Kramer Electronics, Ltd.

USER MANUAL

Model:

SL-12

Master Room Controller

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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 groups[1] that are clearly defined by function.

Thank you for purchasing the Kramer MultiTOOLS® **SL-12** *Master Room Controller*, which is ideal for:

- Controlling multimedia rooms, such as classrooms, auditoriums, conference rooms, and so on, while enabling remote control and management of the AV equipment
- Production studios, rental, and staging

Each package includes the following items:

- The **SL-12** *Master Room Controller*
- Kramer **K-Config configuration** software
- Power supply and this user manual[2]

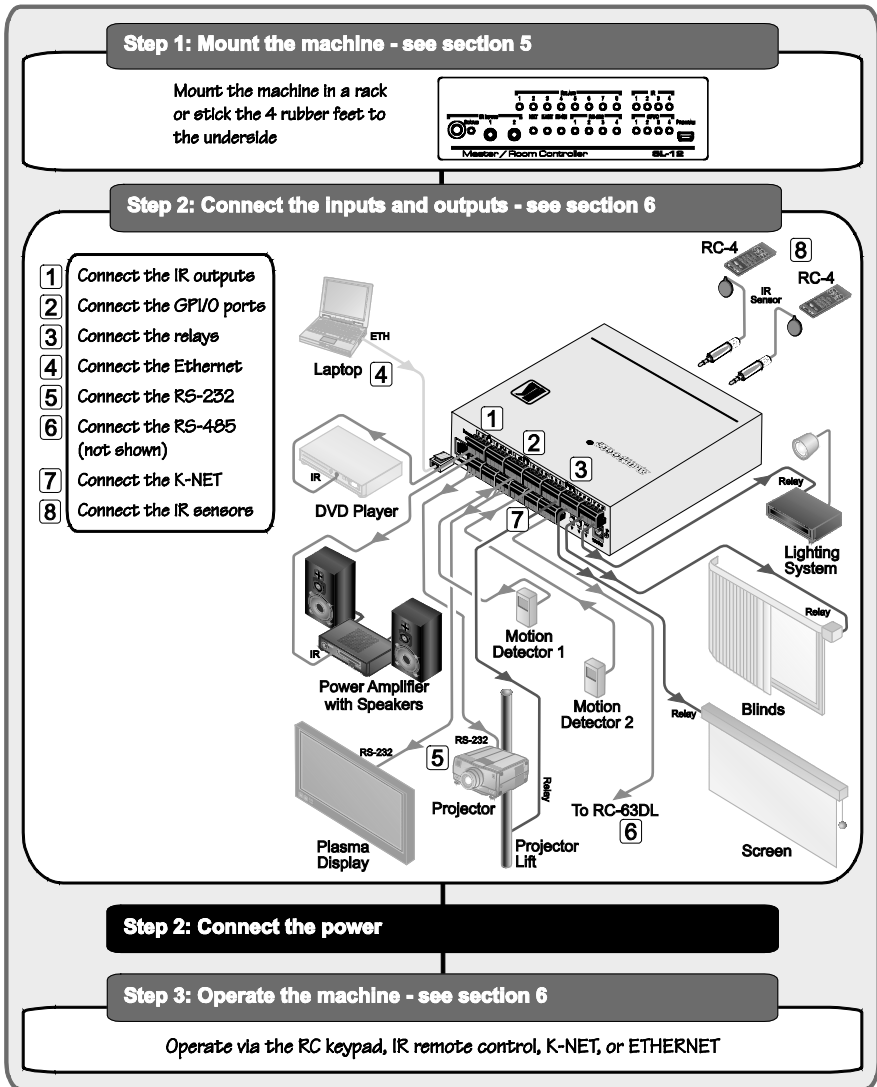# 2 Getting Started

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

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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 Download up-to-date Kramer user manuals from our Web site at http://www.kramerelectronics.com

2.1 Quick Start

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

Step 1: Mount the machine - see section 5

Mount the machine in a rack or stick the 4 rubber feet to the underside

Master / Room Controller   SL-12

Step 2: Connect the inputs and outputs - see section 6

1. Connect the IR outputs
2. Connect the GPI/O ports
3. Connect the relays
4. Connect the Ethernet
5. Connect the RS-232
6. Connect the RS-485 (not shown)
7. Connect the K-NET
8. Connect the IR sensors

RC-4   8

RC-4   IR Sensor

Laptop   4   ETH

1   2   3

IR   DVD Player

7

Relay

Lighting System

Relay

IR   Power Amplifier with Speakers

Motion Detector 1

Motion Detector 2   Relay   Blinds

RS-232   RS-232   5

Projector   To RC-63DL   6

Relay

Plasma Display   Projector Lift   Screen

Step 2: Connect the power

Step 3: Operate the machine - see section 6

Operate via the RC keypad, IR remote control, K-NET, or ETHERNET

3 Overview

The **SL-12** is a highly versatile controller that acts as an all-in-one control processor for control of A/V equipment—especially projectors and associated equipment—in any room (such as classrooms, boardrooms, or auditoriums). It streamlines operations and simplifies control by integrating audio, video, and computer-video sources into a centralized system.

The **SL-12** *Master Room Controller* features:

- 4 general purpose I/O ports that can be configured as analog inputs, digital inputs, or digital outputs for interfacing with a variety of devices such as sensors, switches, LEDs, and relays
- 4 bidirectional RS-232 ports that control AV equipment such as projectors, LCD and PDP displays, power amplifiers, switchers and scalers
- 8 relay contact closure ports that control other room items related to the AV system such as raising and lowering drapes, the screen or the projector
- IR control on 2 inputs (3.5mm) and 4 outputs (terminal blocks)
- IR Learning that learns commands from any IR remote
- 1 RS-485 serial port
- Compatibility with Kramer Site-CTRL software for network remote control and management over the Ethernet port
- A K-NET™ control channel that connects compatible user interfaces and supplies power and control data over a single cable
- A USB port for uploading a configuration file
- Status LEDs for all functions
- Flexible control via Ethernet, K-NET™, RS-485, an IR sensor and external IR commands

To achieve the best performance:

- Use only good quality connection cables[1]
- Position your Kramer **SL-12** away from moisture, excessive sunlight and dust

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

4   Your SL-12 Master Room Controller

Figure 1 and Table 1 define the unit.
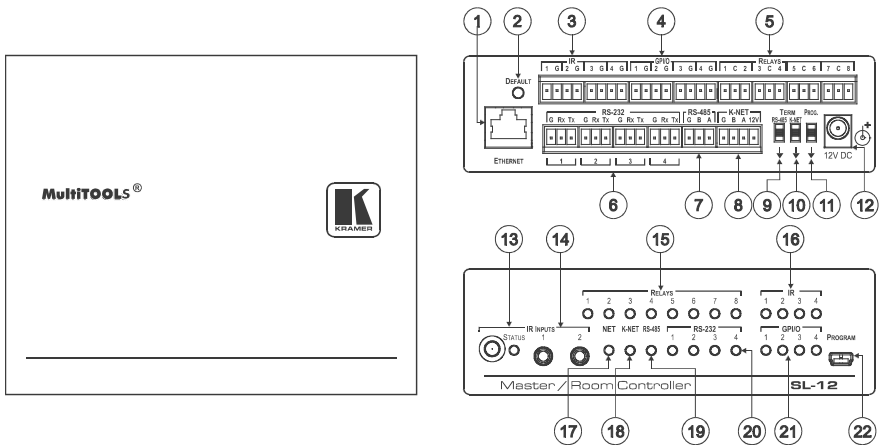
Figure 1: SL-12 Master Room Controller

Table 1: SL-12 Master Room Controller Functions

#	Feature	Function
1	*ETHERNET* RJ-45 Connector	Connects to the PC or other serial controller through computer networking LAN
2	*DEFAULT* Recessed Pushbutton	Press to reset to factory default definitions[1]: IP number – 192.168.1.39, Mask – 255.255.0.0, Gateway – 0.0.0.0
3	*IR* Output Terminal Blocks	Connect to IR emitter cables (from 1 to 4)
4	*GPI/O* Terminal Blocks	Connect to various analog and digital sensors (from 1 to 4)
5	*RELAYS* Terminal Blocks	Connect to low-voltage relay-driven devices (from 1 to 8)
6	*RS-232* Terminal Blocks	Connect to the RS-232 devices (from 1 to 4)
7	*RS-485* Terminal Block	Pins B (-) and A (+) are for RS-485; Pin G may be connected to the shield (if required)
8	*K-NET*[2] Connector	PIN GND is for the Ground connection[3]; PIN B (-) and PIN A (+) are for RS-485, and PIN +12V is for powering the unit
9	*RS-485 TERM* Switch	Slides down for RS-485 termination, slides up for not terminated
10	*K-NET TERM* Switch	Slides down for K-NET termination, slides up for not terminated
11	*PROG.* Switch	For service use only

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1 First disconnect the power supply and then connect it again while pressing the DEFAULT button The unit powers up and loads its memory with the factory default definitions and erases all stored presets

2 K-NET is a proprietary Kramer protocol for interconnecting Kramer units

3 The ground connection is sometimes connected to the shield of the RS-485 cable (in most applications, it is not connected)

KRAMER: SIMPLE CREATIVE TECHNOLOGY

#	Feature	Function
12	*12V DC*	12V DC connector for powering the unit
13	*IR INPUTS* Sensor and Status LED	Accepts IR remote commands
14	*IR INPUTS* 3.5mm Mini Jacks	Connect to remote infrared sensors (1 and 2)
15	*RELAYS* LEDs	Illuminate when an relay is active (1 to 8)
16	*IR* LEDs	Illuminate when an IR port is active
17	*NET LED*	Illuminates when the Ethernet link is active
18	*K-NET* LED	Illuminates while transmitting over K-NET
19	*RS-485* LED	Illuminates while transmitting/receiving on an RS-485 port
20	*RS-232 (Tx/Rx)* LEDs	Illuminate while transmitting/receiving on an RS-232 port (1 to 4)
21	GPI/O LEDS	Illuminate while transmitting/receiving on a general purpose I/O port (1 to 4)
22	*PROGRAM* USB Connector	Connect to a computer for unit configuration and firmware upgrading

5 Connecting the SL-12 Master Room Controller

To connect the **SL-12**, as the example in Figure 2 illustrates, do the following[1]:

1. Connect the RELAY terminal block connectors as follows:
   - Connect RELAY 1 and 2 to the projector lift
   - Connect RELAY 3 and 4 to the screen
   - Connect RELAY 5 and 6 to the blinds
   - Connect RELAY 7 and 8 to the lighting system

2. Connect the GPI/O ports as follows:
   - Connect GPI/O 2 to motion detector 1
   - Connect GPI/O 4 to motion detector 2

3. Connect the IR outputs as follows:
   - Connect an IR emitter[2] to IR OUTPUT 1 and attach the emitter to the DVD player
   - Connect an IR emitter[2] to IR OUTPUT 2 and attach the emitter to the power amplifier

4. Connect the IR sensors as follows:
   - Connect IR INPUT 1 to IR sensor[3] 1
   - Connect IR INPUT 2 to IR sensor[3] 2

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1 Switch OFF the power on each device before connecting it to your SL-12 After connecting your SL-12, switch on its power and then switch on the power on each device

2 P/N: C-A35/IRE-10; two IR Emitter Extension Cables are also available: a 15 meter cable and a 20 meter cable

3 P/N: 95-0104050

5. Connect the RS-232 ports as follows:
    - Connect RS-232 port 1 to the projector
    - Connect RS-232 port 3 to the plasma display

6. Connect the RS-485 to several Kramer matrices, for example[1].

7. Connect the Ethernet port to a network.

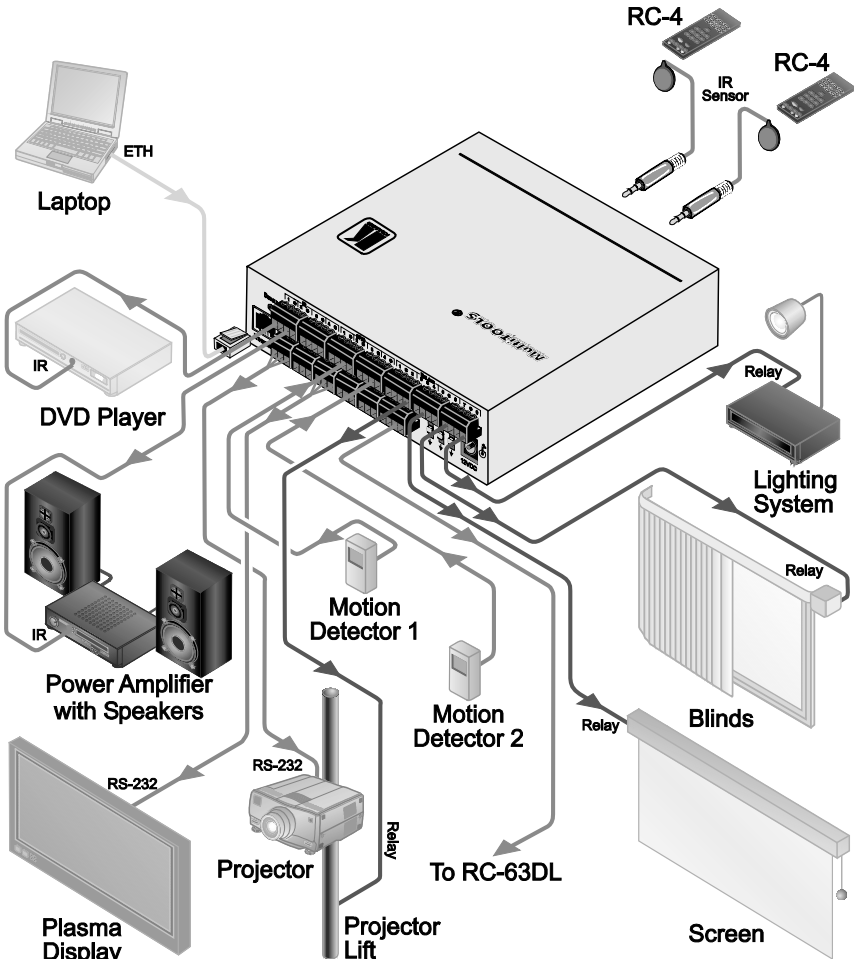8. Connect the K-NET port to any **RC** device with K-NET.

Figure 2: Connecting the SL-12 Master Room Controller

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1 Not shown in Figure 2

5.1 Using the RC-4 IR transmitter

You can use the optional **RC-4** IR transmitter as an auxiliary control panel and initiate configured control macros—refer to the **K-Config** configuration guide—via the built in IR receiver on the front panel, or, instead, via an optional external wired IR receiver[1], which exists in several cable lengths.

5.2 Connecting the RS-232 Interface

To connect an AV device to the **SL-12** using the RS-232 port, connect the RS-232 9-pin D-sub port on your device to the RS-232 terminal block on the rear panel of the **SL-12** as shown in Figure 3:
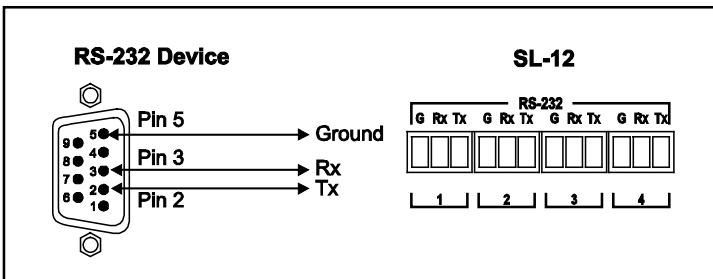

Figure 3: RS-232 Connection

5.3 Connecting the RS-485 Interface

To connect an AV device to the **SL-12** using the RS-485 port, connect the RS-485 port on your device to the RS-485 terminal block on the rear panel of the **SL-12** as shown in Figure 4:

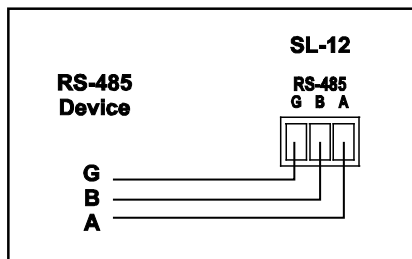*Figure 4: RS-485 Connection*

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1 Model: C-A35M/IRR-50

5.4 Connecting the Ethernet Port

The Ethernet connection of the **SL-12** allows you to perform all control functions of the **SL-12** over the Internet using a PC running the Kramer Site-CTRL control program.

To connect the **SL-12** to a network:

1. Connect the Ethernet port of the **SL-12** to the Ethernet port on a network hub or network router, via a straight cable with RJ-45 connectors.

2. At the other end, connect the Internet to a PC running Site-CTRL.

After connecting the Ethernet port, you have to install and configure it. For detailed instructions on how to install and configure your Ethernet port, see the **K-Config** Configuration Guide[1].

5.5 Connecting the K-NET Port

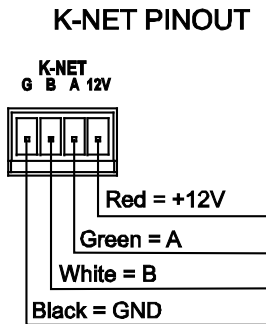The K-NET port is wired as shown in Figure 5.

K-NET PINOUT

Figure 5: K-NET Pinout Connection

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1 Available for download at the Kramer Web site: www.kramerelectronics.com

6 Operating the SL-12 Master Room Controller

You can operate your **SL-12** using:

- An RC family remote controller:
  To operate your device using an RC remote controller, see the Kramer **K-Config Guide**[1]

- The optional **RC-4** infrared remote control transmitter[2]:
  To operate your device using the infrared remote controller, see the User Manual packed with the remote controller

- A PC running **Site-CTRL** control software:
  To operate your device using **Site-CTRL**, see the **Site-CTRL and Web Access** Online User Guide[1]

7 Technical Specifications

The **SL-12** technical specifications are shown in Table 2:

Table 2: SL-12 Master Room Controller Technical Specifications[3]

INPUTS:	4 RS-232, RS-485, 4 GPI/O and K-NET on terminal block connectors; E hernet on an RJ-45 connector; 1 infrared sensor, 2 infrared on 3.5mm mini jack connectors; 1 USB for programming
OUTPUTS:	4 infrared, 8 relays (36V AC or DC, 2A, 60VAC maximum on non-inductive load) and 4 GPI/O on terminal block connectors
DEFAULT IP SETTINGS:	IP number − 192.168.1 39; Mask– 255 255.0.0; Gateway – 0.0.0.0
INDICATORS:	LED indicator for each function
POWER SOURCE:	12V DC over K-NET connection
DIMENSIONS	14.3cm x 12.2cm x 4.4cm (5.6" x 4.8" x 1.7") W, D, H
WEIGHT:	0.6kg (1.4lbs)
ACCESSORIES:	Power supply, K-Config configuration software
OPTIONS:	RK-13 19" rack mount, RC-4 remote controller, IR emitter cables[4], IR sensor cable[5]

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1 Available for download at the Kramer Web site: www kramerelectronics com

2 The RC-4 is configured via the Kramer K-Config software

3 Specifications are subject to change without notice

4 P/N: C-A35/IRE-10; two IR Emitter Extension Cables are also available: a 15 meter cable and a 20 meter cable

5 P/N: 95-0104050

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 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.

Caution

Kramer Electronics, Ltd.
Web site: www.kramerelectronics.com
E-mail: info@kramerel.com
P/N: 2900-000552 REV 2