Quick Start

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



3 Overview

The **910** is a high-performance stereo audio preamplifier. It accepts balanced and unbalanced stereo audio, S/PDIF digital audio, and microphone inputs, processes the signals, and outputs them to balanced, unbalanced and S/PDIF outputs.

The **910** has the following features:

- Grouped audio controls: volume, balance, bass, mid, treble, loudness, equalizer, delay, mute, expand and compress
- Selectable condenser or dynamic mic input with talk over, mix and override controls
- A 24-character by 2-line LCD display
- Memory locations that store up to 4 presets to be recalled and executed when needed
- A USB port for software upgrades
- Flexible control options including the front panel, RS-232 (with Windows®-based control software included), Ethernet and IR
- Standard 19" rack mount size of 1U with rack "ears" included

To achieve the best performance:

- Use only good quality connection cables¹ to avoid 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 **910** away from moisture, excessive sunlight and dust

4 Your 910 Digital Audio Preamplifier

[Figure 1](#) and [Table 1](#) define the unit.

¹ Available from Kramer Electronics on our Web site at <http://www.kramerelectronics.com>

Your 910 Digital Audio Preamplifier

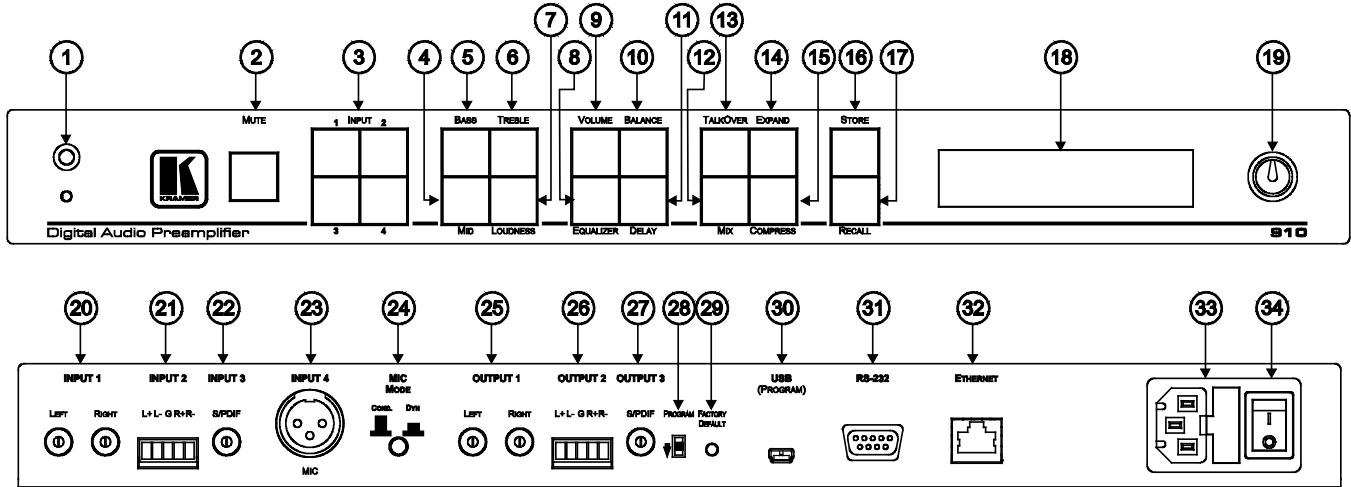


Figure 1: 910 Digital Audio Preamplifier

Your 910 Digital Audio Preamplifier

Table 1: 910 Digital Audio Preamplifier Functions

#	Feature	Function
1	IR Receiver	The red LED illuminates when receiving signals from the infrared remote control transmitter
2	MUTE Button	Press to toggle between turning off (muting) and turning on the audio output
3	INPUT Selector Buttons	Press a button to select an input (1 to 4)
4	MID Button	Press to adjust midrange frequencies on the selected input
5	BASS Button	Press to adjust low frequencies on the selected input
6	TREBLE Button	Press to adjust high frequencies on the selected input
7	LOUDNESS Button	Press to toggle loudness on the selected input
8	EQUALIZER Button	Press to adjust 7 different frequency bands on the selected input; each press advances to the next band
9	VOLUME Button	Press to adjust the output volume; to adjust the input volume press VOLUME and STORE together
10	BALANCE Button	Press to change the relative volume between the left and right channels on the selected input
11	DELAY Button	Press to adjust the delay in milliseconds on the output
12	MIX Button	Press to choose multiple inputs
13	TALKOVER Button	Press to allow the microphone to interrupt the selected input, the background audio fades out when the microphone is loud enough and fades in when the microphone is silent again
14	EXPAND Button	Press to increase the dynamic range of the output
15	COMPRESS Button	Press to decrease the dynamic range of the output
16	STORE Button	Press to save the device settings; use the adjustment knob or the input buttons to select the preset number
17	RECALL Button	Press to bring back a stored preset, use the adjustment knob or the input buttons to select the preset number
18	DISPLAY	2 line, 24 character LCD display
19	Adjustment Knob	Turn to adjust the value of the selected function
20	INPUT 1 (LEFT, RIGHT) RCA Connectors	Connect to an unbalanced stereo audio source
21	INPUT 2 Terminal Block Connector	Connect to a balanced stereo audio source
22	INPUT 3 S/PDIF RCA Connector	Connect to a digital audio source
23	INPUT 4 MIC XLR Connector	Connect to a microphone. The XLR connector provides 15V phantom power when the MIC switch is set for a condenser microphone
24	MIC MODE (DYN/COND.) Pushbutton	Press IN for dynamic mic, set OUT for condenser mic
25	OUTPUT 1 (LEFT, RIGHT) RCA Connectors	Connect to an unbalanced stereo audio acceptor (power amplifier)
26	OUTPUT 2 Terminal Block Connector	Connect to an balanced stereo audio acceptor (power amplifier)
27	OUTPUT 3 S/PDIF RCA Connector	Connect to a digital audio acceptor (digital power amplifier)
28	PROGRAM Switch	Slide down to upgrade the device firmware (see section 7.4); slide up for normal operation

Your 910 Digital Audio Preamplifier

#	Feature	Function
29	<i>FACTORY DEFAULT</i> Button	Press to revert to the default settings, including all the configured buttons
30	<i>USB (PROGRAM)</i> Connector	Connect to the PC using a USB cable for remote control
31	<i>RS-232</i> 9-pin D-sub (F) Port	Connect to the RS-232 connector on the AV equipment or a PC or other serial controller for remote control
32	<i>ETHERNET</i> RJ-45 Connector	Connects to the PC or other serial controller through computer networking LAN for remote control
33	Power Connector with Fuse	AC connector enabling power supply to the 910
34	Power Switch	Illuminated switch for turning the unit ON and OFF

5 Installing the 910 in a Rack

This section describes how to install the **910** in a rack.

Before Installing in a Rack

Before installing in a rack, be sure that the environment is within the recommended range:

Operating temperature range	+5° to +45° C (41° to 113° F)
Operating humidity range	10 to 90% RHL, non-condensing
Storage temperature range	-20° to +70° C (-4° to 158° F)
Storage humidity range	5 to 95% RHL, non-condensing



CAUTION!

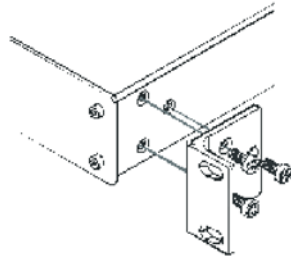
When installing on a 19" rack, avoid hazards by taking care that:

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 situations where electricity is supplied indirectly (when the power cord is not plugged directly into the socket in the wall), for example, when using an extension cable or a power strip, 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:

- 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 available from: <http://www.kramerelectronics.com>

6 Connecting the 910 Digital Audio Preamplifier

To connect the **910** as illustrated in the example in [Figure 2](#)¹:

1. Connect the inputs:
 - Connect an unbalanced stereo source (for example, a tape recorder) to the left and right INPUT 1 RCA connectors
 - Connect an balanced stereo source (for example, a tape recorder) to the left (L+, L-), right (R+, R-) and ground (G) terminals on the INPUT 2 terminal block connectors
 - Connect a digital audio source (for example, a digital audio player) to the INPUT 3 S/PDIF RCA connector
 - Connect a microphone to the INPUT 4 MIC XLR connector (see [Section 6.4](#)). Set the MIC MODE button to Dynamic or Condenser (pressed in)
2. Connect the outputs:
 - Connect the left and right OUTPUT 1 RCA connectors to an unbalanced stereo audio acceptor (for example, a power amplifier)
 - Connect left (L+, L-), right (R+, R-) and ground (G) terminals on the OUTPUT 2 terminal block connectors to a balanced stereo audio acceptor (for example, a power amplifier)
 - Connect the OUTPUT 3 S/PDIF connector to a digital audio acceptor (for example, a digital power amplifier)
3. To remotely operate the **910**, make any of the following connections:
 - RS-232 9-pin D-sub port to a PC (see [Section 6.1](#))
 - Ethernet RJ-45 connector to a network (see [Section 6.2](#))
 - USB connector to a PC (see [Section 6.3](#))
4. Connect the power cord² (not shown in [Figure 2](#)).

¹ Switch OFF the power on each device before connecting it to the 910. After connecting the 910, switch on its power and then switch on the power on each device

² We recommend that you use only the power cord supplied with this device

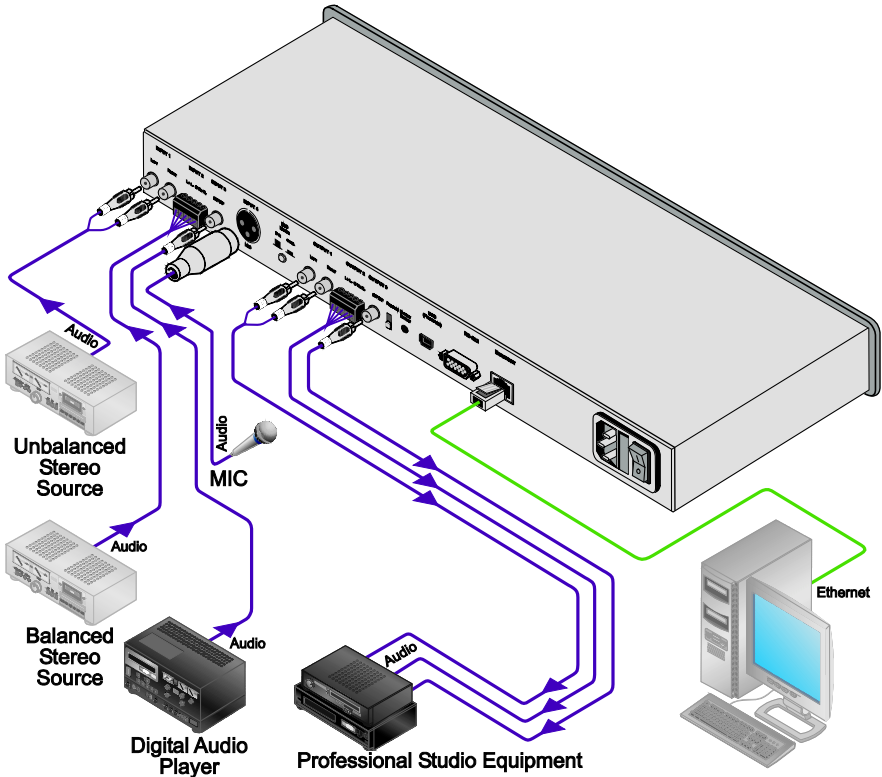


Figure 2: Connecting the 910 Digital Audio Preamplifier

6.1 Connecting the RS-232 Port

You can connect to the unit via a straight pin-to-pin RS-232 connection, using for example, a PC.

Connect the RS-232 9-pin D-sub port on the unit via a straight cable (pin 2 to pin 2, Pin 3 to pin 3, and pin 5 to pin 5) to the RS-232 9-pin D-sub port on the PC. If a shielded cable is used, connect the shield to pin 5.

Note: There is no need to connect any other pins.

6.2 Connecting the ETHERNET Port

You can use the Ethernet port to control the **910**.

- To connect directly to a PC using a crossover cable, see [Section 6.2.1](#)

- To connect to a network hub or network router with a straight-through cable, see [Section 6.2.2](#)
- To configure the Ethernet port, see [Section 6.2.3](#)

6.2.1 Connecting the ETHERNET Port Directly to a PC (Crossover Cable)

You can connect the Ethernet port of the **910** to the Ethernet port on your PC, via a crossover cable with RJ-45 connectors.

This type of connection is recommended for identification of the factory default IP Address of the **910** during the initial configuration

After connecting the Ethernet port, configure your PC as follows:

1. Right-click the My Network Places icon on your desktop.
2. Select **Properties**.
3. Right-click Local Area Connection Properties.
4. Select **Properties**.
The Local Area Connection Properties window appears.
5. Select the Internet Protocol (TCP/IP) and click the **Properties** Button (see [Figure 3](#)).

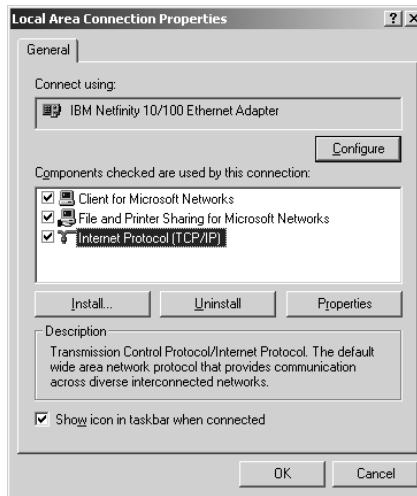


Figure 3: Local Area Connection Properties Window

6. Select Use the following IP address, and fill in the details as shown in [Figure 4](#).

7. Click **OK**.

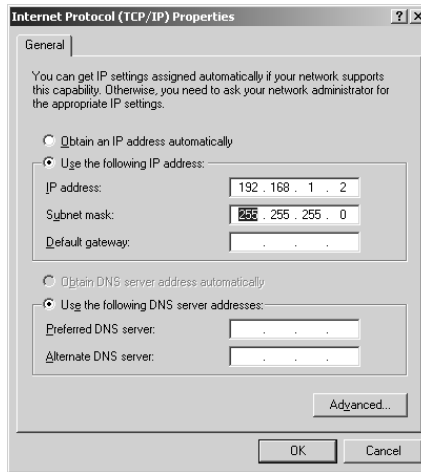


Figure 4: Internet Protocol (TCP/IP) Properties Window

6.2.2 Connecting the ETHERNET Port via a Network Hub (Straight Through Cable)

You can connect the Ethernet port of the **910** to the Ethernet port on a network hub or network router, via a straight through cable with RJ-45 connectors.

6.2.3 Configuring the Ethernet Port

To configure the Ethernet port, download the P3K configuration software¹. Extract the file to a folder and create a shortcut on your desktop to the file.

Follow these steps to configure the port:

1. Double click the desktop icon.
The Connect screen appears as follows:

¹ Available from Kramer Electronics on our Web site at <http://www.kramerelectronics.com>

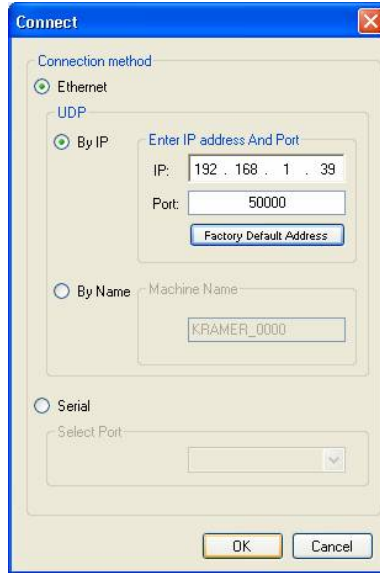


Figure 5: Connect Screen

2. Select the method to connect to the Ethernet port of the **910**.
Select:
 - Ethernet, if you know the IP address number¹ or the machine name. The default name for the machine is **KRAMER_XXXX**²
 - Serial, if you are connected via a serial port
3. Click OK.
The Device Properties window appears:

¹ The default IP address is 192.168.1.39

² The four digits are the last four digits of the machine's serial number

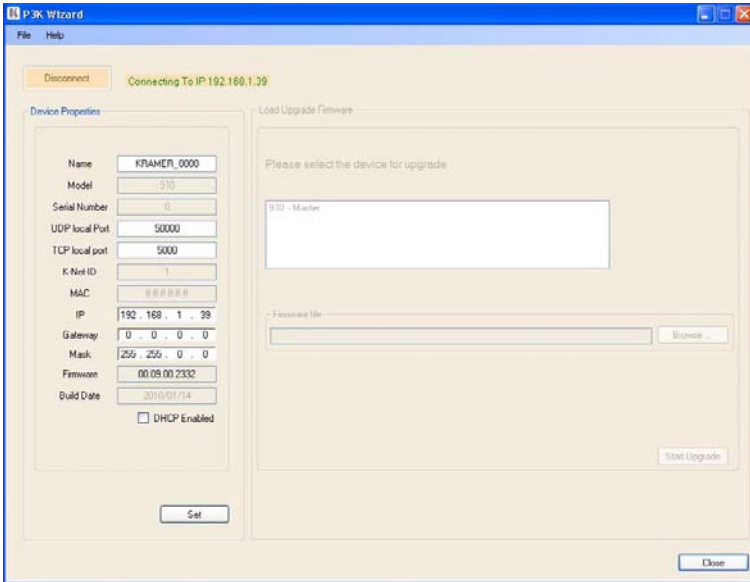


Figure 6: Device Properties Screen

4. If required, make changes and press Set. If not, click Close.

6.3 Connecting via USB

To connect the **910** via the USB port, you must plug the USB cable into the PC and install the Kramer USB driver downloaded from our Web site at <http://www.kramerelectronics.com>.

6.4 Connecting a Microphone to the XLR Input

Connect a microphone to the XLR input as illustrated in [Figure 7](#).

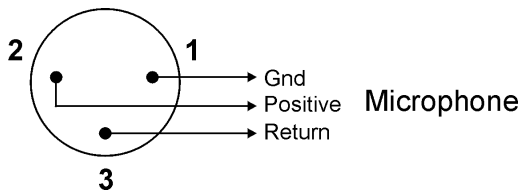


Figure 7: Connecting a Microphone to the XLR Input

Note: The XLR connector provides 15V phantom power when the MIC switch is set for a condenser microphone.

7 Operating the 910 Digital Audio Preamplifier

You can operate your **910** using:

- The front panel buttons (see [Section 7.1](#))
- Serial commands via the RS-232/USB/Ethernet ports transmitted by a touch screen system, PC, or other serial controller (see [Section 7.2](#))
- **RC-IR2** Infrared remote control transmitter (see [Section 7.3](#))

7.1 Using the Front Panel Buttons

The **910** is operated from its front panel buttons as follows (for an explanation of the front panel button functions see [Table 2](#)):

1. Select an input from 1 to 4 by pressing its INPUT button.
The selected input appears in the display.
2. Select a function by pressing its appropriate button.
The selected input and function appear in the display.
3. Adjust the function using the adjustment knob.

7.1.1 Using MIX

To mix multiple inputs (any or all) press the MIX button and press any INPUT desired. Each selected input lights.

7.1.2 Using Loudness

Pressing LOUDNESS activates and deactivates the loudness function.

7.1.3 Using Talkover

To use the talkover function, press TALKOVER. The microphone on INPUT 4 activates. The audio fades out when the microphone input is loud enough and fades back in when the microphone is silent for approximately 1.5 seconds.

7.1.4 Using Store

Up to four current settings can be stored in four presets. To store a preset: press STORE, it flashes. Choose a preset location by turning the adjustment knob or pressing an INPUT button. Press STORE again to save the preset.

7.1.5 Using Recall

To recall any of the four presets: press RECALL, it flashes. Choose a preset location by turning the adjustment knob or pressing an INPUT button. Press RECALL to activate the preset.

Operating the 910 Digital Audio Preamplifier

Table 2: 910 Front Panel Button Functions

Button Display	Function	Meaning/Range	Notes				
MUTE	Mute		When pressed, stops all output				
<table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td style="width: 30px; height: 30px; text-align: center;">1</td> <td style="width: 30px; height: 30px; text-align: center;">2</td> </tr> <tr> <td style="width: 30px; height: 30px; text-align: center;">3</td> <td style="width: 30px; height: 30px; text-align: center;">4</td> </tr> </table>	1	2	3	4	INPUT 1	Unbalanced stereo	Only one input lights when selected, multiple buttons light when MIX pressed
1	2						
3	4						
	INPUT 2	Balanced stereo					
	INPUT 3	S/PDIF digital stereo					
	INPUT 4	Microphone					
<table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td style="width: 30px; height: 30px; text-align: center;">BASS</td> <td style="width: 30px; height: 30px; text-align: center;">TREB</td> </tr> <tr> <td style="width: 30px; height: 30px; text-align: center;">MID</td> <td style="width: 30px; height: 30px; text-align: center;">LDNS</td> </tr> </table>	BASS	TREB	MID	LDNS	Bass	-40 to +40	Adjusts low-level tones
BASS	TREB						
MID	LDNS						
	Treble	-40 to +40	Adjusts high-level tones				
	Mid	-40 to +40	Adjusts mid-level tones				
	Loudness	-40 to +40	Toggles loudness on and off				
<table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td style="width: 30px; height: 30px; text-align: center;">VOL</td> <td style="width: 30px; height: 30px; text-align: center;">BAL</td> </tr> <tr> <td style="width: 30px; height: 30px; text-align: center;">EQ</td> <td style="width: 30px; height: 30px; text-align: center;">DLY</td> </tr> </table>	VOL	BAL	EQ	DLY	Volume	-100 to +24	Adjusts output volume
VOL	BAL						
EQ	DLY						
	Balance	-24 to +24	Adjusts right and left volume				
	Equalization	-40 to +40 each band	Equalizes 7 bands from low to high frequency; each press advances to the next band				
	Delay	0 to 60	Delay in milliseconds to avoid feedback from the microphone				
<table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td style="width: 30px; height: 30px; text-align: center;">TR</td> <td style="width: 30px; height: 30px; text-align: center;">EXPD</td> </tr> <tr> <td style="width: 30px; height: 30px; text-align: center;">MIX</td> <td style="width: 30px; height: 30px; text-align: center;">CMPS</td> </tr> </table>	TR	EXPD	MIX	CMPS	Talkover		Activates INPUT 4 (mic) and lowers all other inputs to the background
TR	EXPD						
MIX	CMPS						
	Expand		Increases the dynamic range of the output by a fixed ratio				
	Mix		Allows multiple inputs				
	Compress		Decreases the dynamic range of the output by a fixed ratio				
<table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td style="width: 30px; height: 30px; text-align: center;">STO</td> </tr> <tr> <td style="width: 30px; height: 30px; text-align: center;">RCL</td> </tr> </table>	STO	RCL	Store		Stores four presets: press STORE, adjust for preset number, press STORE		
STO							
RCL							
	Recall		Recalls four presets: press RECALL, adjust for preset number, press RECALL				

7.2 Controlling the 910 from the PC

To operate your device remotely from your PC over the RS-232, USB or Ethernet ports, you need to download and install Kramer's **910 Control Application**¹.

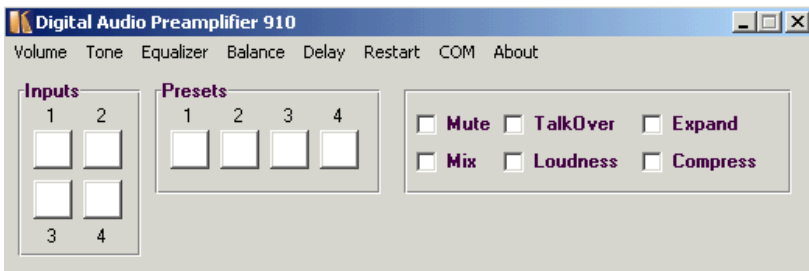


Figure 8: 910 Control Application Screen

For an explanation of all control commands, see [Section 10](#).

7.3 Using the Infrared Remote Controller

To operate your device using the **RC-IR2** infrared remote controller, see the User Manual packed with the remote controller.

7.4 Updating the 910 Firmware

The **910** functions by means of a device microcontroller that runs firmware located in FLASH memory.

You can download¹ and upgrade the latest version of firmware² according to the recommendation of Kramer Technical Support.

¹ Available on our Web site at <http://www.kramerelectronics.com>

² The firmware is installed using the P3K software available from the Kramer Web site <http://www.kramerelectronics.com>

8 Technical Specifications

The **910** technical specifications are shown in [Table 3](#):

Table 3: 910 Technical Specifications¹

INPUTS:	1 unbalanced stereo audio on an RCA connector; 1 balanced stereo audio on a 5-pin terminal block; 1 S/PDIF on an RCA connector; 1 mono balanced microphone on an XLR (F) connector (provides 15V phantom power when the MIC switch is set for a condenser microphone)
OUTPUTS:	1 unbalanced stereo audio on an RCA connector; 1 balanced stereo audio on a 5-pin terminal block; 1 S/PDIF on an RCA connector
OUTPUT LEVEL:	8Vpp
BANDWIDTH (-3dB):	21.7kHz
S/N RATIO:	75dB @1kHz, weighted
CONTROLS:	Volume: <-75 to +23.5dB; Bass: -15 to +15dB @100Hz; Mid: -20 to +20dB @1kHz; Treble: -10 to +10dB @20kHz; Loudness: +10.6dB @50Hz, +4.3dB @1kHz, +6.8dB @20kHz; Balance: <-64 to 0dB @1kHz; Delay: 90usec to 300usec; Expand: +23.8dB @1kHz; Compress: -3.3dB @1kHz
VOLTAGE GAIN:	22.5dB at max gain
COUPLING:	AC
AUDIO THD + NOISE:	0.1% @1kHz
AUDIO 2nd HARMONIC:	0.03% @1kHz
POWER SOURCE:	100-230V AC
DIMENSIONS	19" x 7" x 1U (W, D, H)
WEIGHT:	2.0kg (4.4lbs)
ACCESSORIES:	Power cord, rack "ears", IR remote control transmitter and Windows®-based Kramer control software

¹ Specifications are subject to change without notice

9 Protocol 3000 Syntax

9.1 Host Message Format

Start	Address (optional)	Body	Delimiter
#	<i>Destination_id@</i>	Message	CR

9.1.1 Simple Command

Command string with only one command without addressing:

Start	Address (optional)	Body	Delimiter
#		Command SP <i>Parameter_1,Parameter_2,...</i>	CR

9.1.2 Command String

Formal syntax with commands concatenation and addressing:

Start	Address	Body	Delimiter
#	<i>Destination_id@</i>	Command_1 <i>Parameter1_1,Parameter1_2,...</i> Command_2 <i>Parameter2_1,Parameter2_2,...</i> Command_3 <i>Parameter3_1,Parameter3_2,...</i> ...	CR

9.2 Device Message Format

Start	Address (optional)	Body	delimiter
~	<i>Sender_id@</i>	Message	CR LF

9.2.1 Device Long Response

Echoing command:

Start	Address (optional)	Body	Delimiter
~	<i>Sender_id@</i>	Command SP [<i>Param1 ,Param2 ...</i>] result	CR LF

CR = Carriage return (ASCII 13 = 0x0D)

LF = Line feed (ASCII 10 = 0x0A)

SP = Space (ASCII 32 = 0x20)

10 910 Commands in Protocol 3000

This RS-232/RS-485 communication protocol lets you control the machine from any standard terminal software (for example, Windows[®] HyperTerminal Application) and uses a data rate of 115200 baud, with no parity, 8 data bits, and 1 stop bit.

This section describes all commands sent to the **910**. For an explanation of the syntax and use of Protocol 3000, see [Section 10](#).

10.1 Help Commands

Command	Syntax	Response
Protocol handshaking	# <code>CR</code>	~OK <code>CRLF</code>

10.2 Device Initiated Messages

Command	Syntax
Start message	Kramer Electronics LTD. . <code>Device Model</code> Version <code>Software Version</code>

Switcher actions:

Audio channel has switched (breakaway mode)	AUD <code>IN>OUT</code>
---	----------------------------

10.3 Result and Error Codes

	Syntax
Command ran successfully, no error.	<code>COMMAND</code> <code>PARAMETERS</code> OK

Protocol Errors:

Syntax error	ERR001
Command not available for this device	ERR002
Parameter is out of range	ERR003
Unauthorized access (command run without the matching login).	ERR004

10.4 Basic Routing Commands

Switch audio	AUD <u>IN</u> > <u>OUT</u> , <u>IN</u> > <u>OUT</u> , ... Short form: A <u>IN</u> > <u>OUT</u> , <u>IN</u> > <u>OUT</u> , ...	AUD <u>IN</u> > <u>OUT</u> <u>IN</u> > <u>OUT</u> ... <u>RESULT</u>
Read audio connection	AUD? <u>OUT</u> Short form: A? <u>OUT</u> AUD? *	AUD <u>IN</u> > <u>OUT</u> AUD <u>IN</u> >1, <u>IN</u> >2, ...

Parameter Description:

- IN = Input number or '0' to disconnect output.
- '>' = Connection character between in and out parameters.
- OUT = Output number or '*' for all outputs.

Example:

Switch audio input 2 to output 1	#A 2>1 <code>CR</code>	~AUD 2>1 OK <code>CRLF</code>
----------------------------------	------------------------	-------------------------------

10.5 Preset Commands

Command	Syntax	Response
Store current connections to preset	PRST-STO <u>PRESET</u> Short form: PSTO <u>PRESET</u>	PRST-STO <u>PRESET</u> <u>RESULT</u>
Recall saved preset	PRST-RCL <u>PRESET</u> Short form: PRCL <u>PRESET</u>	PRST-RCL <u>PRESET</u> <u>RESULT</u>
Delete saved preset	PRST-DEL <u>PRESET</u> Short form: PDEL <u>PRESET</u>	PRST-DEL <u>PRESET</u> <u>RESULT</u>
Read audio connections from saved preset	PRST-AUD? <u>PRESET</u> , <u>OUT</u> Short form: PAUD? <u>PRESET</u> , <u>OUT</u> PRST-AUD? <u>PRESET</u> , *	PRST-AUD <u>PRESET</u> : <u>IN</u> > <u>OUT</u> PRST-AUD <u>PRESET</u> : <u>IN</u> >1, <u>IN</u> >2,...
Read saved presets list	PRST-LST? Short form: PLST?	PRST-LST <u>PRESET</u> , <u>PRESET</u> , ...

Parameter Description:

- PRESET = Preset number.
- OUT = Output in preset to display, '*' for all.

Examples:

Store current audio connections to preset 5	#PRST-STR 5 <code>CR</code>	~PRST-STR 5 OK <code>CRLF</code>
Recall audio connections from preset 3	#PRCL 3 <code>CR</code>	~PRST-RCL 3 OK <code>CRLF</code>

10.6 Audio Parameter Commands

Command	Syntax	Response
Set simple audio volume	VOLUME <u>VOLUME</u> Short form: VOL <u>VOLUME</u>	VOLUME <u>VOLUME</u> <u>RESULT</u>
Increase/decrease simple audio volume	VOLUME <u>+/-</u> Short form: VOL <u>+/-</u>	VOLUME <u>+/-</u> <u>RESULT</u>
Read simple audio level	VOLUME? Short form: VOL?	VOLUME <u>VOLUME</u>
Set audio level in specific amplifier stage.	AUD-LVL <u>STAGE</u> <u>CHANNEL</u> <u>VOLUME</u> Short form: ADL <u>STAGE</u> <u>CHANNEL</u> <u>VOLUME</u>	AUD-LVL <u>STAGE</u> <u>CHANNEL</u> <u>VOLUME</u> <u>RESULT</u>
Read audio volume level	AUD-LVL? <u>STAGE</u> <u>CHANNEL</u> Short form: ADL? <u>STAGE</u>	AUD-LVL <u>STAGE</u> <u>CHANNEL</u> <u>VOLUME</u>

Advanced commands for controlling each stage of audio amplification:

Set audio bass level	BASS <u>BASS</u> Short form: ADB, <u>BASS</u>	BASS <u>BASS</u> <u>RESULT</u>
Read audio bass level	BASS? Short form: ADB?	BASS <u>BASS</u>
Set audio treble level	TREBLE <u>TREBLE</u> Short form: ADT <u>TREBLE</u>	TREBLE <u>TREBLE</u> <u>RESULT</u>
Read audio treble	TREBLE? Short form: ADT?	TREBLE <u>TREBLE</u>
Set audio midrange	MIDRANGE <u>MID_RANGE</u> Short form: ADM <u>MID_RANGE</u>	MIDRANGE <u>MID_RANGE</u> <u>RESULT</u>
Read audio midrange	MIDRANGE? Short form: ADM?	MIDRANGE <u>MID_RANGE</u>
Set audio loudness	LOUDNESS <u>LOUDNESS</u> Short form: ADS <u>LOUDNESS</u>	LOUDNESS <u>LOUDNESS</u> <u>RESULT</u>
Read audio loudness	LOUDNESS? Short form: ADS?	LOUDNESS <u>LOUDNESS</u>
Set audio mix	MIX <u>MIX-MODE</u>	MIX <u>MIX-MODE</u> <u>RESULT</u>
Read audio mix	MIX?	MIX <u>MIX-MODE</u>
Mute audio	MUTE <u>MUTE-MODE</u>	MUTE <u>MUTE-MODE</u> <u>RESULT</u>
Read audio mute state	MUTE?	MUTE <u>MUTE-MODE</u>
Set balance mode	BALANCE <u>BALANCE-LEVEL</u>	BALANCE <u>BALANCE-LEVEL</u> <u>RESULT</u>
Read balance mode	BALANCE?	BALANCE <u>BALANCE-LEVEL</u>
Set equalizer	EQUALIZER <u>BAND</u> <u>EQ_LEVEL</u>	EQUALIZER <u>BAND</u> <u>EQ_LEVEL</u> <u>RESULT</u>
Read equalizer	EQUALIZER? <u>BAND</u>	EQUALIZER <u>BAND</u> <u>EQ_LEVEL</u>
Set delay	DELAY <u>DELAY_VOL</u>	DELAY <u>DELAY_VOL</u> <u>RESULT</u>
Read delay	DELAY?	DELAY <u>DELAY_VOL</u>
Set talk over	TLK <u>TALKOVER_MODE</u>	TLK <u>TALKOVER_MODE</u> <u>RESULT</u>
Read talk over	TLK?	TLK <u>TALKOVER_MODE</u>
Set expand	EXPAND <u>EXPAND_MODE</u>	EXPAND <u>EXPAND_MODE</u> <u>RESULT</u>
Read expand	EXPAND?	EXPAND <u>EXPAND_MODE</u>
Set compress	COMPRESS <u>COMPRESS_MODE</u>	COMPRESS <u>COMPRESS_MODE</u> <u>RESULT</u>
Read compress	COMPRESS?	COMPRESS <u>COMPRESS_MODE</u>

Parameter Description:

STAGE = 'IN', 'OUT'

or

Numeric value of present audio processing stage. For example: '0' for input level, '1' for pre-amplifier, '2' for amplifier (OUT) etc.

CHANNEL = Input or Output #

VOLUME / **BASS** / **TREBLE** / **MID_RANGE** = Audio parameter in Kramer units, minus sign precedes negative values.

++ increase current value,

-- decrease current value.

MIX =

'0' or 'OFF'

'1' or 'ON'

TLK =

'0' or 'OFF'

'1' or 'ON'

EXPAND =

'0' or 'OFF'

'1' or 'ON'

COMPRESS =

'0' or 'OFF'

'1' or 'ON'

10.7 Identification Commands

Command	Syntax	Response
Protocol handshaking	# CR	-OK CRLF
Read device model	MODEL?	MODEL MACHINE_MODEL
Read device serial number	SN?	SN SERIAL_NUMBER
Read device firmware version	VERSION?	VERSION MAJOR MINOR BUILD REVISION
Set machine name	NAME MACHINE_NAME	NAME MACHINE_NAME RESULT
Read machine name	NAME?	NAME MACHINE_NAME
Reset machine name to factory default*	NAME-RST	NAME-RST MACHINE_FACTORY_NAME RESULT

***Note:** The machine name is not the same as the model name. The machine name is used to identify a specific machine or a network in use (with DNS feature on).

MACHINE_NAME = Up to 14 alphanumeric chars.

* **Machine factory name** = Model name + last 4 digits from serial number.

10.8 Network Setting Commands

Command	Syntax	Response
Set IP address	NET-IP IP_ADDRESS Short form: NTIP	NET-IP IP_ADDRESS RESULT
Read IP address	NET-IP? Short form: NTIP?	NET-IP IP_ADDRESS
Read MAC address	NET-MAC? Short form: NTMC	NET-MAC MAC_ADDRESS
Set subnet mask	NET-MASK SUBNET_MASK Short form: NTMSK	NET-MASK SUBNET_MASK RESULT
Read subnet mask	NET-MASK? Short form: NTMSK?	NET-MASK SUBNET_MASK
Set gateway address	NET-GATE GATEWAY_ADDRESS Short form: NTGT	NET-GATE GATEWAY_ADDRESS RESULT
Read subnet mask	NET-GATE? Short form: NTGT?	NET-GATE GATEWAY_ADDRESS

Command	Syntax	Response
Set DHCP mode	NET-DHCP [DHCP_MODE] Short form: NTDH	NET-DHCP [DHCP_MODE] [RESULT]
Read subnet mask	NET-DHCP? Short form: NTDH?	NET-DHCP [DHCP_MODE]

[DHCP_MODE] =

'0' – Don't use DHCP (Use IP set by factory or IP set command).

'1' – Try to use DHCP, if unavailable use IP as above.

Change protocol Ethernet port	ETH-PORT [PROTOCOL] , [PORT] Short form: ETHP	ETH-PORT [PROTOCOL] , [PORT] [RESULT]
Read protocol Ethernet port	ETH-PORT? [PROTOCOL] Short form: ETHP?	ETH-PORT [PROTOCOL] , [PORT]

[PROTOCOL] = TCP/UDP (transport layer protocol)

[PORT] = Ethernet port that accepts Protocol 3000 commands

1-65535 = User defined port

0 - Reset port to factory default (50000 for UDP, 5000 for TCP)

10.9 Machine Information Commands

Command	Syntax	Response
Set device time and date	TIME [DATE_TIME]	TIME [DATE_TIME] [RESULT]
Read device time and date	TIME?	TIME? [DATE_TIME]

Note: Time setting commands require administrator authorization.

Read in/out count	INFO-IO?	INFO-IO: IN [INPUTS_COUNT] , OUT [OUTPUTS_COUNT]
Read max preset count	INFO-PRST?	INFO-PRST: AUD [PRESET_AUDIO_COUNT]
Reset to factory default configuration	FACTORY	FACTORY [RESULT]

10.10 Command Terms

Command

A sequence of ASCII letters ('A'-'Z', 'a'-'z' and '-').

Command and parameters must be separated by at least one space.

Parameters

A sequence of alphanumeric ASCII characters ('0'-'9', 'A'-'Z', 'a'-'z' and some special characters for specific commands). Parameters are separated by commas.

Message string

Every command entered as part of a message string begins with a **message starting character** and ends with a **message closing character**.

Note: A string can contain more than one command. Commands are separated by a pipe ('|') character.

Message starting character

#' – For host command/query

'~' – For machine response

Device address (Optional, for K-NET)

K-NET Device ID followed by '@'

Query sign

'?' follows some commands to define a query request.

All outputs sign

'*' defines all outputs.

Message closing characterCR – For host messages; carriage return (ASCII 13)CRLF – For machine messages; carriage return (ASCII 13) + line-feed (ASCII 10)**Command chain separator character**

When a message string contains more than one command, a pipe ('| ') character separates each command.

Spaces between parameters or command terms are ignored.

10.11 Entering Commands

You can directly enter all commands using a terminal with ASCII communications software, such as HyperTerminal, Hercules, etc. Connect the terminal to the serial, Ethernet, or USB port on the Kramer device. To enter CR, press the Enter key.

(LF is also sent but is ignored by command parser).

For commands sent from some non-Kramer controllers like Crestron, some characters require special coding (such as, /X##). Refer to the controller manual.

10.12 Command Forms

Some commands have short name syntax in addition to long name syntax to allow faster typing. The response is always in long syntax.

10.13 Command Chaining

Multiple commands can be chained in the same string. Each command is delimited by a pipe character ('| '). When chaining commands, enter the **message starting character** and the **message closing character** only once, at the beginning of the string and at the end.

Commands in the string do not execute until the closing character is entered.

A separate response is sent for every command in the chain.

10.14 Maximum String Length

64 characters

10.15 Backward Support

Protocol 2000 is transparently supported by Protocol 3000. You can switch between protocols using a switch protocol command from either platform.

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, or on which the WARRANTY VOID IF TAMPERED sticker has been torn, reattached, removed or otherwise interfered with.
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.
* FCC and CE approved using STP cable (for twisted pair products)



For the latest information on our products and a list of Kramer distributors visit 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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