

RK2

In-Wall Universal Controller



RK2

Operation & Installation Guide

v1.0



FEDERAL COMMUNICATIONS COMMISSION NOTICE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

SAFETY SUGGESTIONS

Read Instructions. Read all safety and operating instructions before operating the unit.

Heat. Keep the unit away from heat sources such as radiators, heat registers, stoves, etc., including amplifiers that produce heat.

Power Sources. Connect the unit only to an RTI approved power supply.

Power Cord Protection. Route power supply cords so that they are not likely to be walked on or pinched by items placed on or against them, paying particular attention to the cords at power receptacles and at the point at which they exit from the unit.

Nonuse Periods. Unplug the power supply from the outlet when the unit is to be left unused for a long period.

Water and Moisture. Do not use the unit near water—for example, near a sink, in a wet basement, near a swimming pool, near an open window, etc.

Object and Liquid Entry. Do not allow objects to fall or liquids to be spilled into the enclosure through openings.

Cleaning. The unit should be cleaned only as recommended in the operating guide.

Servicing. Do not attempt any service beyond that described in the operating guide. Refer all other service needs to qualified service personnel.

Damage Requiring Service. The unit should be serviced by qualified service personnel when:

- The power supply cord or the plug has been damaged.
- Objects have fallen or liquid has been spilled into the unit.
- The unit does not appear to operate normally or exhibits a marked change in performance.

LIMITED WARRANTY

Remote Technologies Incorporated warrants its products for a period of one (1) year from the date of purchase from Remote Technologies Incorporated or an authorized Remote Technologies Incorporated distributor.

This warranty may be enforced by the original purchaser and subsequent owners during the warranty period, so long as the original dated sales receipt or other proof of warranty coverage is presented when warranty service is required.

Except as specified below, this warranty covers all defects in material and workmanship in this product. The following are not covered by the warranty:

Damage resulting from:

1. Accident, misuse, abuse, or neglect.
2. Failure to follow instructions contained in this Guide.
3. Repair or attempted repair by anyone other than Remote Technologies Incorporated.
4. Causes other than product defects, including lack of skill, competence or experience of user.
5. Shipment of this product (claims must be made to carrier).
6. Being altered or which the serial number has been defaced, modified or removed.

Remote Technologies Incorporated is not liable for any damages caused by its products or for its failure of its products to perform, including any lost profits, lost savings, incidental damages, or consequential damages.

Remote Technologies Incorporated is not liable for damages based upon inconvenience, loss of use of the product, loss of time, interrupted operation, commercial loss, any claim made by a third party or made by you for a third party.

Remote Technologies Incorporated's liability for any defective product is limited to repair or replacement of the product, at our option.

If your RK2 needs service, please contact Remote Technologies Incorporated by telephone, fax or e-mail for return information.

Please do not return products to RTI without return authorization.

DISCLAIMER

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Chapter 1. Welcome

Thank you for purchasing the *RK2* in-wall universal controller. The *RK2* is an advanced universal system controller that mounts in a wall. Its design maintains the perfect balance between a customizable touchpanel and frequently used hard buttons. At 2.5 inches the LCD is small enough to blend into a room's interior, yet it provides enough resolution to display a complete graphical interface. The *RK2* interface is fully programmable, making it easy to display custom buttons, text, icons, and animations.

The *RK2* can directly control almost any audio/video component, lighting system, etc. up to 1000 feet away using its infrared output port. Programming is easy and convenient thanks to the Windows® based TheaterTouch Designer™ software.

Because RTI's remote control products are sold only through professional installers/programmers, and never directly to consumers, it is our philosophy to not incorporate programming capability directly into our products. Instead, we are committed to providing our dealers with the hardware and software tools that allow them to create re-usable programming databases and templates in the most efficient and reliable way possible.

The *RK2* can be used as a stand-alone device or as part of an expandable central control system. When used with the available RTI accessory devices, the *RK2* is capable of infrared routing, relay control, power sensing, and RS-232 communications for advanced control.

COMPATIBILITY NOTE

The *RK2* and *TheaterTouch Designer* software are compatible with infrared (IR) commands with carrier frequencies between 15KHz and 460KHz, as well as those commands that do not use a carrier. This covers virtually all of the remotes that exist to date.

UNPACKING AND INSPECTION

After unpacking your new *RK2* universal system controller, save all of the packing materials in case you ever have to ship the unit.

Thoroughly inspect the *RK2* and packing materials for signs of damage. Report any damage to the carrier immediately. Report any equipment malfunctions to Remote Technologies Incorporated or an authorized Remote Technologies Incorporated distributor.

PRODUCT CONTENTS

Contents within the box include the following items:

- One (1) *RK2* universal system controller
- One (1) Cut-out template
- Two (2) Spare retrofit mounting wings
- One (1) Operation & Installation guide

SOFTWARE REQUIREMENTS

The recommended minimum system requirements needed to run the *TheaterTouch Designer* software are as follows:

- Windows 98SE[®], Windows ME[®], Windows 2000[®], Windows XP[®] or later version.
- A free USB port.
- At least 64 Megabytes of RAM.
- At least 100 Megabytes of free disk storage.

Chapter 2. Introduction

FEATURES

The *RK2* provides superior quality and reliability as well as these specific features:

- Stylish low-profile faceplate with integrated attachment latches.
- Integrated mounting wings for easy installation.
- High contrast STN LCD to display custom buttons, text, and graphics.
- Adjustable backlight brightness.
- Light sensor for automatic backlight level.
- Audible Beeper.
- Plasma friendly Infrared receiver for command pass-through.
- IR output port drives up to 1000 feet of wire.
- Two power status input ports.
- Completely customizable, programmable, and upgradeable.
- Optional 'Voltage' and 'Video' power sensing modules.
- Optional interface for RS-232 controlled equipment.
- Non-volatile Flash memory stores your program even when power is lost.
- Easy-to-use Windows based software for programming and customization.
- Field upgradeable firmware.
- USB Programming.

IMPORTANT NOTES

Please read these important notes about the *RK2*:

- The *RK2* should be placed in an area where it is around normal room temperature (between 60°F to 90°F). If the temperature is too hot, the display appears dim. If the temperature is too cold, the display appears dark and may respond slowly.
- Avoid installing the *RK2* in a location where it can come in contact with direct sunlight.
- Do not install the *RK2* directly adjacent to thermostats. Heat generated by the *RK2* may effect temperature measurement.
- Do not use sharp objects on the touchscreen. It is designed to operate with a touch of your finger.
- Do not let the *RK2* get wet. It should not be handled with wet hands or placed in an area where it could get wet.
- Do not subject the *RK2* to smoke, dust, or vibrations. The display may be damaged from excessive shock or vibration.
- Only use the power supply that is specified for the *RK2*. Using the wrong type of power supply may result in damage.
- Do not disassemble the unit. Service of the *RK2* should be performed by authorized personnel only.

CLEANING

Occasional cleaning may be required, depending on use. It is recommended that you create a “Clean” button somewhere on the Home page of the *RK2*. This button should link to a page that does not contain commands or macros that could be inadvertently executed while cleaning the unit. The “Clean” page could contain a text message or graphic of your choosing such as:



To clean your *RK2*, lightly dampen a lint-free cloth with a glass cleaner or mild detergent, and wipe the touchscreen, surrounding display bezel, and buttons.

GETTING STARTED

The RK2 is turned-on by simply applying power to it. RTI provides two power supply solutions which are sold separately:

Single Unit Power Supply

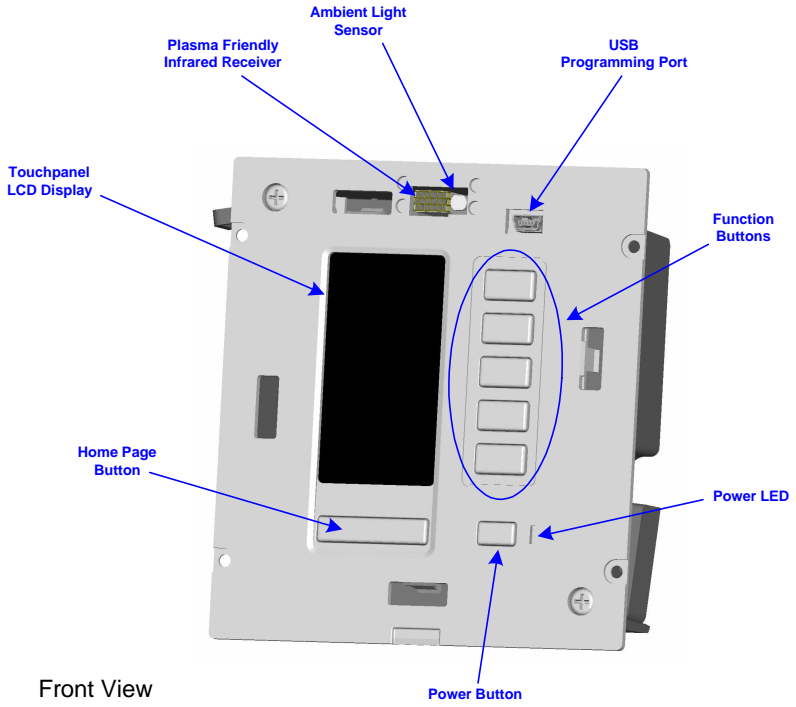
- 16VDC, 1.6Amp
- Provides power for up to eight RK2's
- Part Number: **40-210285-22**

CB-4 Connecting Block

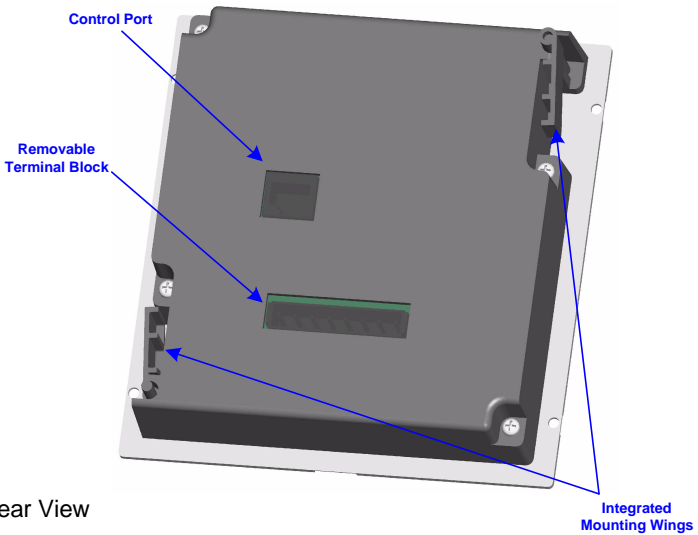
- Includes 16VDC, 4.3Amp power supply
- Provides power for up to twenty RK2's
- Provides a convenient connection hub
- Part Number: **10-210052-11**

After powering down, the *RK2* is activated by touching any area of the touchpanel display. The *RK2* turns-on instantly from its sleep mode.

REMOTE REFERENCE



Front View



Rear View

Chapter 3. Operation

THE TOUCHSCREEN DISPLAY



The *RK2* touchscreen display is organized into a series of pages. Normally each page contains objects (buttons, text, graphics, etc.) that are related in some way. For instance, they may all display information necessary for controlling a particular CD player.

By default, the *RK2* has one *Home* page—all other pages are normally accessed from links on the Home page. In addition, any page can contain buttons with a link to any other page.

Normally the Home page is used to display the names of the A/V sources and other devices being controlled. The *RK2* will support 200 pages including the Home page.

A representation of a programmed Home page is shown below:



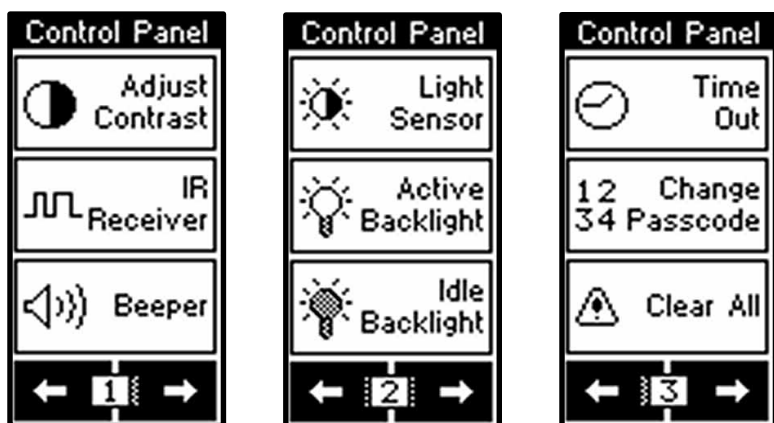
In order to contain more than one screen of buttons and graphics, a page can consist of up to twelve frames. To change frames, press the frame **Left**  or frame **Right**  buttons on the lower touchscreen.

THE CONTROL PANEL PAGE

The Control Panel page can be displayed by pressing and holding the frame number box at the bottom of the touchscreen continuously for **3 seconds**.

You can also access the Control Panel page by assigning a “Control Panel” page link to a button using the *TheaterTouch Designer* software.

The Control Panel consists of the following three frames:

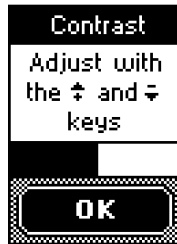


To change frames, press the frame **Left**  or frame **Right**  buttons on the lower touchscreen.

To return to the user program, press the Home button.

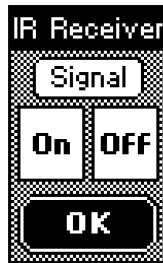
ADJUST CONTRAST

This button displays a window that allows you to adjust the LCD contrast. Press the **Left Arrow** or **Right Arrow** keypad buttons to adjust. Press the OK button in the window to close.



IR RECEIVER

This button displays a window that allows you to enable or disable the front panel IR Receiver. The IR Signal graphic inverts color to indicate IR data and/or noise being detected by the receiver. This helps to determine if you should enable the receiver in a particular environment.



On means the IR Receiver is enabled. This will cause infrared data to be passed through to the signal output pin.

Off means the IR Receiver is disabled.

Press the OK button in the window to close.

BEEPER

This button displays a window that allows you to turn the audible beep on or off. The beeper provides feedback that a button was pressed.



On means the beeper is enabled.

Off means the beeper is disabled.

Press the OK button in the window to close.

LIGHT SENSE

This button displays a window that allows you to enable or disable the front panel ambient light sensor.



On means the Light Sensor is enabled. This will cause the backlight brightness to dim or brighten in response to changes in the ambient room light.

Off means the Light Sensor is disabled.

Press the OK button in the window to close.

ACTIVE BACKLIGHT

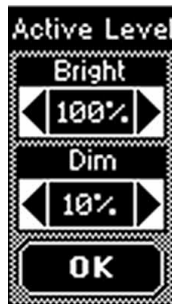
This button displays a window that allows you to adjust the backlight brightness for the RK2 Active mode.

If the light sensor is disabled, there is only one backlight level to adjust. Press the left arrow or right arrow buttons in the window to adjust. Press the OK button in the window when finished.



With the light sensor disabled, the backlight brightness will always stay at the same level. The backlight level can, however, be set differently for the unit's Idle mode.

If the light sensor is enabled, there are two backlight levels to adjust. Press the left arrow or right arrow buttons in the window to adjust. Press the OK button in the window when finished.



With the light sensor enabled, the backlight brightness will automatically change between the two levels, depending upon the ambient lighting conditions. Also, the backlight level can be set differently for the unit's Idle mode.

IDLE BACKLIGHT

This button displays a window that allows you to adjust the backlight brightness for the RK2 Idle mode.

If the light sensor is disabled, there is only one backlight level to adjust. Press the left arrow or right arrow buttons in the window to adjust. Press the OK button in the window when finished.



With the light sensor disabled, the backlight brightness will always stay at the same level. The backlight level can, however, be set differently for the unit's Active mode.

If the light sensor is enabled, there are two backlight levels to adjust. Press the left arrow or right arrow buttons in the window to adjust. Press the OK button in the window when finished.



With the light sensor enabled, the backlight brightness will automatically change between the two levels, depending upon the ambient lighting conditions. Also, the backlight level can be set differently for the unit's Active mode.

TIME OUT

This button displays a window that allows you to adjust the amount of time the unit stays in active mode after the last button press. The time is variable from 1 second to 60 seconds (the default is 10 seconds). Press the arrows to the left or right of the Time Out setting to adjust the time. Press the OK button in the window to close it.

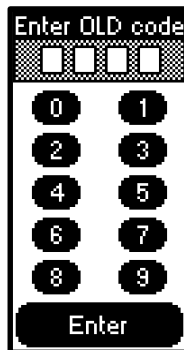


CHANGE PASSCODE

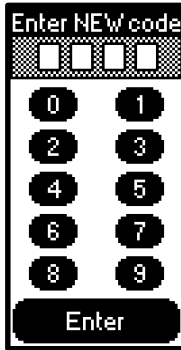
This button displays a window that allows you to set the passcode that is used to limit access to the Clear All function on the Control Panel page, as well as the Button Lockout function that is available on all buttons.

When you press the CHANGE PASSCODE button, the screen will prompt you to enter the **old** passcode. Press the ENTER button after entering the numbers.

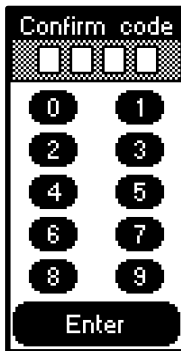
(The default code is 0000).



Now enter a **new** four-digit passcode.



You will be prompted to enter the **new** four-digit passcode again for confirmation.



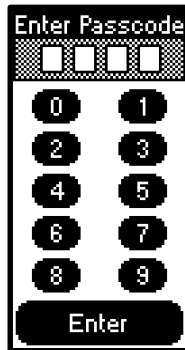
When new code is entered successfully, the “Code Changed” window will pop up to let you know you have changed the passcode.



Do not forget the passcode!

CLEAR ALL

This button displays a window that will allow you to erase the current user program in the RK2. When the button is pressed, you will be prompted to enter the current passcode. If the proper code is entered, the entire user program in the RK2 will be erased.



Warning! This will erase the entire user program in the RK2. Once this is done there is no way to restore it, except by reloading the program from the *TheaterTouch Designer* software!

If you inadvertently press the CLEAR ALL button, simply press the ENTER keypad button without entering the passcode and you will be returned to the Control Panel page.

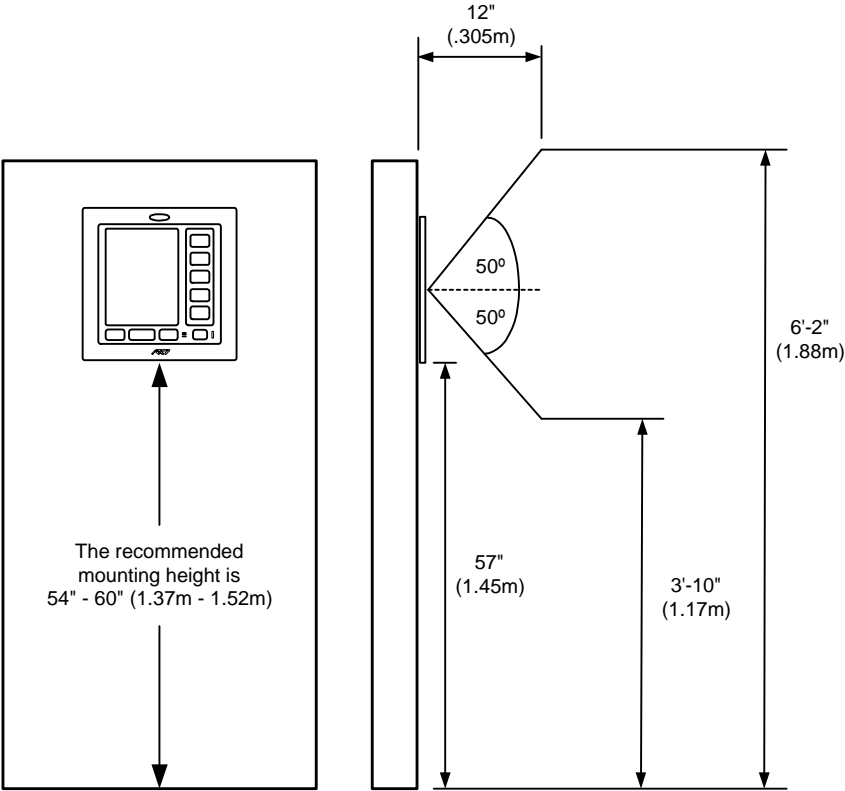
Chapter 4. Installation & Programming

The RK2 is designed for flush-mount installations in walls or cabinets. It requires an available mounting depth of 2.0 inches (50mm) from the front surface of the wall. There are numerous options for mounting and wiring the RK2.

Note: Make sure to use the included cardboard cut-out template to create the correct size opening in the wall.

MOUNTING HEIGHT

The recommended mounting height for the RK2 is between 54" (1.37m) and 60" (1.52m) from the bottom of the faceplate.



RK2 side view: Viewing angle at 57"

MOUNTING OPTIONS

The RK2 has integrated mounting wings for retrofit installation in new or existing construction. Additionally, the RK2 can be directly attached to certain walls (wood, etc.) using screws.

An optional drywall rough-in bracket (RTI part #: 40-210306-16) is available for conveniently locating the RK2 in new construction installations.

WIRING CONNECTION OPTIONS

The RK2 can be wired either from the Control Port or the Removable Terminal Block. A minimum of 3-conductor wire is required for basic operation (+16VDC, GND, and IR DATA).

CAT5 cable can be used to power the RK2 up to 1000 feet (300m) if a full wire pair is used for both +16VDC and GND. For longer distances use the following size of unshielded multi-conductor cable:

<u>Wire Size</u>	<u>Distance</u>
20 AWG	1300' (400m)
18 AWG	2000' (600m)

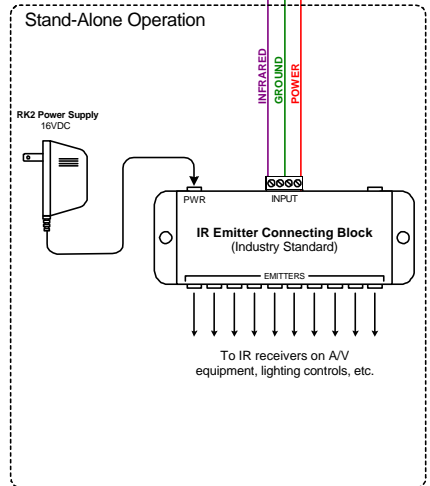
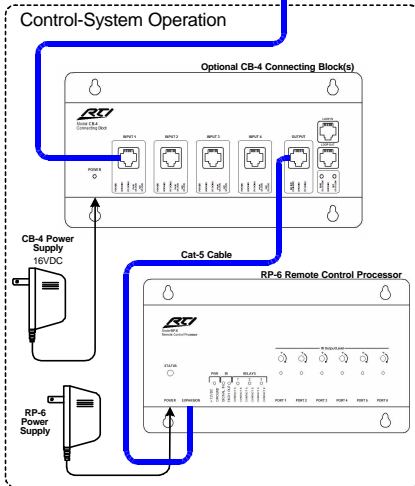
RK2 Basic Wiring Connections

Control Port Pin-Out

- GROUND Pin 8
- GROUND Pin 7
- INFRARED Pin 6
- +16VDC Pin 5
- +16VDC Pin 4
- INFRARED Pin 3
- RS-485 + Pin 2 (Future Use)
- RS-485 - Pin 1 (Future Use)

Cat-5 Cable

20 AWG (min.) wire
- or - full Cat-5
pairs



RK2 REMOVABLE TERMINAL BLOCK DESCRIPTION

TERMINAL NAME	DESCRIPTION
+16VDC	Positive power supply connection. This should be connected to 9VDC-16VDC.
GND	Common ground connection. Use this ground reference for any device that is connected to any of the other pins on the connector.
IR DATA	High current (200mA) IR output connection. This can be used to power up to 10 infrared mini-emitters, an IR blaster, or extending IR control over a long distance (1000 ft. max).
PWR STATUS	Voltage power sensing input connection. This can be connected to a trigger output or switched outlet (using a small wall-mount power supply) on A/V equipment, current sensors, light sensors, etc. The ON state sense voltage is 3VDC - 20VDC. The OFF state sense voltage is 0VDC - 2VDC.
GND	Common ground connection. Use this ground reference for any device that is connected to any of the other pins on the connector.

<p>RELAY CTRL</p>	<p>Voltage trigger output. This can be used to control speaker relays, screens, window coverings, etc. The output can supply up to 100mA and has a voltage equal to the input supply.</p>
<p>AUX STATUS</p>	<p>Voltage power sensing input connection. This can be connected to a trigger output or switched outlet (using a small wall-mount power supply) on A/V equipment, current sensors, light sensors, etc. The ON state sense voltage is 3VDC - 20VDC. The OFF state sense voltage is 0VDC - 2VDC.</p>
<p>TRIG OUT</p>	<p>Voltage trigger output. This can be used to control speaker relays, screens, window coverings, etc. The output can supply up to 100mA and has a voltage equal to the input supply.</p>

PROGRAMMING THE RK2

The RK2 is programmed using RTI's *TheaterTouch Designer™* software. RTI dealers can download the software free of charge from:

www.rticorp.com/dealers

A PC running Windows® 98SE or higher with a USB port is required. The required USB cable is included with the RTI *IR-PRO* dealer kit.

Chapter 5. Troubleshooting

If you are having problems with your *RK2*, please read these troubleshooting tips before contacting technical support.

If you continue to have problems, see Chapter 6 for more information on contacting RTI technical support.

DISPLAY IS DIM, BLANK OR UNREADABLE

Make sure the external power supply is properly secured to the *RK2*, and it is functioning properly.

Try adjusting the contrast level from the **Control Panel** page (Refer to Chapter 3 for more details).

By nature, the contrast of an LCD screen changes with temperature, so if the display is cold it will appear dark and will return to normal as it warms.

USB COMMUNICATION PROBLEMS

Verify that your PC is running Windows® 98SE or higher.

Verify that the *RK2* is present in the Human Interface Devices section of the Device Manager within the Windows® Control Panel.

Make sure you are using the programming cable that was supplied by RTI and that both ends are connected securely.

Make sure the PC detects the presence of the *RK2*. If it doesn't, unplug the USB cable, wait for about ten seconds, and plug it in again.

If the download fails after some data has been transferred, try re-sending the program.

IR CODE PROBLEMS

If you are using an IR repeater system, make sure it is working correctly with the original OEM remote. If not, you will need to troubleshoot the IR repeater system.

If you are still having problems, try adjusting the IR code “Minimum Repeats” value in the *TheaterTouch Designer* programming software.

If the IR code is executed inside a macro that contains multiple IR codes, try inserting a small time delay before the problem code. If there already is a delay, try increasing it.

Chapter 6. Service and Support

UPDATES AND NEW PRODUCTS

For news about the latest updates, new product information and accessories, please visit our web site at:

www.rticorp.com

CONTACTING REMOTE TECHNOLOGIES INCORPORATED

For general info, you can contact RTI at:

Remote Technologies Incorporated

Tel. (952) 253-3100

Fax (952) 253-3131

info@rticorp.com

www.rticorp.com

RTI TECHNICAL SUPPORT

At RTI, customer service and satisfaction is an utmost priority. If you are encountering any problems or have a question about your RTI product, please contact RTI Technical Support for assistance.

RTI provides technical support by telephone, fax or e-mail. For the highest quality service, please have the following information ready, or provide it in your fax or e-mail.

- Your Name
- Company Name
- Telephone Number
- E-mail Address
- Product model and serial number (if applicable)

If you are having a problem with hardware, please note the equipment in your system, a description of the problem, and any troubleshooting you have already tried.

If you are having a problem with software, please note what version you have installed, the operating system on your PC, a description of the problem, and any troubleshooting you have already tried.

If you are calling about a software or programming question or problem, please be at your computer when you place your call. This will considerably speed up the troubleshooting process.

For **Technical Support** or assistance with your RTI product, contact RTI at:

(952) 253-3137

support@rticorp.com

www.rticorp.com/support

For questions regarding **Service or Repair** of your RTI product, contact RTI at:

(952) 253-3136

service@rticorp.com

www.rticorp.com/service

Please do not return products to RTI without return authorization.

Specifications

Power	9 - 16 VDC, .3 Amp max
Power Management	Adjustable backlight brightness/power down time
Display	High-contrast STN LCD 128 x 64 pixels (Dark Blue on White)
Touchscreen	Digital Matrix, 7 x 2 Touchscreen never needs calibrating
Display Size (L x W)	2.4 in. x 1.3 in. (61mm x 33mm)
Display Backlight	Display: white LED Keypad: blue/amber LED
Infrared Output Port	200mA output Drives up to 1000 feet (300 meters) of wire
Operating Temperature	+32 °F to +122 °F (0 °C to +50 °C)
Operating Humidity	5% to 95% non- condensing
Total System Memory	256K Bytes Flash (non-volatile)
Device Capability	Total number of devices is limited only by memory

Macro Capability	Unlimited steps allowed in a single macro Total number of macros is limited only by memory Macro capability on every button
Communications	USB programming port
Enclosure	High-impact molded ABS plastic, black/gray
Front Plate	High-impact molded ABS plastic, white
Mounting	Integrated mounting wings, or screws through front bezel
On Wall Plate Dimensions (H x W x D)	5.1 in (129 mm) x 4.65 in (118 mm) x .17 in (4.3 mm)
Installation Cut-Out (H x W)	4.5 in. (117mm) x 4.0 in. (102mm)
Total Depth in Wall	1.4 in. (33mm)
Weight	10 oz (284g)
Warranty	One Year (Parts & Labor)

All specifications are subject to change without notice.

It's Under Control®



Remote Technologies Incorporated

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