KRAMER ELECTRONICS LTD.

USER MANUAL

MODEL:

RC-76M/RC-712M

RC-76M, RC-712M Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to http://www.kramerelectronics.com/support/product_downloads.asp to download the latest manual or scan the QR code on the left.

Step 1: Check what's in the box

☑ **RC-76M** and/or **RC-712M** Room Controller

☑ Button labels sheets
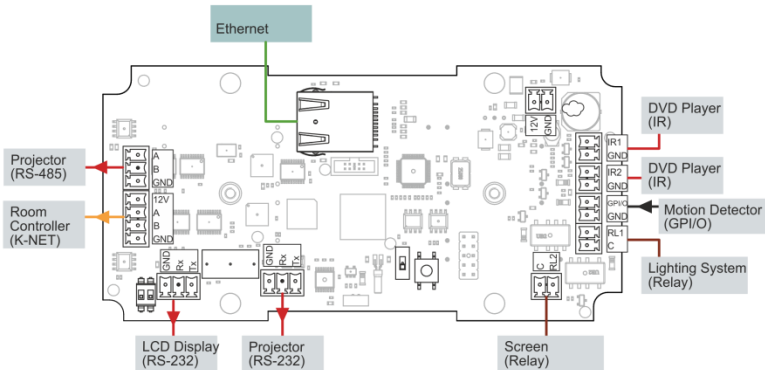
☑ 1 Quick start guide

☑ 1 12V DC power supply
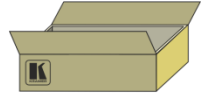
Save the original box and packaging materials in case you need to return your product for service.

Step 2: Install the device

Always switch OFF the power on each device before connecting it to your **RC-76M/RC-712M**.

1. Configure the buttons using Kramer the **K-Config** configuration software.

2. Place the device in the Merten housing.

3. Connect the inputs and outputs to their appropriate devices using terminal block connectors: 2 RS-232, 1 RS-485, 1 GPI/O, 1 K-NET, 1 Ethernet (RJ-45) 2 infrared, 2 relays.

Step 3: Operate the device

Operate the unit via the front panel buttons or remotely by AUX. keypad over K-NET or from the Web page from any PC over the Ethernet connection.

4. Connect the 12V DC power.

5. Insert the labels under the button caps.

6. Fix the frame and faceplates.

Contents

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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 video, audio, presentation, and broadcasting professionals 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 that are clearly defined by function: GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Routers; 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 and GROUP 11: Sierra Products.

Congratulations on purchasing your Kramer **RC-76M** and/or **RC-712M**, which are ideal for the following typical applications:

- Remote control and management of AV equipment in multimedia rooms, such as classrooms, auditoriums, conference rooms

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

Go to http://www.kramerelectronics.com/support/product_downloads.asp to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)

- Do not secure the cables in tight bundles or roll the slack into tight coils

- Avoid interference from neighboring electrical appliances that may adversely influence signal quality

- Position your Kramer **RC-76M/RC-712M** away from moisture, excessive sunlight and dust

This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.

2.2 Safety Instructions

Caution: There are no operator serviceable parts inside the unit

Warning: Use only the Kramer Electronics input power wall adapter that is provided with the unit

Warning: Disconnect the power and unplug the unit from the wall before installing

2.3 Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at *http://www.kramerelectronics.com/support/recycling/*.

3　Overview

The **RC-76M** and **RC-712M** are six and twelve−button configurable room controllers for multimedia rooms. They control audio components, video components and other room facilities such as lights and screens. They are designed to be installed in compatible Merten System M on-wall boxes (frame and housing).

RC-76M/**RC-712M** features:

- 6/12 configurable buttons - RGB backlit, front panel buttons, configured using the K−Config configuration software

- 1 GPI/O port that can be configured by K−Config configuration software as a digital input, digital output or analog input for interfacing with a variety of devices such as sensors, switches, LEDs, or relays

- Kramer Site-CTRL compatibility for network remote control and management over the Ethernet port

- 2 bidirectional RS-232 ports for the control of AV equipment such as projectors, LCD and PDP displays, power amplifiers, switchers and scalers

- 2 relay contact closure ports for the control of other room items related to an AV system, such as, raising and lowering drapes, a screen or a projector

- 2 IR control ports with an IR learning receiver on the front panel that learns commands from any IR remote

- 1 RS-485 port

- A K-NET™ control channel that connects compatible user interfaces, supplies power and controls data over a single cable

- A USB port located on the front panel to connect to a computer for firmware upgrade or for uploading the configuration file

- Flexible control - via Ethernet and K−NET

- Wall Plate Size - 2 gang EU, Merten compatible

3.1 Defining the RC-76M/RC-712M Room Controllers

Figure 1 defines the front panel of the **RC-76M**/**RC-712M**:
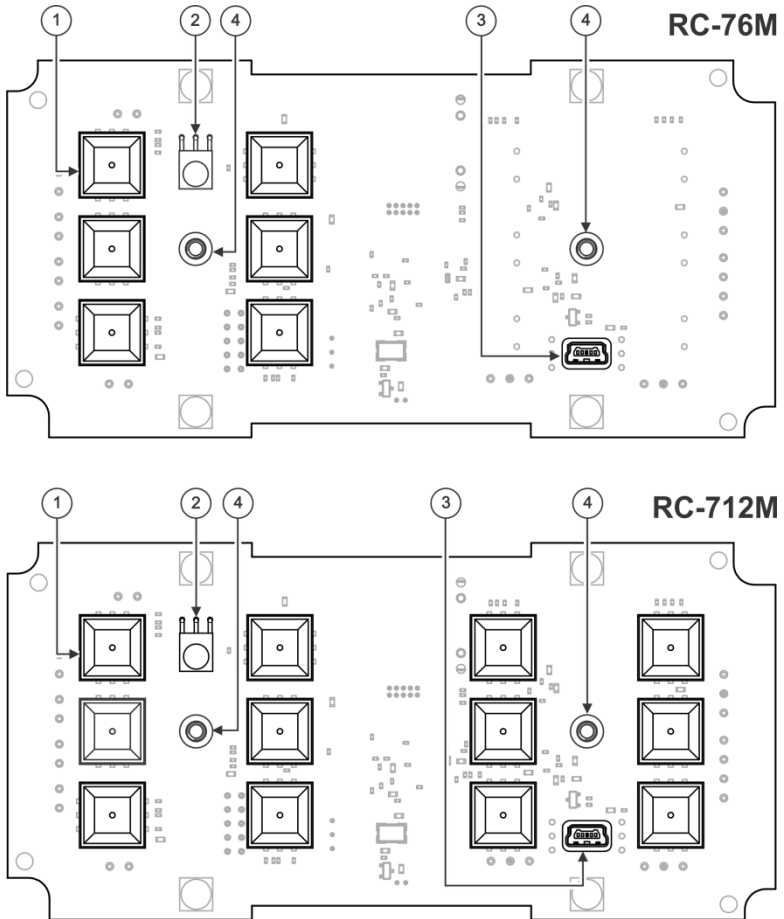
Figure 1: RC-76M/RC-712M Room Controller – Front Panel

#	Feature	Function
1	6/12 Configurable Buttons	Button function is programmed by the K-Config Configuration software
2	IR In Built-in IR Receiver	Use to learn the IR commands from a machine's remote control transmitter
3	USB Connector	Connect to a computer for firmware upgrade or for uploading the configuration file
4	Button Cover Plate Mounting Screw holes (2)	To secure the faceplates and frame to the Merten compatible housing. Remove to access the USB ports and IR learner.

defines the rear panel of the **RC-76M/RC-712M**:

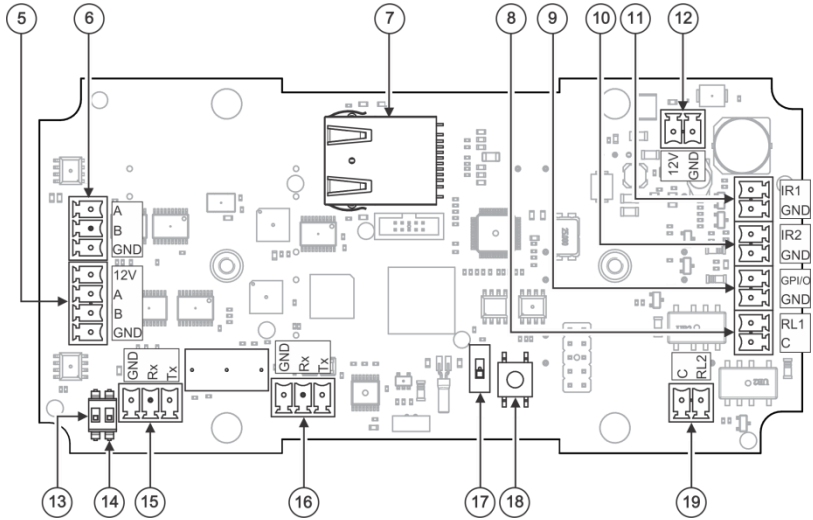Figure 2: RC-76M/RC-712M Room Controllers – Rear Panel

#	Feature	Function
5	K-NET Terminal Block Connector	Connect the GND pin to the Ground connection; pin B (-) and pin A (+) are for RS-485, and the +12V pin is for powering the unit
6	RS-485 Terminal Block Connector	Pins B (-) and A (+) are for RS-485; Pin G may be connected to the shield (if required)
7	ETHERNET RJ-45 Connector	Connects to the PC or other serial controller through computer LAN to control AV products
8	RELAY C1	Connect to low-voltage relay-driven device 1
9	GPIO/GND Terminal Block Connector	Connect to various sensors, switches, LEDs, or relays
10	*IR 2* Terminal Block Connector	Connect to IR emitter cable 2
11	*IR 1* Terminal Block Connector	Connect to IR emitter cable 1
12	Power Supply 2-pin Terminal Block Connector	Connect +12V to +12V, ground to GND
13	RS-485 Terminator Switch	Slide the DIP-switch up to terminate the RS-485 line with a 120Ω load; down is for no termination
14	K-NET Terminator Switch	Slide the DIP-switch up to terminate the K-Net line with a 120Ω load; down is for no termination
15	*RS-232 (1)* Terminal Block Connector	Connects to a PC or the remote controller
16	*RS-232 (2)* Terminal Block Connector	Connects to a PC or the remote controller
17	Program Switch	For technical support use only (should be set downwards for normal operation)

#	Feature	Function
18	RESET Button	Press to reset to factory default definitions: IP number – 192.168.1.39, Mask – 255.255.0.0, Gateway – 0.0.0.0
		First, disconnect the power supply and then connect it again while pressing the Reset button. The unit powers up and loads its memory with the factory default definitions and erases all stored preset
19	RELAY C2	Connect to low-voltage relay-driven device 2

4 Installing the RC-76M/RC-712M

To install the **RC-76M**/**RC-712M**:

- Configure the buttons

- Connect the cables

- Mount the room controller onto the Merten compatible housing

- Attach button caps with labels

- Place the frame

- Attach the faceplates

4.1 Configuring the Room Controller Buttons

Configure the 6 buttons for **RC-76M** and 12 buttons for **RC-712M** using the
K−Config configuration software via the USB port that is located on the front panel
on the board or the Ethernet port located on the rear panel. Use the IR learning
receiver on the front panel to read IR commands from any IR remote control. Note
that the device needs to be connected to the power to configure the buttons. The
K-Config user guide is available on our Web site at
http://www.kramerelectronics.com/support/product_downloads.asp

> We recommend that you configure the buttons before mounting the
> device onto the Merten compatible on-wall box.

4.2 Mounting the Device

This section describes how to mount the **RC-76M**/**RC-712M** onto the Merten
compatible on-wall box (sold by Kramer, P/N: OWB-2G/M).

4.2.1 Connecting the Ports

The following diagrams illustrate a compatible 2 gang on- wall box, but installation
is similar with any compatible wall box.

> We recommend that you first detach the male connectors from the rear
> panel, connect the relevant wires to them and then reconnect the
> assembled male terminals to the unit just before installation in the on-wall
> box.

> Pass the appropriate cables through any of the four housing cable pass-through openings on the sides of the box (see Figure 3).
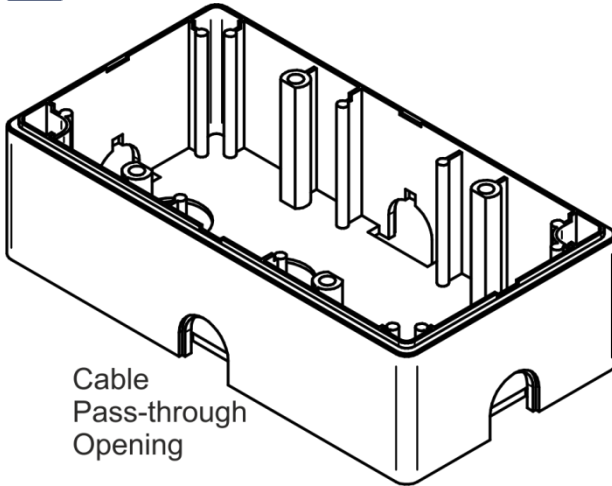

Cable
Pass-through
Opening

Figure 3: Merten Compatible Housing

> Always switch off the power to each device before connecting it to your **RC-76M**/**RC-712M**. After connecting your **RC-76M**/**RC-712M**, connect its power and then switch on the power to each device.

Although the illustration in Figure 4 shows the **RC-712M**, the following example applies also to the **RC-76M**.

To connect the **RC-76M**/**RC-712M** as illustrated in the example in Figure 4:

1. Connect the IR outputs as follows:

   - Connect an IR emitter to IR OUTPUT 1 and attach the emitter to the DVD player 1

   - Connect an IR emitter to IR OUTPUT 2 and attach the emitter to the DVD player 2

2. Connect the RS-232 ports (see Section 4.2.1.1) as follows:

   - Connect RS-232 port 1 to the projector

   - Connect RS-232 port 2 to the plasma display

3. Connect the RELAY terminal block connectors as follows:

   ▪ Connect RELAY C and 1 to the screen

   ▪ Connect RELAY C and 2 to the lighting system

4. Connect the GPI/O 1 port to a motion detector.
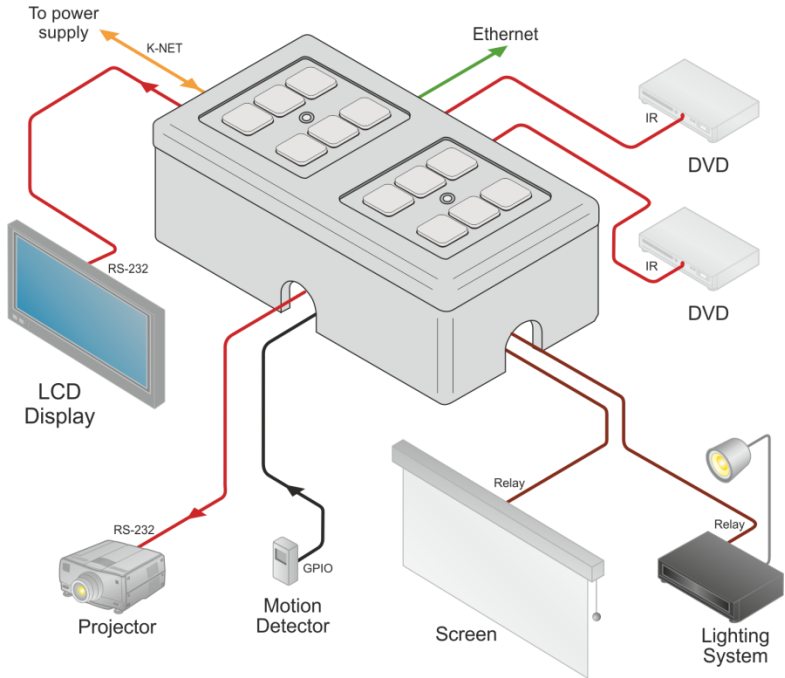
5. Connect the Ethernet port to a network.

Figure 4: Connecting the RC-712M

4.2.1.1 Connecting RS-232 Devices

You can control up to two AV devices such as a projector or an RS-232 display by connecting them to the **RC-76M**/**RC-712M** via their RS-232 connection.

To connect a device to the **RC-76M**/**RC-712M** via RS-232:

• Using a straight cable, connect pin 2 to **TX**, pin 3 to **RX** and pin 5 to **GND** on the RS-232 terminal block connector of the **RC-76M**

4.2.1.2   Connecting RS-485 Devices

You can control up to one AV device by connecting it to the **RC-76M**/**RC-712M** via its RS-485 connection.

To connect a device to the **RC-76M**/**RC-712M** via RS-485:

- Connect the A (+) pin of the device to the **A** pin on the RS-485 terminal block of the **RC-76M**/**RC-712M**

- Connect the B (-) pin of the device to the **B** pin on the RS-485 terminal block of the **RC-76M**/**RC-712M**

- Connect the G pin of the device to the **GND** pin on the RS-485 terminal block of the **RC-76M**/**RC-712MRC-76M**

If your device is the first or last device on the line, slide the RS-485 termination switch up, otherwise make sure it is set to down (see Figure 1).

4.3   Connecting the Ethernet Port

The Ethernet connection of the **RC-76M**/**RC-712M** lets you perform all control functions of the **RC-76M**/**RC-712M** over the Internet using a PC running the Kramer Site-CTRL control program to control AV devices.

To connect the **RC-76M**/**RC-712M** to a network:

1. Connect the Ethernet port of the **RC-76M**/**RC-712M** 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**.

3. 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 Software Guide.*
   Available from our Web site at
   http://www.kramerelectronics.com/support/product_downloads.asp.

4.4 Connecting the K-NET Port

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

If your device is the first or last device on the line, slide the K-NET termination switch up; otherwise make sure it is set to down (see Figure 1).
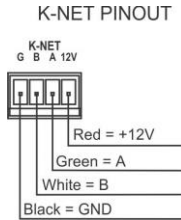

Figure 5: K-NET PINOUT Connection

4.5 Mounting the RC-76M/RC-712M onto the Merten Housing

After the cables are connected you can mount the device onto the housing. Note that the illustrations in this section do not show the cables that are already connected to the device and passing through the housing cable openings.

To mount the **RC-76M**/**RC-712M**:

1. Reconnect the detachable terminals to the rear panel

2. Gently place the **RC-76M**/**RC-712M** inside the housing, making sure that all cables remain connected.
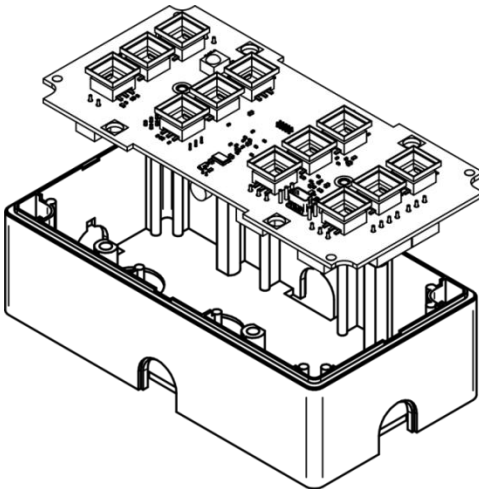

Figure 6: Inserting the RC-76M/RC-712M

3. Secure the unit to the housing by screwing the four 3.5x10 conical Philips screws (supplied with the unit) into their 4 designated holes (see Figure 7).
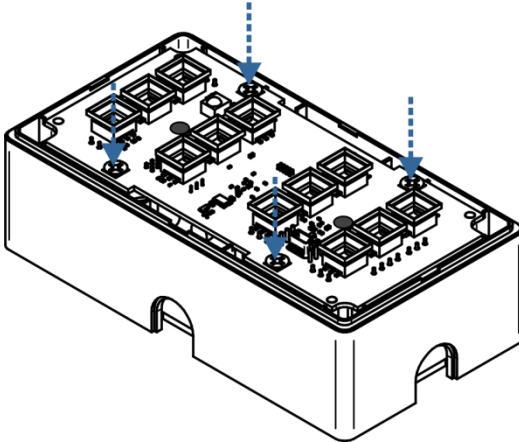

Figure 7: Securing the RC-76M/RC-712M

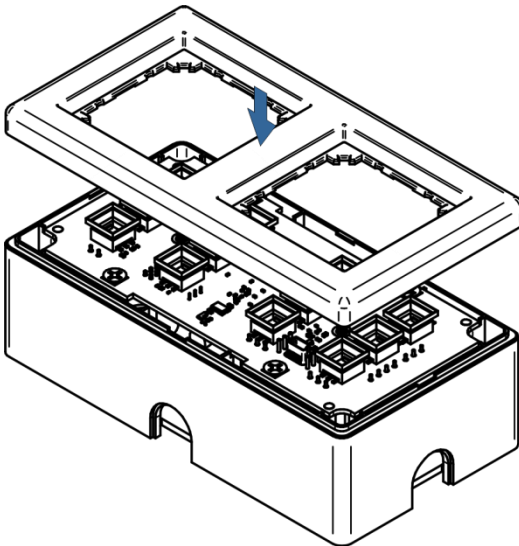4. Mount the frame over the device (see Figure 8).

Figure 8: Placing the Frame

5. Insert the labels, as required, inside the button caps while holding the button cap "wings" to the sides, as shown in Figure 9.

Figure 9: Button Cap Orientation with Label

6. Retaining this orientation, place each button cap, with the label to its correct button (see Figure 10).
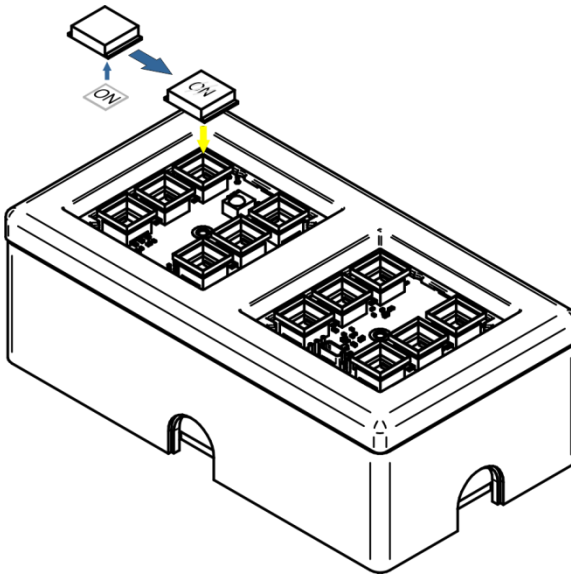

Figure 10: Placing the Button Caps and Mounting the Device

7. Place the faceplates over the frame while fitting the buttons in (for the **RC-76M** you need to attach one button faceplate and one blank faceplate), see Figure 11.

RC-76M/ RC-712M - Installing the RC-76M/RC-712M
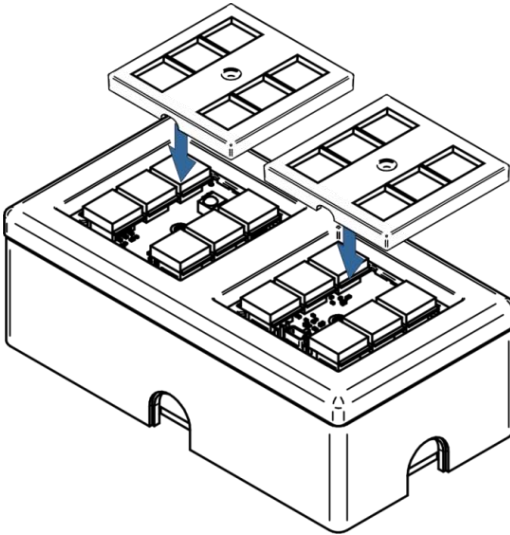
Figure 11: Placing the Faceplates

8. Tighten the two M3x16 screws with Allen key (supplied) to fix the faceplates and the frame to the housing (see Figure 12).
Note that if you need to reconfigure the buttons, simply remove these two screws and remove the frame and faceplate to gain access to the IR learner and USB port.
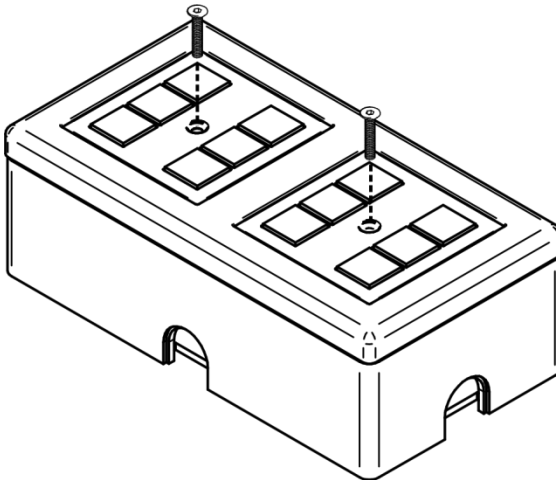
Figure 12: Securing the Frame and Faceplates

5 Operating the RC-76M/RC-712M

You can operate your **RC-76M**/**RC-712M** via the front panel buttons or remotely by AUX. keypad over K-NET.

The front panel buttons are configured using the **K-Config** software. For instructions on using the software, see the K-Config *Software Guide* available from our Web site www.kramerelectronics.com.

6 Front Panel Button Labels

The **RC-76M**/**RC-712M** are supplied with a button label sheet and 6/8 clear, button caps to house the labels. illustrates a sample button label sheet.

DISPLAY ON	DISPLAY OFF	CYCLE SOURCES	OPEN	CLOSE	VOLUME UP	VOLUME DOWN
MUTE	MENU	SUB MENU	TITLE	SUB TITLE	ENTER	OK
EXIT	LANGUAGE	LOCK	UNLOCK	FUNC 1	FUNC 2	FUNC 3
FUNC 4	ACCEPT	ASPECT RATIO	AUTO	AUTO IMAGE	AV	BLANK
CONTINUE	FREE-VIEW	FREEZE	GUIDE	INDEX	INFO	INPUT
INPUT SELECT	LIST	MODE	OSD	PIP	RESET	SCAN
SHUFFLE	SYNC	TAKE	RED	GREEN	BLUE	YELLOW
CALL	HANG UP	SYSTEM	CONTROL	ALL ON	ALL OFF	MUSIC PLAYER
DISPLAY	DISPLAY 1	DISPLAY 2	DISPLAY 3	DISPLAY 4	PROJECTOR	PC
PC 1	PC 2	PC 3	PC 4	LAPTOP	LAPTOP 1	LAPTOP 2
LAPTOP 3	LAPTOP 4	MOBILE				

KRAMER

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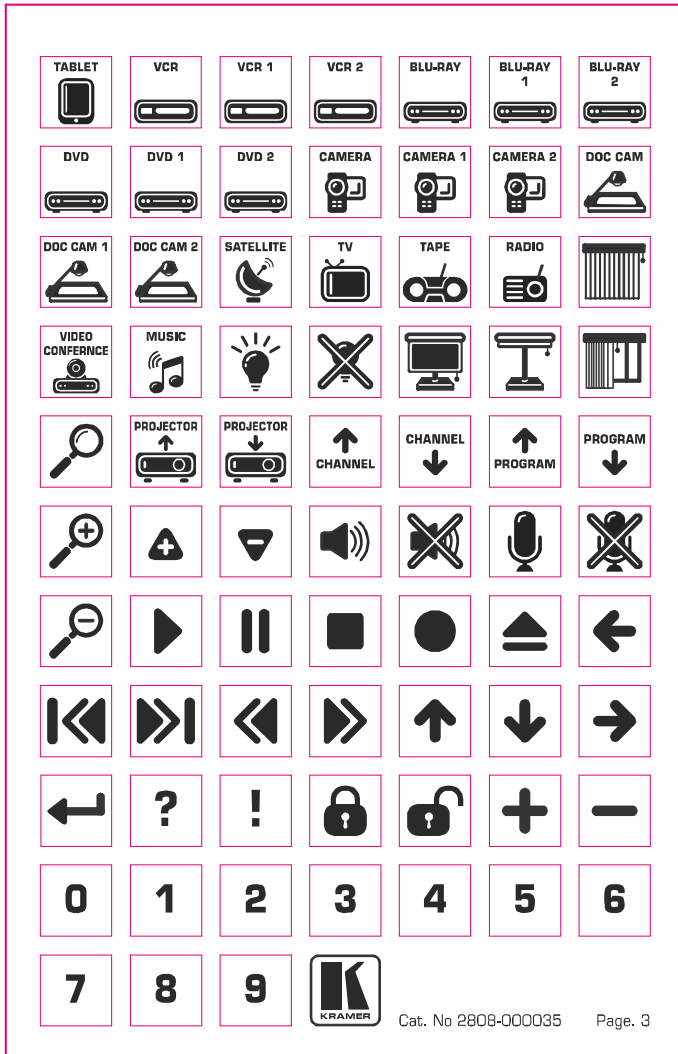
Figure 13: Sample Button Label Sheet

7   Technical Specifications

PORTS:	2 RS-232, 1 RS-485, 1 GPI/O and 1 K-NET on terminal block connectors; 1 Ethernet on an RJ-45 connector; 1 USB for programming
OUTPUTS:	2 IR, 2 relays (36V AC or DC, 2A, 60VAC maximum on non-inductive load)
DEFAULT IP SETTINGS:	IP number – 192.168.1.39; Mask – 255.255.0.0; Gateway – 0.0.0.0
POWER CONSUMPTION:	12V DC, 1.25A
OPERATING TEMPERATURE:	0° to +40°C (32° to 104°F)
STORAGE TEMPERATURE:	-40° to +70°C (-40° to 158°F)
HUMIDITY:	10% to 90%, RHL non-condensing
DIMENSIONS:	7.9cm x 2.8cm x 12.4cm (3.1" x 1.1" x 4.9") W, D, H (with wall plate)
WEIGHT:	0.245kg (0.54lbs) approx.
ACCESSORIES:	Power supply, button caps, button labels
OPTIONS	Merten-compatible 2 gang on-wall box (housing and frame, P/N: OWB-2G/M)
Specifications are subject to change without notice at http://www.kramerelectronics.com	

LIMITED WARRANTY

The warranty obligations of Kramer Electronics for this product are limited to the terms set forth below:

What is Covered

This limited warranty covers defects in materials and workmanship in this product.

What is Not Covered

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Kramer Electronics to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover cartons, equipment enclosures, cables or accessories used in conjunction with this product.

Without limiting any other exclusion herein, Kramer Electronics does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

How Long Does this Coverage Last

Seven years as of this printing; please check our Web site for the most current and accurate warranty information.

Who is Covered

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

What Kramer Electronics will do

Kramer Electronics will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

1. Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition. Kramer Electronics will also pay the shipping costs necessary to return this product once the repair is complete.

2. Replace this product with a direct replacement or with a similar product deemed by Kramer Electronics to perform substantially the same function as the original product.

3. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

What Kramer Electronics will not do Under This Limited Warranty

If this product is returned to Kramer Electronics or the authorized dealer from which it was purchased or any other party authorized to repair Kramer Electronics products, this product must be insured during shipment, with the insurance and shipping charges prepaid by you. If this product is returned uninsured, you assume all risks of loss or damage during shipment. Kramer Electronics will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Kramer Electronics will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

How to Obtain a Remedy under this Limited Warranty

To obtain a remedy under this limited warranty, you must contact either the authorized Kramer Electronics reseller from whom you purchased this product or the Kramer Electronics office nearest you. For a list of authorized Kramer Electronics resellers and/or Kramer Electronics authorized service providers, please visit our web site at www.kramerelectronics.com or contact the Kramer Electronics office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required. You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

If it is decided that this product should be returned directly to Kramer Electronics, this product should be properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization number will be refused.

Limitation on Liability

THE MAXIMUM LIABILITY OF KRAMER ELECTRONICS UNDER THIS LIMITED WARRANTY SHALL NOT EXCEED THE ACTUAL PURCHASE PRICE PAID FOR THE PRODUCT. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, OR UNDER ANY OTHER LEGAL THEORY. Some countries, districts or states do not allow the exclusion or limitation of relief, special, incidental, consequential or indirect damages, or the limitation of liability to specified amounts, so the above limitations or exclusions may not apply to you.

Exclusive Remedy

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IF ANY PRODUCT TO WHICH THIS LIMITED WARRANTY APPLIES IS A "CONSUMER PRODUCT" UNDER THE MAGNUSON-MOSS WARRANTY ACT (15 U.S.C.A. §2301, ET SEQ.) OR OTHER APPICABLE LAW, THE FOREGOING DISCLAIMER OF IMPLIED WARRANTIES SHALL NOT APPLY TO YOU, AND ALL IMPLIED WARRANTIES ON THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR THE PARTICULAR PURPOSE, SHALL APPLY AS PROVIDED UNDER APPLICABLE LAW.

Other Conditions

This limited warranty gives you specific legal rights, and you may have other rights which vary from country to country or state to state.

This limited warranty is void if (i) the label bearing the serial number of this product has been removed or defaced, (ii) the product is not distributed by Kramer Electronics or (iii) this product is not purchased from an authorized Kramer Electronics reseller. If you are unsure whether a reseller is an authorized Kramer Electronics reseller, please visit our Web site at www.kramerelectronics.com or contact a Kramer Electronics office from the list at the end of this document.

Your rights under this limited warranty are not diminished if you do not complete and return the product registration form or complete and submit the online product registration form. Kramer Electronics thanks you for purchasing a Kramer Electronics product. We hope it will give you years of satisfaction.

For the latest information on our products and a list of Kramer distributors, visit our Web site where updates to this user manual may be found.

We welcome your questions, comments, and feedback.
Web site: www.kramerelectronics.com
E-mail: info@kramerel.com

CE

! SAFETY WARNING
Disconnect the unit from the power supply before opening and servicing

P/N: 2900- 300329   Rev: 3