Kramer Electronics, Ltd.

RC Configuration and Installation Guide

Revision 8

Intended for Kramer Technical Personnel or external System Integrators. To check that you have the latest version, go to the DOWNLOADS section of our Web site at: http://www.kramerelectronics.com/support/downloads.asp

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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.

Congratulations on purchasing your Kramer RC device, which is ideal for controlling A/V equipment and media room items.

The software package includes the following items:

- The program on a CD
- This RC Configuration and Installation Guide on CD[2]

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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 the Internet at this URL: http://www.kramerelectronics.com

1.1 Quick Start

To configure your Room Controller, follow these basic steps (see section 4):

Step 1: Install the software

VERIFY THAT THE ".NET FRAMEWORK" REVISION 2.0 SOFTWARE IS INSTALLED

1. Download the software from our Web site at: http://www.kramerelectronics.com
2. Extract the ZIP file
3. Install the software application

Step 2: Download and install the Drivers

THE ROOM CONTROLLER CAN ONLY IDENTIFY A PERIPHERAL DEVICE (FOR EXAMPLE, A KRAMER SWITCHER OR SCALER, A DVD AND A PROJECTOR)

1. Check, according to your list of peripheral devices, that you have all the required drivers
2. Download the required drivers to a folder (for example, C:\Media-Room-1\Peripheral Device Drivers)

Step 3: Create the Driver commands

YOU CAN WRITE TWO TYPES OF COMMANDS TO A CONNECTED PERIPHERAL DEVICE: SERIAL COMMANDS AND IR COMMANDS

1. In the Driver Manager window, select the required driver from the Vendor, Device and Revision areas
2. Create a command via the Serial Command area or the IR Commands area

TO CREATE IR COMMANDS FOR A SELECTED DEVICE, USE THE IR LEARNER FEATURE AND THEN READ THE LEARNT IR COMMAND TO YOUR PC VIA THE DRIVER MANAGER WINDOW

Step 4: Port mapping

PORT MAPPING LETS YOU WRITE A DESCRIPTION AND ASSIGN A DEFAULT DRIVER FOR EACH PORT
THE PORTS LISTED ARE SPECIFIC TO THE SELECTED ROOM CONTROLLER

Click the "Port Manager..." Item in the Configuration menu and define as required
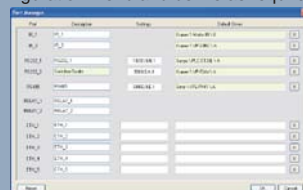
Step 5: Button Configuration

USE THE RC-SV CONFIGURATION MAIN WINDOW TO CONFIGURE THE ROOM CONTROLLER BUTTONS
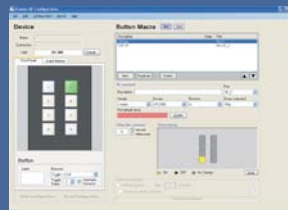
2 Overview

The Kramer RC devices are a series of highly sophisticated machines, used for controlling A/V equipment and room items in media rooms. An RC system includes A/V equipment (for example, DVD players, audio amplifiers and switchers) and media room items, such as blinds, lights and so on. Before operating an RC system[1], you have to:

- Carefully plan the installation layout
- Install the drivers of the peripheral devices
- Configure your RC device
- Assign the macros to the RC device
- Install the RC system

The RC Configuration Software V1.26.0.38 is used to configure the following room controller families (**RC-6**, **RC-8**, **RC-7** and **VP-23RC**)[2]:

RC-6IR	RC-6IRE	RC-8IR	RC-8IRE		
RC-6IRP	RC-8IRP				
RC-8RK	RC-8RKL				
RC-7B	RC-7BE	RC-7RL	RC-7RLE	RC-7LC	RC-7LCE
VP-23RC					

Since each Room Controller includes different ports[3], you will find that not all the available commands apply to your Room Controller.

Table 1 defines the sections that apply to each Room Controller:

Table 1: Room Controller Commands Available

Machine	The Commands [Section Number]						
	IR [10.2.3]	RS-232 [10.2.2]	RS-485 [10.2.2]	RELAY [10.2.1]	ETH [10.2.2]	SELF [10.2.4]	VP-23RC (internal) [10.2.2]
RC-8IR, RC-8IRE	Yes	Yes	Yes	Yes	Yes	Yes	
RC-6IR, RC-6IRE	Yes	Yes	Yes	Yes	Yes	Yes	
RC-6IRP, RC-8IRP	Yes	Yes	Yes	Yes	Yes	Yes	
RC-8RK, RC-8RKL	Yes	Yes	Yes	Yes	Yes	Yes	
RC-7B, RC-7BE	Yes	Yes	Yes			Yes	
RC-7LC, RC-7LCE	Yes	Yes	Yes	Yes		Yes	
RC-7RL, RC-7RLE	Yes	Yes	Yes	Yes		Yes	
VP-23RC	Yes	Yes		Yes	Yes	Yes	Yes

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1 An RC system includes the RC device and the peripheral devices it controls

2 For each machine, the installation process is described in the separate user manual. you can download the up-to-date Kramer user manuals and guides from the Internet at this URL: http://www.kramerelectronics.com

3 For example, RC-7B does not include relays or ETH connectors, so these commands are not available for this machine

2.1 Requirements for Using the Kramer RC Configuration

This section describes the system requirements for the Kramer RC Configuration software.

2.1.1 System Requirements

The minimum system requirements include:

- A 400MHz processor
- 128MB RAM
- 300MB free hard disk space
- Microsoft Internet Explorer 6.0
- A network connection for configuring devices

2.1.2 The Required Operating System

Microsoft® Windows XP® is the recommended operating system[1].

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1 Windows NT does not support .NET 2.0.

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3 Initial Planning

Carefully plan your RC system layout to ensure a smooth and easy configuration, and installation.

To do this:

- Define your requirements
- List the peripheral devices and room items that will be included in the system
- Plan the location of each device
- Plan the function of each device

Make a detailed list of the functions and commands required of the system devices, as illustrated in the partial list in Figure 1

Media room components list		
Device	Functions	Commands Used
Blinds (relay)	Shut out External lighting	Open Close
Projector (RS-232)	Show presentation	Turn on Turn off Change Inputs Focus
VCR (IR-1)	Play Video	Play Stop Pause Rewind

Figure 1: Media Room Components List

Once this list is finalized and approved, you can carry on with the configuration and installation process

Note that the RC configuration and installation processes are independent of each other. You do not have to connect the RC device before starting the configuration

4 The RC Configuration Software

The RC can be configured via the Kramer RC Configuration software, an easy-to-use software that lets you set a sequence of RC commands (the macro) and assign them to any of the buttons on the RC device.

The Kramer RC Configuration software lets you:

- Create your own device drivers manually or via the IR learner feature
- Modify or delete commands
- Change the order of commands within the macro
- Set delay times between commands in a macro
- Save multiple sets of RC device configurations
- Read macros from the RC device

> The RC buttons can be configured prior to installation

The following sections describe how to:

- Install the software (see section 4.1)
- Download the device drivers via the Driver Manager window (see section 5)
- Create a driver command (see section 7)
- Map the ports (see section 8)
- Create a macro to the device (see section 10)

4.1 Installing the Software

Prior to using the Kramer RC Configuration software, make sure that the ".NET Framework", Revision 2.0 software is installed on your PC. If it is not, you need to install it:

- If you have a fast Internet connection, this software is automatically installed during the installation of the Kramer RC Configuration software
- If you do not have a fast Internet connection, insert the CD-ROM into the CD-ROM drive, double click the *dotnetfx.exe*[1] file and follow the on-screen instructions[2]

Before getting started with your Kramer RC Configuration, you must download the software and then install it.

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1 File names are liable to change

2 Installation may take about 15 minutes

You can download the Configuration program[1] from the Internet. To do so:

1. Go to our Web site at http://www.kramerelectronics.com and download the file: "*Kramer RC Config.zip*" from the DOWNLOADS section.

2. Extract the file "*Kramer RC Config.zip*" package, which includes the Kramer RC configuration application setup and the Kramer device drivers[2], to a folder (for example, C:\Program Files\Kramer RC Configuration).

3. Install the Kramer RC Configuration application.
    When running Setup, you are prompted to set the working directory (see Figure 2):
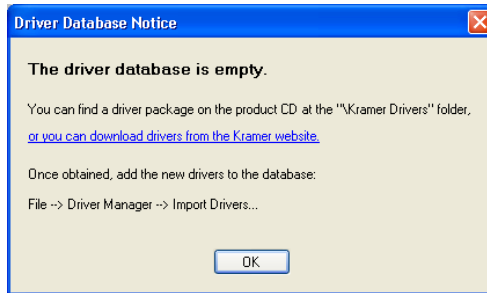
Figure 2: Driver Data Base Notice

4. Click OK.
    The following window appears (see Figure 3):
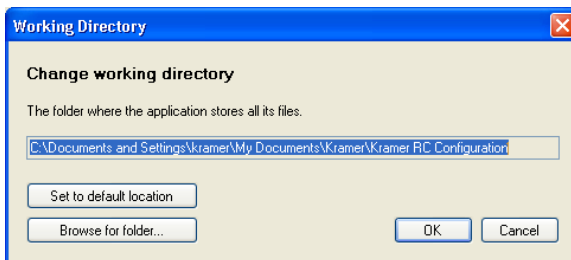
Figure 3: Setting a Working Directory

5. Select or create a new working directory[3].

6. Continue to run the setup according to the installation instructions.

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1 File names are liable to change from time to time

2 Mostly for matrix switchers and switchers

3 The working directory will keep the information that is essential for operating the software. This information will remain unchanged while upgrading the software

5 Downloading and Installing the Drivers via the Driver Manager Window

The RC system peripheral devices have device drivers that let them communicate with computers. The device driver needs to be installed so that the computer can recognize it and control it. The Kramer RC Configuration software uses driver commands to control these peripheral devices.

5.1 Download the Drivers

Check, according to the peripheral devices list (see Figure 1), that you have all the required drivers:

- Kramer machines have drivers that are provided within the package
- Other peripheral device drivers are either provided within the package, provided by the manufacturer or can be downloaded from the Internet

Download the required drivers, according to the instructions provided for each driver, to a folder (for example, C:\Media-Room-1\Peripheral Device Drivers).

5.2 Install the Drivers

The peripheral device drivers are installed via the Driver Manager window, defined in Figure 7 and Table 2:

To access the Driver Manager window:

1. Open the Kramer RC Configuration program.
2. In the File menu, click Driver Manager…[1].
   The Driver Manager window appears (see Figure 4).

Once the Driver Manager window is open, you can:

- Import one or more drivers (Import Drivers…, see Figure 5), or export an existing driver (Export Driver…, see Figure 6)
- Add a new device driver
- Rename or delete devices, revisions and commands, as defined in Table 2
- Set the driver revision date
- Write new driver commands

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1 If you are opening this program for the first time, the Driver Manager window appears automatically

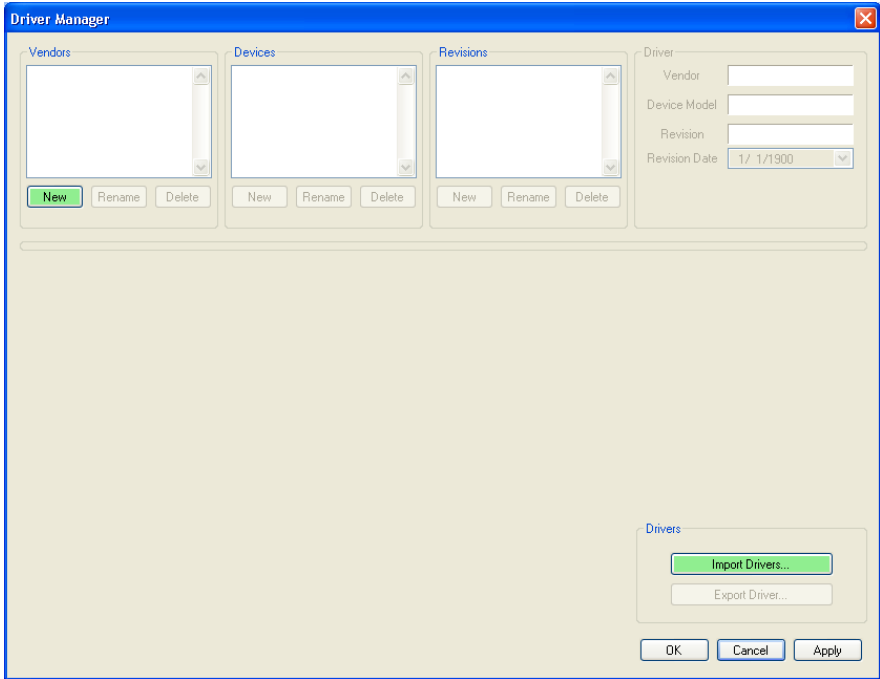**KRAMER: SIMPLE CREATIVE TECHNOLOGY**

Figure 4: The Driver Manager Window Prior to Installing the Drivers
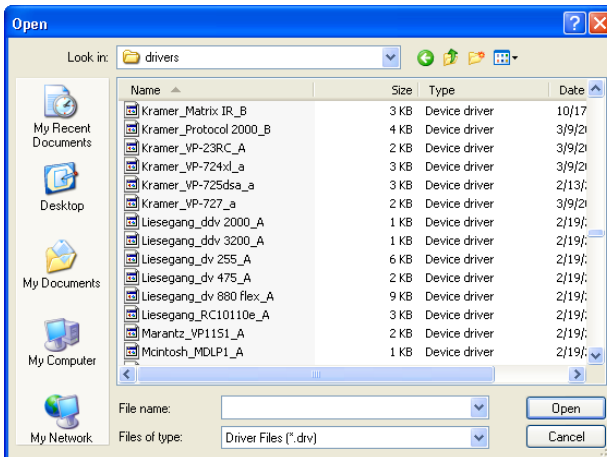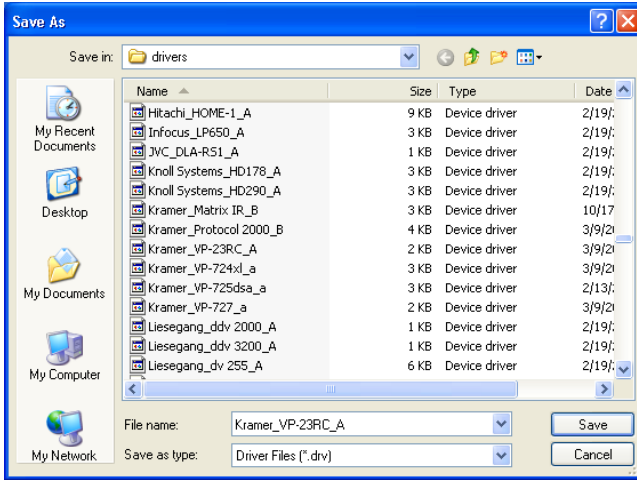

Figure 5: Importing a Kramer Driver File

Figure 6: Exporting a Kramer Driver File

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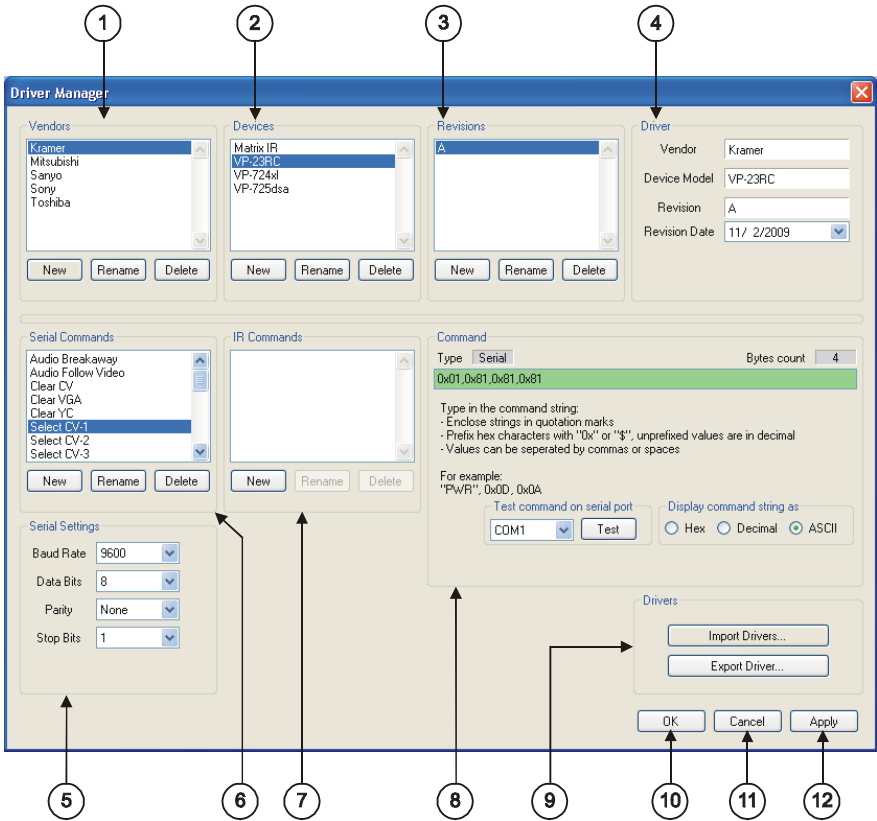
Figure 7: The Driver Manager Window

Table 2: Driver Manager Window Features

#	Feature	Function
1	*Vendors* Area	Lists the downloaded vendors New: press to enter a new vendor name manually Rename: press to rename the vendor name Delete: erases the selected vendor
2	*Devices* Area	Lists the names of devices of a selected vendor (in the Vendors area) New: press to enter a new device name manually Rename: press to rename the device name Delete: press to erase the selected device
3	*Revisions* Area	Lists the revision of a selected device New: press to enter a new revision manually Rename: press to rename the revision number Delete: press to erase the selected revision
4	*Driver* Area	Displays the selected *Vendor*, *Device Model* and *Revision*. Lets you set the *Revision Date*
5	*Serial Settings* Area	Select the serial settings for the device: the *Baud Rate*, the *Data Bits*, the *Parity* and the *Stop Bits*
6	*Serial Commands* Area	Lists the serial command names for a specific device New: press to enter a new command name manually Rename: press to rename the Command editing tab Delete: press to erase the selected command
7	*IR Commands* Area	Lists the IR command names for a specific device New: press to enter a new command name manually Rename: press to rename the Command editing tab Delete: erases the selected command
8	*Command* Area	Displays the command type or lets you manually write a new command[1]
9	*Drivers* Area	Import Drivers…: press to import one or more driver files Export Driver…: press to export a driver file
10	*OK* Button	Apply changes and close window
11	*Cancel* Button	Close window without applying changes
12	*Apply* Button	Apply changes, but do not close window

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1 See section 7.1

6 Connecting to the RC Device

Table 3 defines the connecting ports available for each machine and the connecting methods:

Table 3: Machine Connection Method

The Machine Name	The Connection Port	The Connection Method
RC-8IR, RC-8IRE	Ethernet, RS-232	Discover (see section 6.1)
RC-6IR, RC-6IRE		Connect (See section 6.2)
RC-6IRP, RC-8IRP		
RC-8RK, RC-8RKL		
VP-23RC		
RC-7B, RC-7BE	3.5mm Serial configuration Jack	Connect (See section 6.2)
RC-7LC, RC-7LCE		
RC-7RL, RC-7RLE		

6.1 The "Discover" Connection Method

To connect the RC device to your PC via the Discover connection method, do the following:

1. Connect the RC device to the PC via the Ethernet port, as described in section 10.3.

2. Click the appropriate shortcut in the Start menu's Programs folder.
   The Kramer RC Configuration main window opens.

3. Open the Device menu and click Discover[1].
   The Device Selection window opens.

4. The Device Selection dialog box lists the devices found, and their IP number (see Figure 8). Select the device and then click OK.

Figure 8: Connecting a Device to your PC – Device Selection Dialog Box

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1 To automatically search for devices

6.2   The "Connect" Connection Method

To connect the RC device to your PC via the Connect connection method, do the following:

1. Connect the RC device to the PC via either of the following:
    - Ethernet port (see section 10.3)
    - Serial CONFIG serial configuration jack[1]

2. Select the connection method to:
    - Ethernet (Figure 9), and enter the IP address
    - Serial Port (Figure 10), and enter the select the PC serial port to which the RC machine is connected
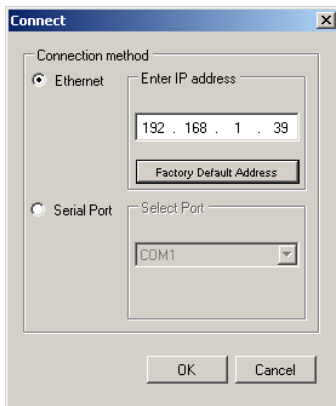
Figure 9: The Connection Method – via the Ethernet	*Figure 10: The Connection Method – via the Serial Port*
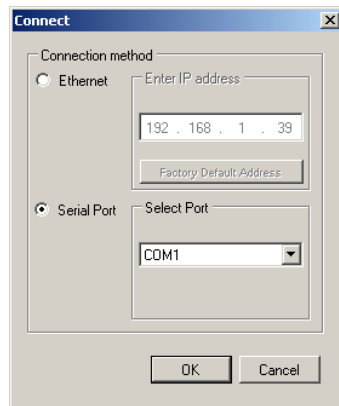
3. Click OK.

---

1 Via the CONFIG cable (C-A35M/D9F-6) from the CONFIG port to the serial port on a PC for devices that do not have an Ethernet connector (for example, the RC-7BE)

6.3 Changing the Network Settings

If the RC device has an Ethernet port you can change the settings according to your network requirements.

To change the settings according to your network requirements:

1. Open the Device menu and click Properties.
   The Device Properties dialog box opens.

2. Click the Set button to apply the settings (see Figure 11).
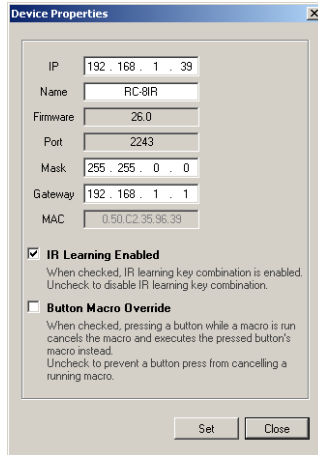
Figure 11: Kramer RC Configuration – Set Device Details Dialog Box

7 Creating a Driver Command

You can write new driver commands via the Driver Manager window. You can write two types of commands for a device (for example, a DVD player, projector, A/V receiver, and so on):

- Serial commands (see section 7.1)
- IR commands (see section 7.2)

7.1 Creating a Serial Command

To write the serial commands for a selected device:

1. Click the New button in the Serial Commands area.
   The New Serial Command window appears.

2. Type the new command name:
   A Serial command type area appears, as illustrated in Figure 13.
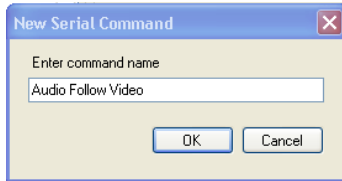
Figure 12: New Serial Command Window

3. Type in the command string in the command area.

You can test the serial commands from the driver manager, using a local serial port.

Figure 13: Writing the Serial Commands

The serial commands created can be sent via RS-232, RS-485 and Ethernet ports.

When writing a serial command:

- Enclose the strings in quotation marks (for example, "MUTE OFF")

- Prefix the hex characters with 0x or "$" (for example, 0x0D), unprefixed values are in decimal (for example, 13)

- String and byte values should be separated by commas or spaces (for example, "BRIGHT DEC",0x0D)

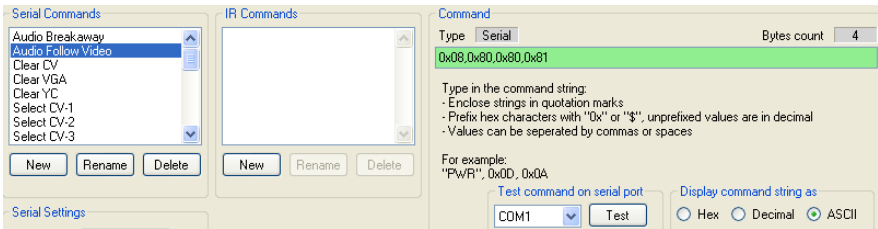- If a protocol command states Carriage Return (<CR>) and/or Line Feed (<LF>) following the command line, add 0x0D or 0x0A, respectively, outside the command quotation marks, separated by a comma.
  For example, "PWR" <CR> <LF> should appear as "PWR",0x0D,0x0A

7.2   Creating an IR Command

In addition to installing driver IR commands, you can write new IR commands via the IR Learner feature. To create an IR command:

- Write the required IR command to the RC device via its IR Learner function (see section 7.2.1)
- Connect the device to your PC (see section 6)
- Read the IR commands from the RC device to the PC

7.2.1   Write the IR Commands via the IR Learner

This procedure does not require that the RC device be connected to your PC, although it can be.

To learn an IR command, do the following:

1. Connect the IR device to the power source.

2. Blot out or lower[1] the room lighting as much as you can.

3. Simultaneously press and hold the two buttons (illustrated in Figure 14) for 2 seconds.
   The buttons (as illustrated in Figure 14) on the RC device blink sequentially[2].

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1 Bright lights (especially fluorescent lights) may interfere with the IR learning process

2 The RC-8RK and RC-8RKL behave the same as the RC-8IRE
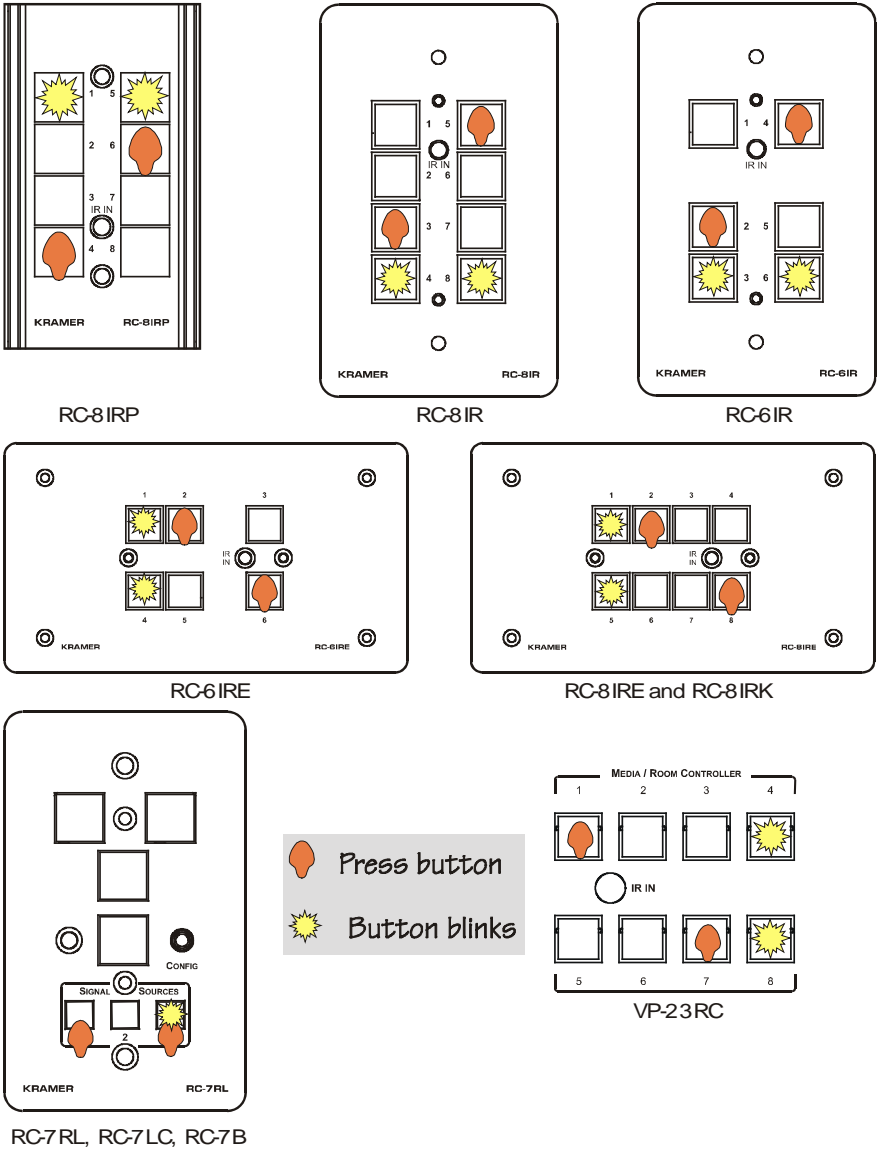
Figure 14: Initializing the IR Learner Procedure

4. Push the button to which you want the IR commands to be read (for example, button 6).
    Button 6 is now ready to accept the command.

5. Point the DVD's remote control transmitter directly at the IR receiver on the RC device.

6. Press the desired command on the remote control (for example, Play).
   Button 6 on the RC device is now learning the IR command.
   If the learning process is successful, button 6 on the RC device blinks several times, pauses, and then all the buttons blink sequentially.
   If the button did not accept the IR command (after about 10 seconds) or if an incorrect command was read (for example, due to some kind of interference), the RC device buttons blink twice simultaneously and then the device exits the IR Learner mode. The last command will not be registered to the button.
   To restart the IR Learner mode, repeat this procedure from step 3 onwards.

> **Note that:**
>
> - The IR learning process overwrites any previous command or macro on the selected button
>
> - Only one IR command can be written at a time, per button
>
> - Learned IR commands can be immediately tested by pressing the buttons they were learned into; an act that will send the same IR command over port IR1 (see note 9 below).

7. You can continue the learning process for each button, until each button has an IR command, and you can also overwrite previously learned buttons.
   In this way, an IR command is transmitted to each button and then can be read in sequence to the driver.

8. To exit the IR learner state, wait several seconds without pressing any button, until the lights cease to blink.

9. If the peripheral device (the DVD player in this example) is connected to the RC device via the IR1 port, you can press the relevant button (button 63 in this example) to verify that the command signal has been transmitted correctly.

7.2.2 Connect the RC Device to your PC

After writing the IR command to button 6, connect the RC device to your PC to read the command data to the Kramer RC configuration program, as described in section 6.

7.2.3   Read the IR Commands from the RC Device to the PC

To read the new IR commands from the RC device, click the New button in the IR commands area to type the new command name. An IR command type area appears, as illustrated in <u>Figure 16</u>.

To write a new IR command to the RC device:

1. Click the New button in the IR commands area to type the new command name. The following window appears:
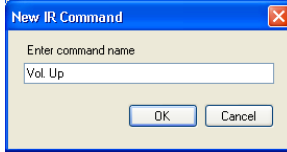
Figure 15: New IR Command Window

Figure 16: Creating the IR Commands
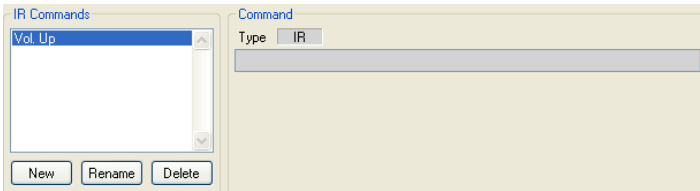
2. The button layout appears under the Command area. The button that includes the IR command appears red.

3. Click the Read IR button.
    After reading the command, an "IR data successfully read" window appears. The IR command is now included in the selected driver file.

<u>Figure 17</u> shows the IR Command area after reading the IR command:
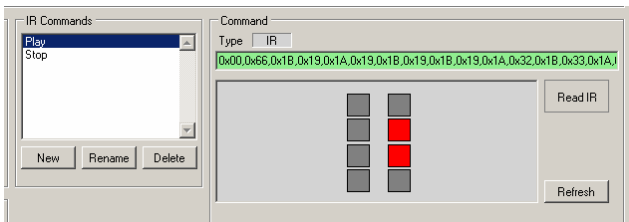

Figure 17: The IR Command Area

8 Port Mapping

The Port Manager window defines the ports on the Room Controller (see section 2) and lets you write a description and assign a default driver for each port. For example, if the Kramer **VP-724xl** Presentation Switcher/Scaler is connected to the **RC-8IR** via the RS-232_2 port, you can change the description next to that port to "Kramer Switcher" and assign the switcher/scaler driver to this port[1].

In this way, the Kramer **VP-724xl** driver will be associated with the Kramer Presentation Switcher/Scaler port[2] when creating a command sequence as illustrated in Figure 18, making it easier to select the commands. The same applies to all the ports in the Port Manager window.

Figure 18: The Kramer VP-724xl in the RC Command Area

For the RS-232 and RS-485 ports on the unit, the Port Manager window also lets you set the baud rate, data bits, parity and stop bits. These definitions will override the definitions written in the driver manager.

To open the Port Manager window, click the "Port Manager…" item in the Configuration menu (see section 11.3). Figure 19 shows the port manager window for an **RC-8IR** unit.

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1 This applies also to any other machine connected to the room controller, such as DVD's projectors and so on

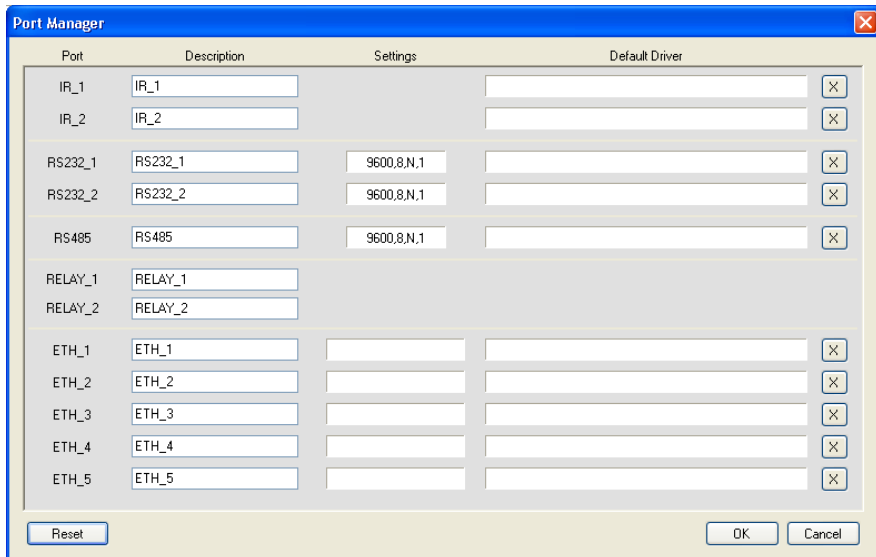2 Although you can assign it with a different Vendor or Device

Figure 19: The Port Manager Window

Table 4: The Port Manager Window Features

The Item	Description
Port	Lists the number of ports available for the selected machine
Description	Type a description of the port
Settings	For serial ports, press the white area to open the serial Settings window and define the baud rate and parity For Ethernet ports, press the white area to open the Ethernet Settings window and define the IP address and TCP port
Default Driver	Press the white area to open the Drivers Tree window and select the default driver for this port
☒	Press to clear the Default Driver data
Reset	Press to reset to default definitions

You can also set or update the port default driver settings in the RC Command area by clicking the Update button, as illustrated in Figure 20:
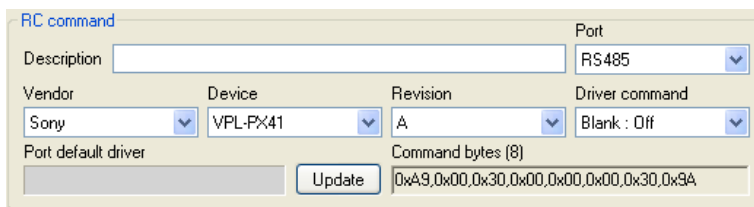
Figure 20: Setting the Default Driver

After clicking the Update button, the Port default driver box displays the new updated port default driver, as illustrated in Figure 21:

Figure 21: Updating the Port Default Driver

The Port Manager window, illustrated in Figure 22, shows the default driver set for the RS485 port, as well as the default driver and description set previously for the RS232_2 port .

Figure 22: Updated Port Manager Window

9 The Kramer RC Configuration Main Window

Once the drivers are imported and the ports are defined, use the Kramer RC Configuration main window to assign a sequence of commands (the macro) for each RC button. Figure 23 illustrates the Kramer RC Configuration main window, and Table 5 defines it:
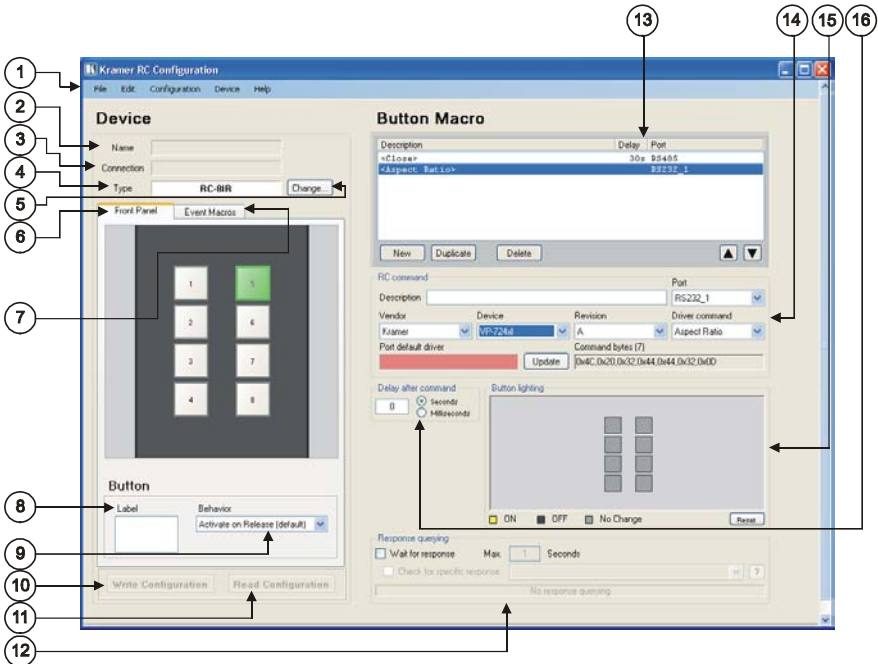
Figure 23: The Kramer RC Configuration Main Window

Table 5: Kramer RC Configuration Window Features

#	Feature	Function
1	Menu Bar	Menus are described in section 11
	Device Area	
2	*Name* Box	Displays the name of the specific device[1]
3	*Connection* Box	Displays the connection properties with the device (IP address and port)[1]
4	*Type* Display Box	Select the device type[2].
5	*Change…* Button	Press the Change… to change the device type (from a list)

---

[1] The name and IP number are initially set by the Device Selection dialog box (see section 11.4)

[2] The device type can be selected only if there is no device connected to the computer. If a device is connected, the device type is selected automatically

#	Feature		Function
6	*Front Panel* Tab		Shows the layout of the RC buttons according to the device type selected, with the labels on the button. Click to Select a button to configure, modify, read, or delete its macro. When the button is: • Blue, it is assigned a macro • Green, it is selected • Gray, it is not assigned a macro
7	*Event Macros* Tab		By default, two event macros are assigned and can have commands added to them: Startup – a series of commands to be executed when the machine is turned on Inactivity timeout – a series of commands to be executed after a set amount of inactivity time (during which no button is pressed) has expired (see Figure 24)
8	*Button* Area[1]	*Label* Text Box	Select a button and type the required button label
9		*Behavior* Drop Down Box	Assign the button response to press and release actions
			Button Definition — **Behavior**
			Activate on Release (default) — The macro is executed upon releasing the button
			Activate while Pressed — The macro is activated and repeated for as long as the button is pressed
			Hold for 2 seconds — Press and hold the button for 2 seconds to execute the macro
			Toggle 1-2-3-4 — Cycling macro behavior: The button can be assigned with up to 4 different macros. Each time it is pressed, the next macro in the set will be activated in a cyclic fashion[2], provided the Automatic Advance box is checked (the default). If the automatic advance button is not checked, the macros will advance only as part of a macro sequence in a different button (see section 10.2.4)
			Toggle Press-Release — Dual macro behavior: One macro is activated when pressing the button and the other is activated when releasing the button
			Disabled — The button is disabled
10	*Write Configuration* Button[3]		Press to write the configuration of all the buttons to the device
11	*Read Configuration* Button[3]		Press to read the configuration of all the buttons from the device
12	*Response querying* Area (shows after checking this option in the configuration menu, see section 11.3)		Enabled for RS-232, RS-485 and Ethernet communication *Wait for response* Check Box – check for the command to wait for a response before continuing with the macro *Max. … Seconds*– type the response wait timeout in seconds (from 0 to 999 seconds) *Check for specific response* Check Box – specify an exact response to wait for (otherwise any response will do) If there is no response or the response doesn't match, the button will flash and the macro will be aborted

1 The Button area appears only after selecting a button in the Front Panel tab

2 The number of toggle states can be determined (from 1 to 4). The selected number of toggle states appears above the Button Macro area (see Figure 25)

3 This button is enabled only when a device is connected to the PC. Otherwise it is disabled

#	Feature	Function
Button Macro Area		
13	Button Macro Display Box	Displays the macro RC commands' Description, Delay and Port in sequence. Select an RC command to duplicate, delete, or change its position in the sequence
	New Command Button	Click to add a new command to the Button Macro display box[1] (see section 10)
	Duplicate Command Button	Duplicate a command in the Button Macro display box
	Delete Command Button	Delete a command from the Button Macro display box
	▲ Button	Move up the selected command
	▼ Button	Move down the selected command
14	*RC command* Area	Includes the following features of the command selected in the Button Macro display box:
	Description Text Box	Optional descriptive text for the command
	Port Drop Down Box	Displays the port associated with the RC command: Select a port when modifying or writing a new RC command. When selecting an IR port, a serial port, or an Ethernet port, the Vendor, Device, Revision and Driver command drop down boxes appear, as well as the Port default driver box and an Update button to update the port default driver. The command bytes box appears for the serial and Ethernet ports. When selecting a relay port, the Relay command drop down box appears.
	Vendor Drop Down Box	Displays the current vendor. Select the vendor when writing a new RC command or modifying a selected command
	Device Drop Down Box	Displays the device driver name. Select the device driver when modifying or writing a new RC command
	Revision Drop Down Box	Displays the device driver revision. Select a revision when modifying or writing a new RC command
	Driver command Drop Down Box	Displays the current driver command. Select a driver command when writing a new command or modifying a selected command
	Relay command Drop Down Box	Select the Relay command: Open – N.C. and Common are connected (default) Close – N.O. and Common are connected
	Port default driver Box and *Update* Button	The port default driver box shows the current port default driver. It can be updated by setting a different driver through the RC command and then clicking the Update button (see section 8)
	Command bytes Box	Displays the command bytes
15	*Button lighting* Area[2]	Select the buttons that will illuminate, turn dark or remain the same following a command (the lighting configuration can be different for each command within the sequence). Toggle between ON (yellow), OFF (black) and No Change (gray). You can also click reset to reset the buttons to No Change (gray)
16	*Delay after command* Text Box[2]	Set a delay time in seconds or milliseconds following the command[3]. The delay between the commands can be set from 0.01 seconds up to 640 seconds. Also, multiple commands with delays can be cascaded to create a longer delay, if required, up to about 2.5 hours (15 delays of 10 minutes each).

---

1 The button macro display box displays <No Description> under Description and None under Port

2 Shows after checking this option in the configuration menu (see section 11.3)
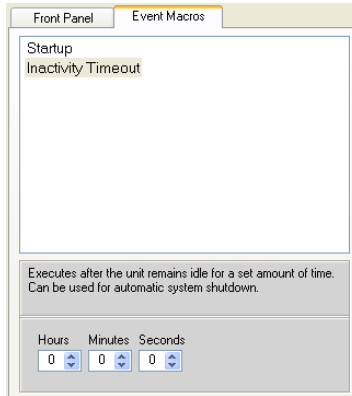
3 In seconds or milliseconds, via check box

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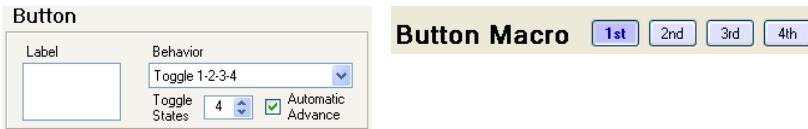
Figure 24: Event Macros Tab

Figure 25: Using the Toggle 1-2-3-4 Behavior

10 Creating a Macro

A macro includes a sequence of commands assigned to a selected button on the RC device

These commands can be derived from:

- Relay Open and Close commands
- The driver files of the peripheral devices that are to be controlled by the RC device
- IR remote control transmitters, via the IR Learner feature[1]

To create a sequence of commands:

1. Press a button in the Front Panel Keypad tab to select the button to which you want to write the macro. The button turns green:

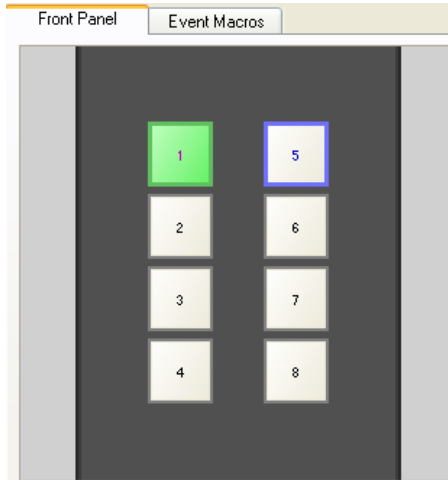1 For RC devices that have the IR learner feature

Figure 26: Selecting a Button to Write a Macro

2. Click the New button in the Button Macro area:
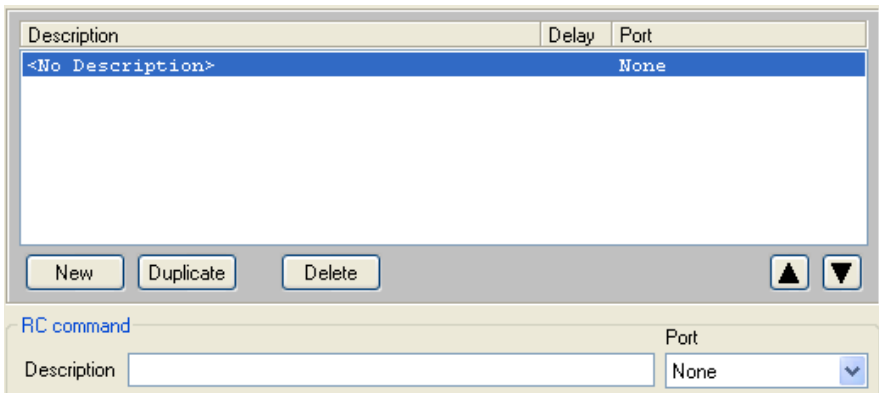
Figure 27: Creating a New Command

3. Select a port[1] from the drop-down box (for example, the RS-232_1 Port). The default driver appears.

4. Select the required Vendor, Device and Revision from the appropriate dropdown box, and then select a command from the Driver command dropdown box and write its description.
The Command bytes (and the number of bytes in the command) appear in a box below the Revision and Driver command dropdown boxes.

---

1 This is an example. The RC command area appears different for different ports, as described in section 10.2

Figure 28: Selecting the Port

> You can update the default driver for this port by clicking the Update button beside the Port default driver box (see section 8)

5. Click the up or down arrow to save the command to the macro.

6. Repeat this process to add new commands. Click Duplicate to duplicate the command and delete a command by clicking the Delete button.

7. If required, set a delay time after the command or set the button lighting:

Figure 29: Setting the Delay Time and Button Lighting

10.1 Labeling the Buttons

For your convenience, you can label the buttons in the Front Panel keypad tab area, as illustrated in the example in Figure 30.
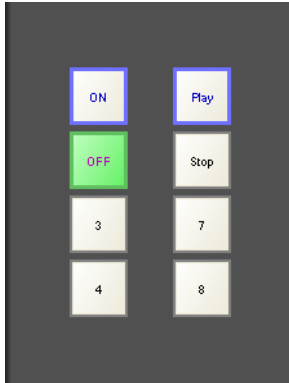
Figure 30: Labeling the RC Buttons

To label a button:

1. Open the Kramer RC Configuration main window.

2. Select a button.

3. Type the button text in the Label area:

Figure 31: Typing the Label

10.2 Adding Commands to the Macro

Each room controller includes a different set of commands, as defined in Table 1. The following sections describe how to write a new command for the different ports.

10.2.1 A Relay Command – Turn Lights ON

To write a relay command on an RC button (for example, turn the lights on), do the following:

1. Open the Kramer RC Configuration main window.

2. Select a button from the RC buttons layout.
   The button turns green.

3. Click the New button (in the Button Macro area) to add a new command to the Button Macro.

4. In the RC command area, write the command description (for example, Lights ON).

5. Select the Port[1] you want to assign (for example, RELAY_1)

6. Select the relay command (for example, Close).

Figure 32 illustrates the RC Command area as it appears after writing the command:
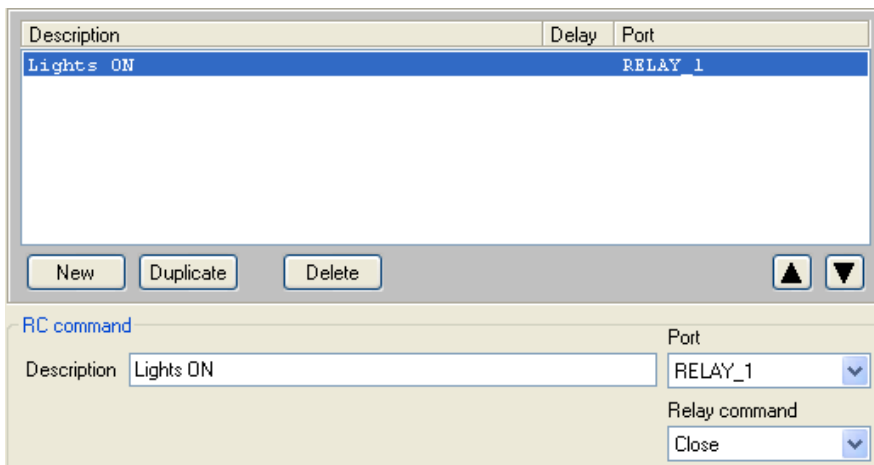
Figure 32: Lights ON RC Command

---

1 When selecting a relay as a port, the Vendor, Device and Revision drop down boxes disappear and the Driver command drop down box is replaced with a Relay Command drop down box

10.2.2   The Driver Command – Switch a DVD Player to the Projector

This section applies to Serial (RS-232, RS-485) and ETH commands, as well as the VP-23RC (internal) command, specific to the **VP-23RC** machine.

To add a Driver command to a macro (for example, to switch the DVD player to the projector[1]), do the following:

1. Open the Kramer RC Configuration main window.

2. Select a button from the RC buttons layout and label it "DVD".

3. Click the New button (in the Macro area).

4. In the RC command area, write the command description (for example, Projector -- Input B (DVD)).

5. Open the Port drop down box and select the relevant port[2] from the list. The default driver associated with this port appears (or you can select a new one and then update the port manager).

6. Select the Driver command (for example, "switch") from the drop down box.

The Command Bytes area shows the command string.

Figure 33 illustrates the Button Macro display box and the RC Command area as it appears after writing the driver command:

---

1 In this example, the projector driver was added manually via the New buttons in the Driver Manager window

2 Once the port is selected, the default driver details appear

Button Macro

Description	Delay	Port
Projector -- Input B(DVD)		RS232_1

[New] [Duplicate] [Delete]   [▲] [▼]

RC command

Description [Projector -- Input B(DVD)]

Port [RS232_1 ▾]

Vendor [Generic type ▾]   Device [Projector ▾]   Revision [A ▾]   Driver command [switch ▾]

Port default driver [Generic type \ Projector \ A] [Update]

Command bytes (1) [0x0D]

Delay after command

[0]   ◉ Seconds   ○ Milliseconds

Button lighting

☐ ON   ◼ OFF   ◻ No Change   [Reset]

Response querying

☑ Wait for response   Max. [1] Seconds

☐ Check for specific response   [▾] [?]

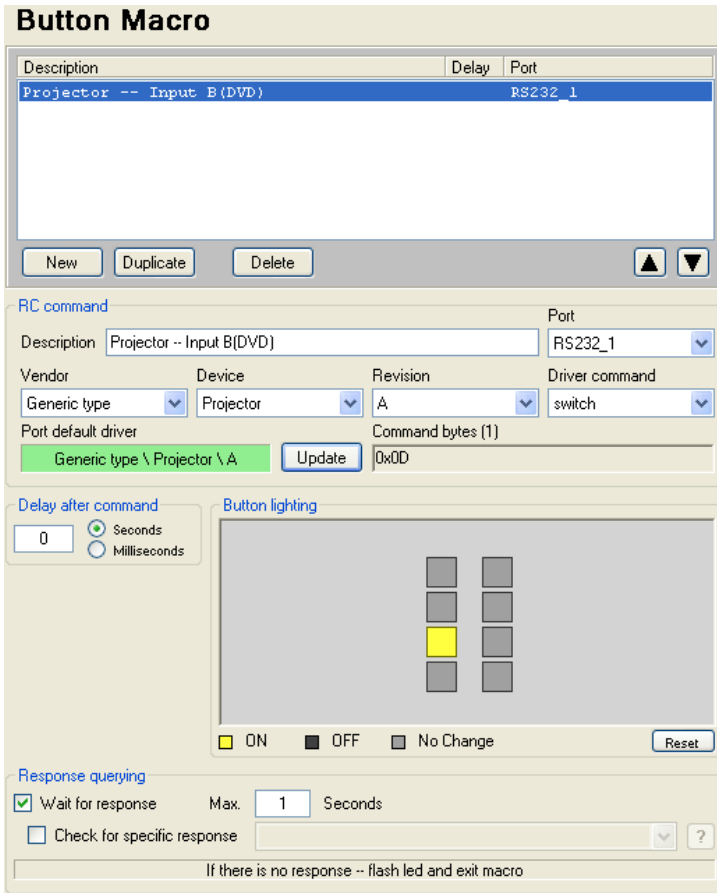If there is no response -- flash led and exit macro

Figure 33: Switch a DVD to the Projector Command

10.2.3 The IR Command –Audio Follows Video in a Matrix Switcher

To add an IR command to the macro, do the following:

1. Open the Kramer RC Configuration window.
2. Select the RC button to which you want to add the command.
3. In the Description text box, type the new command's description (for example, Audio Follows Video).
4. From the Port drop down box, select the desired IR port[1] (for example, IR_1).
5. From the Command drop down box, select the relevant command (for example, AFV).
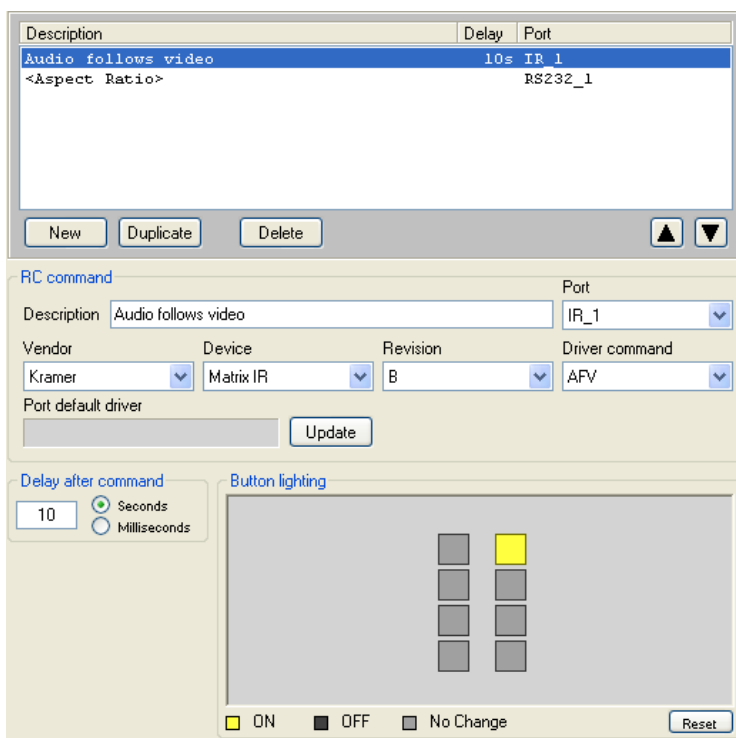
Figure 34 shows the IR command setting:

Figure 34: IR Command Setting

10.2.4 The Self Command

The self command is used to change the toggle state of another button. The example in Figure 35 shows the front panel tab of an **RC-8IR** device:
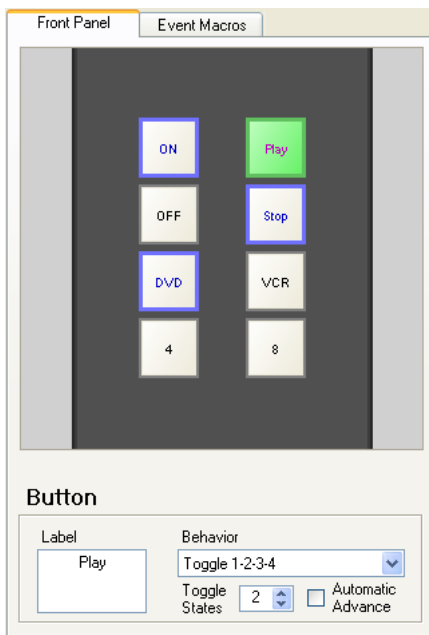
Figure 35: Self Command Front Panel Setting

Button 3 and button 7 are labeled DVD and VCR respectively. Buttons 5 and 6 are labeled Play and Stop respectively, their behavior is set to 2 toggle states and the Automatic Advance box is not checked.

The Play button macros consist of a:

- Toggle 1 macro that includes a Play command for the VCR player
- Toggle 2 macro that includes a Play command for the DVD player

The Stop button macros consist of a:

- Toggle 1 macro that includes a Stop command for the VCR player
- Toggle 2 macro that includes a Stop command for the DVD player

For both the Play and Stop buttons the Automatic Advance check box must NOT be checked.

When creating a macro for the DVD button, the self command can change the toggle state of the Play and Stop button so that the "Play" and "Stop" buttons will transmit an IR signal based on whether the DVD or the VCR are selected.

To add a self command to the macro, do the following:

1. Open the Kramer RC Configuration window.

2. Select the RC button (for example, DVD) to which you want to add the self command.

3. In the Description text box, type the new command's description (for example, DVD Stop).

4. From the Port drop down box, select the Self port.

5. From the Command drop down box, select the Toggle 6.2 "Stop" command. The Inner command includes all the buttons that are in the Toggle state
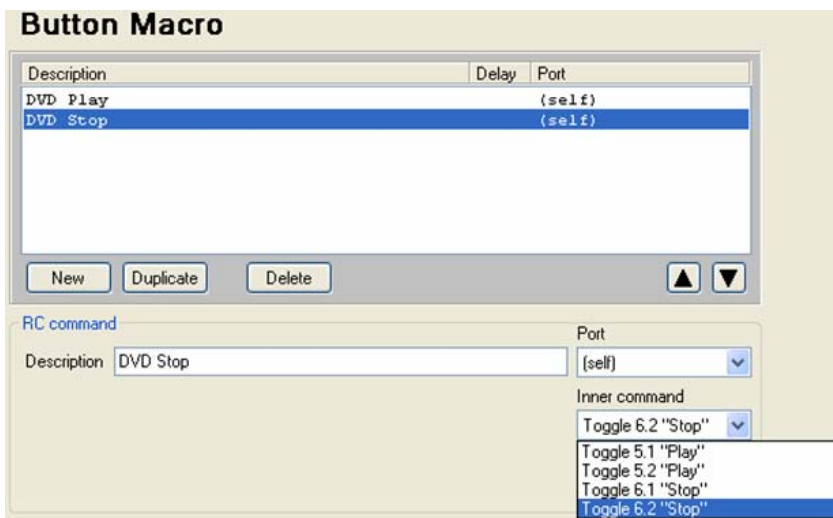
Figure 34 shows the IR command setting:

Figure 36: Self Command Setting

10.3 Connecting via the ETHERNET

You can connect the RC device via the Ethernet, using a crossover cable (see section 10.3.1) for direct connection to the PC or a straight through cable (see section 10.3.2) for connection via a network hub or network router.

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

You can connect the Ethernet port of the RC device 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 RC device (192.168.1.39) during the initial configuration

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

1. Click to open your Network Connections or 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 (see Figure 37).

Figure 37: Local Area Connection Properties Window

5. Select the Internet Protocol (TCP/IP) and click the **Properties** Button (see Figure 37).

6. Select Use the following IP Address, and fill in the details as shown in Figure 38.

7. Click OK.
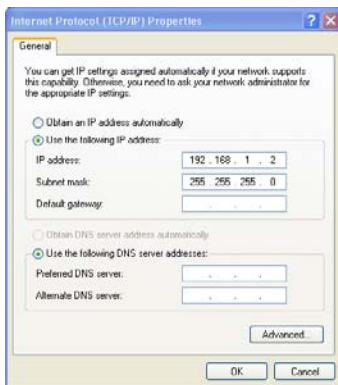
Figure 38: Internet Protocol (TCP/IP) Properties Window

8. Connect the power to your RC controller.
   The front panel buttons on the RC illuminate in order, one after the other.
   If the buttons do not respond, check that the power cable is connected correctly
   at both sides and that the PROGRAM DIP-switch on the rear panel is OFF.

9. Connect the Ethernet crossover cable to your PC and to the RC. Check that the
   LEDs on the Ethernet port blink, indicating an active connection.

If an active connection is not established, disconnect the power and do the
following:

1. Click to open your Network Connections or right-click the My Network Places
   icon on your desktop.

2. Select **Properties**.

3. Right-click Local Area Connection Properties.

4. Select **Properties**.
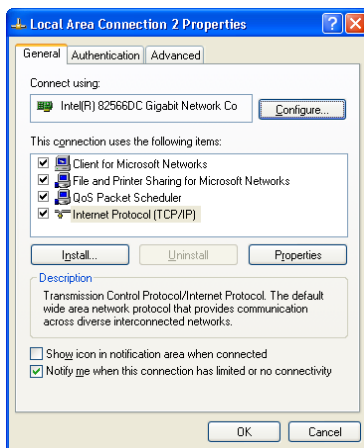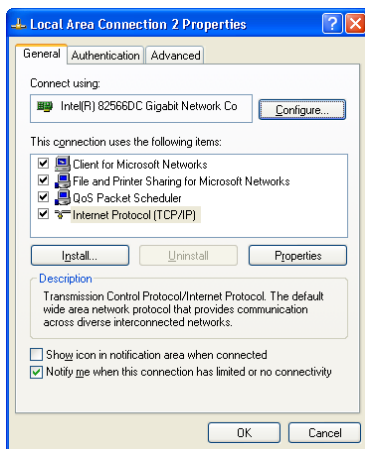   The Local Area Connection Properties window appears (see Figure 37).

Figure 39: Local Area Connection Properties Window

5. Click the Configure… button and select the Advanced tab:

Figure 40: The Advanced Tab

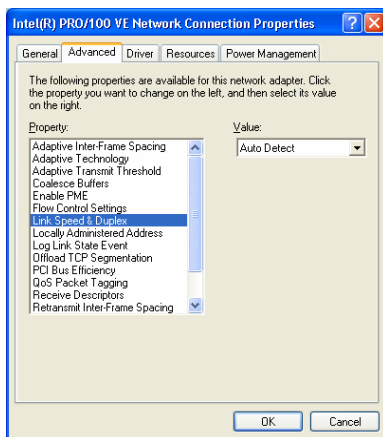6. Under Property, select "Link Speed & Duplex[1]".

7. If the connection speed (appearing under Value) is set to Auto Detect, change it to a manual value of, for example, "100Mb Full Duplex" (or less), as illustrated in Figure 41.
The Network Connection Properties window appears; the available options depend on the installed network adapter

---

1 The name may vary depending on the network adapter
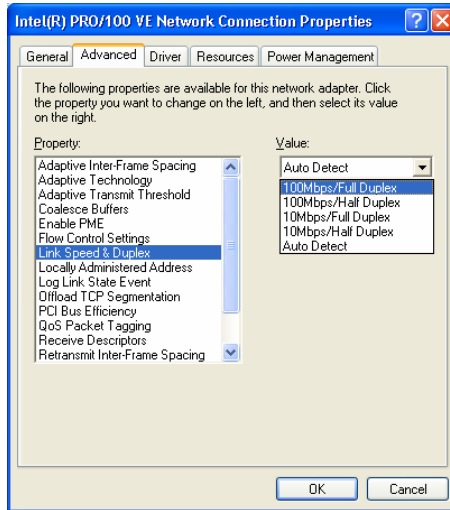
Figure 41: Selecting Manual Link Speed

8. Click OK.

9. Reconnect the power to your RC controller, and check that the buttons now illuminate in order.

10. Connect the Ethernet crossover cable to your PC and to the RC. Check that the LEDs on the Ethernet port blink, indicating an active connection.

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

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

11 The Kramer RC Configuration Menus

This section describes the Kramer RC Configuration menus.

11.1 The File Menu

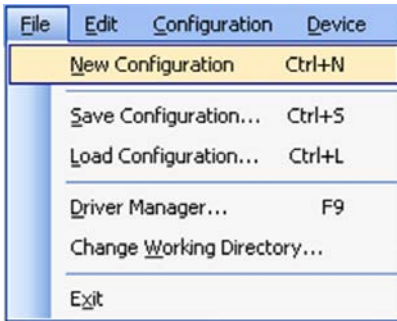Figure 42 illustrates the File menu and Table 6 defines it:

Table 6: File Menu Features

Figure 42: The File Menu

Menu Command	Function
New Configuration	Click to create a new device configuration[1]
Save Configuration…	Click to save the current configuration
Load Configuration…	Click to load a saved configuration
Driver Manager…	Click to open the Driver Manager window (see section 5.2)
Change Working Directory…	Click to change the working directory[2]
Exit	Click to exit the program

11.2 The Edit Menu

Figure 43 illustrates the Edit menu and Table 7 defines it:
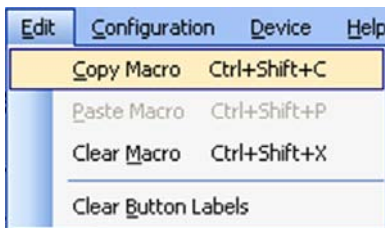
Table 7: Edit Menu Features

Figure 43: The Edit Menu

Menu Command	Function
Copy Macro	Click to copy a button macro command sequence
Paste Macro	Click to paste a button macro command sequence
Clear Macro	Click to clear the Macro-commands sequence box
Clear Button Labels	Click to clear all the button labels

---

1 This will discard the active configuration

2 The working directory can be changed at any time

11.3 The Configuration Menu

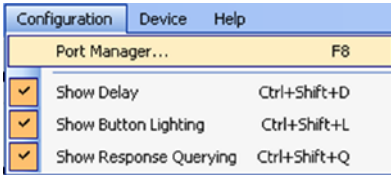[Figure 44](#) illustrates the Configuration menu and [Table 8](#) defines it:

Table 8: Configuration Menu Features

Figure 44: The Configuration Menu

Menu Command	Function
Port Manager	Lists the ports names, description, settings and drivers (see section 8)
Show Delay	Check to show in RC main configuration window
Show Button Lighting	Check to show in RC main configuration window
Show Response Querying	Check to show in RC main configuration window

11.4 The Device Menu

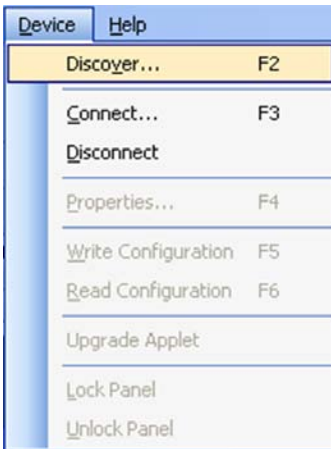[Figure 45](#) illustrates the Device menu and [Table 9](#) defines it:

Table 9: Device Menu Features

Figure 45: The Device Menu

Menu Command	Function
Discover…	Click to open the Device Selection window and search for connected devices (see section 11.4.1)
Connect…	Click to connect via an IP number or serial port
Disconnect	Click to disconnect the device
Properties…[1]	Click to show the device properties dialog
Write Configuration[1]	Writes the configuration to the device
Read Configuration[1]	Reads the configuration from the device
Upgrade Applet[1]	Upload a Java applet
Lock Panel[1]	Click to lock the front panel buttons on the device
Unlock Panel[1]	Click to unlock the front panel buttons of the device

---

1 Active only when a device is connected via the Ethernet

11.4.1 The Discover Command

The Device Selection dialog box detects RC devices via the Ethernet.

To discover any connected devices, do the following:

1. Open the Device menu and click Discover[1].
    The Device Selection window opens (see Figure 46).

2. The Device Selection window lists the device found, and its IP number.
    Select the device and then click OK.

Table 10: Device Selection Dialog Box

Figure 46: Device Selection Dialog box

Feature	Function
MAX. timeout Text Box	Set time out for searching devices[2]
Selected Device Area	Displays Name of the selected RC device, its IP Address, Type and firmware version
Refresh Button	Click to refresh Discover list
Identify Button	Click to identify the connected RC device[3]

If the Discover command failed to detect any connected devices, do the following:

*   Make sure that the subnet mask definition of the device is correct

*   If a Firewall is installed, it is probably blocking the communication.
    To overcome this problem, in the Firewall definitions, open the 2243 and 2244 ports used for the UDP protocol

*   It is recommended to seek assistance from the Network Administrator

---

1 To automatically search for devices

2 You can set the timeout according to your needs. For example, if the connected device cannot be discovered, you may increase the timeout value. If the device can still not be detected, it is probably due to a communication problem

3 The buttons on the device that was detected flash twice

11.5 The Help Menu

Figure 47 illustrates the Help menu and Table 11 defines it:
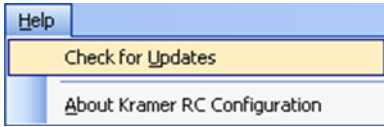
Table 11: Help Menu Features

Figure 47: The Help Menu

Menu Command	Function
Check for updates	Search the Kramer Electronics Web site for software updates
About Kramer RC Configuration	Shows the current software version

12 Assigning the Macros to the RC Device

Once your configuration is ready, you can save it by clicking the save configuration button in the File menu and then connecting the RC device to the PC (see section 6) and writing the configuration to the device.

12.1 Saving a Configuration

To save a configuration, do the following:

1. Click the "Read Configuration" button to download the configuration of the RC device.

2. From the File menu, select Save Configuration….
   The Save As window opens (see Figure 48).
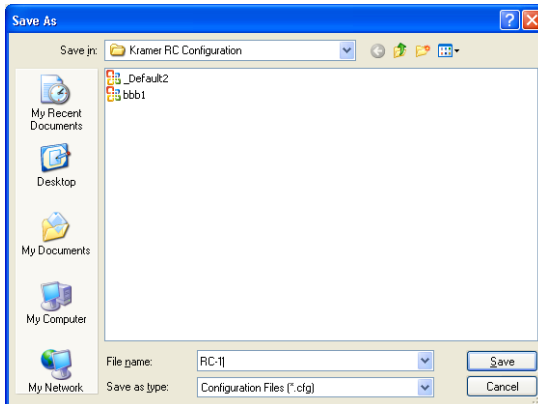
3. Save the configuration.

Figure 48: Saving a Configuration

12.2 Writing a Configuration to the RC Device

1. Connect the RC device to the PC (see section 6):

2. From the File menu, select Load Configuration….

3. Open the RC-1 device configuration file.

4. Click the "Write Configuration" button.
   The configuration is assigned to the RC Device.

13 Installation of the RC System

After connecting the RC system components, connect a 12V DC power supply to the terminal block connector, taking care that **polarity is correct**.

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding 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 and position the RC system away from moisture, excessive sunlight and dust

13.1 Connecting the RS-232 Port

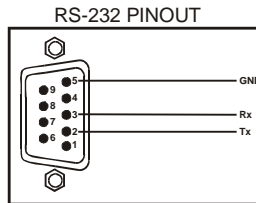The RS-232 9-pin D-sub connector port is defined in Figure 49 and Table 12:

Figure 49: RS-232 PINOUT Connection

Table 12: RS-232 PINOUT Connection

Connect this PIN on the Terminal Block Connector:	To this PIN on the 9-PIN D-SUB Connector
Tx	PIN 2
Rx	PIN 3
GND	PIN 5

Figure 50 shows how to connect the RS-232 terminal block connector port for bidirectional communications.
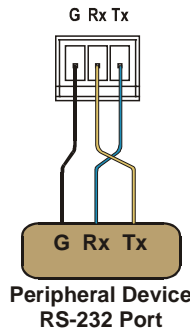

Figure 50: RS-232 Port Wiring

13.2 Connecting the RS-485 Port

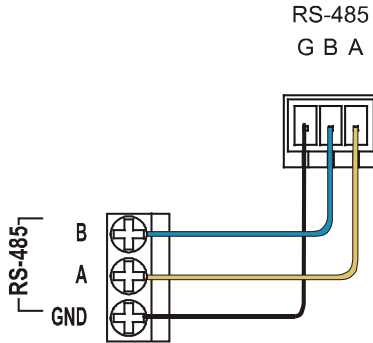Figure 51 shows how to connect the RS-485 terminal block connector

Figure 51: RS-485 Port Wiring

13.3 Connecting the Relays
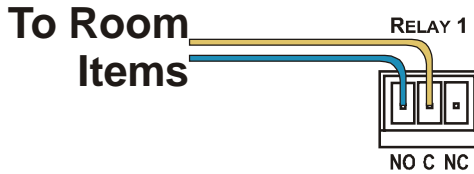
Figure 52 shows how to connect the relays.

Figure 52: Relay Wiring

On each 3-pole terminal block connector, connect either: **C** to **NO,** or **C** to **NC**. Table 13 defines the Relay PINOUT:

Table 13: Relay PINOUT

RELAY PINOUT	
C	Common
NO	Normally Open (relay is open by default and closes for activation)
NC	Normally Closed (relay is closed by default and opens for activation)

13.4 Connecting the IR Emitter

Figure 53 shows how to connect the IR emitter[1]. The white striped side connects to IR OUT, the black side connects to the Ground, and the LED Emitter Shell is affixed to the IR sensor window with the adhesive layer.
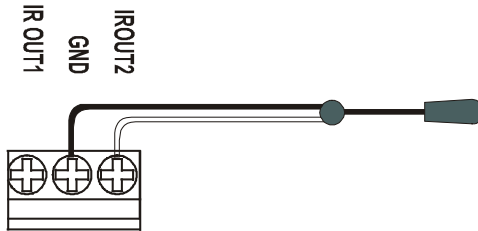

Figure 53: IR Emitter Wiring

NOTE: The dual IR emitter emits a weaker IR signal that may not be detected by some devices

13.5 Inserting the Button Labels

To insert a button label, do the following:

1. Unscrew the faceplate attachment screws, using a screwdriver.
2. Gently remove the transparent button cap with your fingers.
3. Insert the label under the button cap.
4. Replace the button cap with the label onto button base.

14 Ethernet Flash Memory Upgrade

You can find the latest firmware version for the firmware upgrade on our Web site at http://www.kramerelectronics.com.

The Flash memory upgrade instructions for each machine are available in each product's user manual.

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1 The Kramer 3.5mm to IR Emitter Control Cable (C-A35/IRE-10)

**KRAMER: SIMPLE CREATIVE TECHNOLOGY**

14.1 Uploading the Applet[1]

After upgrading a unit's firmware, the Java Applet has to be manually re-uploaded to preserve remote access via a Web-browser. The Java Applet data file can be found on the disc or on our Web site at http://www.kramerelectronics.com.

To upload the applet to the unit via the Kramer RC Configuration:

Follow these steps to install the Web Applet:

1. Connect RC device to your PC through computer networking:

2. Start RC Configuration Software and connect to the RC device (see section 11.4.1).

3. In the Device menu select Upgrade Applet option and browse to the *MC.dat* file included in the package:
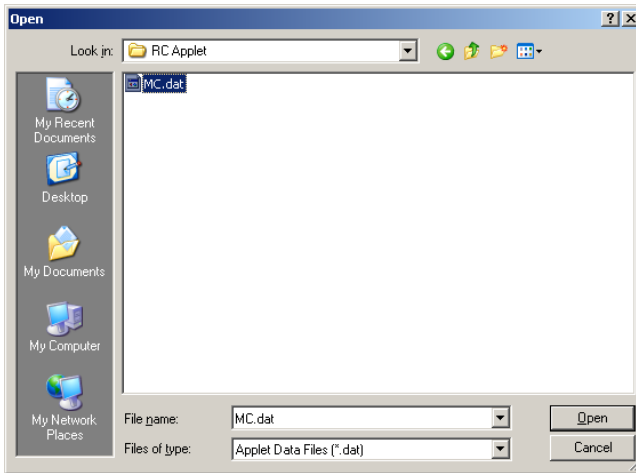
4. Wait until uploading is complete[2] and the success message appears.

5. Click OK.

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1 This section is relevant only for units with an Ethernet connector

2 The product's built-in Java Applet may take a few minutes to load

15 The UDP Protocol

The RC device has a UDP protocol for some basic functions. Send the commands to the IP address of the RC device to UDP port 2243. Please note that all commands consist of bytes in hex format.

Legend:

[ID*] = the ID of the button to activate

[LIGHT*] = light status, [00] = OFF, [01] = ON

Remote button activation – emulates a button push**:**

[00] [01] [00] [04] [**ID***] [00] [00]

Response:

"OK TEST" upon receiving the command

"OK MACRO" when the macro has finished

Get button light status – tells whether the backlight of a button is on or off**:**

[00] [00] [00] [0E] [**ID***] [00] [00]

Response:

[00] [00] [00] [0E] [**ID***] [00] [01] [**LIGHT***]

Set button light status – turns on or off the backlight of a button**:**

[00] [01] [00] [0E] [**ID***] [00] [01] [**LIGHT***]