It's Under Control®

Installation and Operation Guide

RK3-V

In-Wall Controller

RK3-V **In-Wall Controller**

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.
2. This device must accept any interference received including interference that may cause undesired operation.

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DECLARATION OF CONFORMITY (DOC)

The Declaration of Conformity for this product can be found on the RTI website at: www.rticorp.com/declaration

SAFETY SUGGESTIONS

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

Retain Instructions. Keep the safety and operating instructions for future reference.

Heed Warnings. Adhere to all warnings on the unit and in the operating instructions.

Follow Instructions. Follow operating instructions and instructions for use.

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 a power supply of the type described in the operating instructions, or as marked on the unit.

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 cord plugs at power receptacles and at the point at which they exit from the unit.

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 instructions. 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.

WARNING!

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THE UNIT TO RAIN OR MOISTURE.

LIMITED WARRANTY

Remote Technologies Incorporated warrants its products for a period of one (1) year (90 days only for included battery packs) 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. Failure to perform recommended periodic maintenance.
5. Causes other than product defects, including lack of skill, competence or experience of user.
6. Shipment of this product (claims must be made to the carrier).
7. 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 RK3-V In-Wall Controller needs service, please contact Remote Technologies Incorporated by telephone, fax or E-mail for return information. **Please do not return products to Remote Technologies Incorporated without return authorization**.

DISCLAIMER

TABLE OF CONTENTS

CHAPTER 1 | WELCOME

Thank you for purchasing the RK3-V In-Wall Controller. The RK3-V provides elegant and intuitive control of today's entertainment, environment and security systems. Representing the second generation of the award-winning RK3 In-wall Controller, the RK3-V is capable of displaying text and graphics with incredibly rich and vivid detail with a new full VGA display - 4 times the resolution of it's renowned predecessor. Designed for flush-mount installations in walls or cabinets the RK3-V is the only compact in-wall touchpanel that provides both direct infrared control and 10/100Base-T Ethernet for displaying digital video (motion JPEG) and web pages.

The RK3-V In-wall Controller blends into any room. The perfect balance between display size and resolution, a 3.5 inch LCD is small enough to fit in any decor, yet it provides the necessary resolution for displaying custom graphics, web pages and CD cover artwork. In addition, the RK3-V is unique because its graphical user interface (GUI) and programming are completely customizable making it easy to provide simple and intuitive control for the end-user.

The RK3-V can be used as a stand-alone device or as a part of an expandable central control system. It can directly control almost any audio/video component or lighting system up to 1000 feet away using its infrared output port. When used with the available RTI accessory devices, the RK3-V is capable of infrared routing, relay control, power sensing, and two-way RS-232 communications for advanced control. In any situation, from simple to complex, the RK3-V provides the perfect level of control.

COMPATIBILITY

The RK3-V and *Integration 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.

SOFTWARE REQUIREMENTS

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

■ Windows XP®, Windows Vista® or later version of Microsoft operating system.

CHAPTER 1 | WELCOME

UNPACKING AND INSPECTION

After unpacking your new RK3-V In-Wall Controller, save all of the packing materials in case you ever have to ship the unit.

Thoroughly inspect the RK3-V 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) RK3-V In-Wall Controller
- One (1) Cut-out template.
- Two (2) Spare retrofit mounting wings.
- One (1) Operation and Installation guide.

CHAPTER 2 | INTRODUCTION

FEATURES

The RK3-V provides superior quality and reliability as well as these features:

- Stylish low-profile faceplate bezel available in many colors and styles.
- Available with multiple faceplate and button color options.
- Full VGA resolution LCD to display custom buttons, text and graphics.
- Integrated high-resolution touchscreen.
- Integrated 10/100Base-T Ethernet port with Power-over-Ethernet.
- Plasma friendly infrared receiver for command pass-through.
- IR output port drives up to 1,000 feet of wire.
- Two power status input ports.
- Powerful 32-bit, 400MHz XScale processor.
- 512MByte of Flash Memory.
- Integrated mounting wings for easy installation.
- Nine assignable/programmable keys.
- Completely customizable and programmable.
- Non-volatile Flash Memory stores your program even when power is lost.
- Field upgradable firmware.
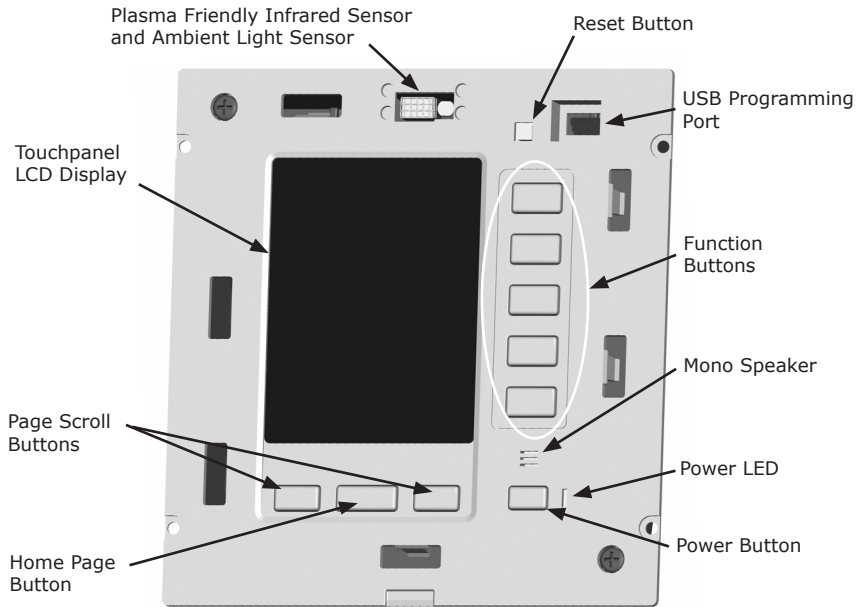- USB and Ethernet programming.

IMPORTANT NOTES

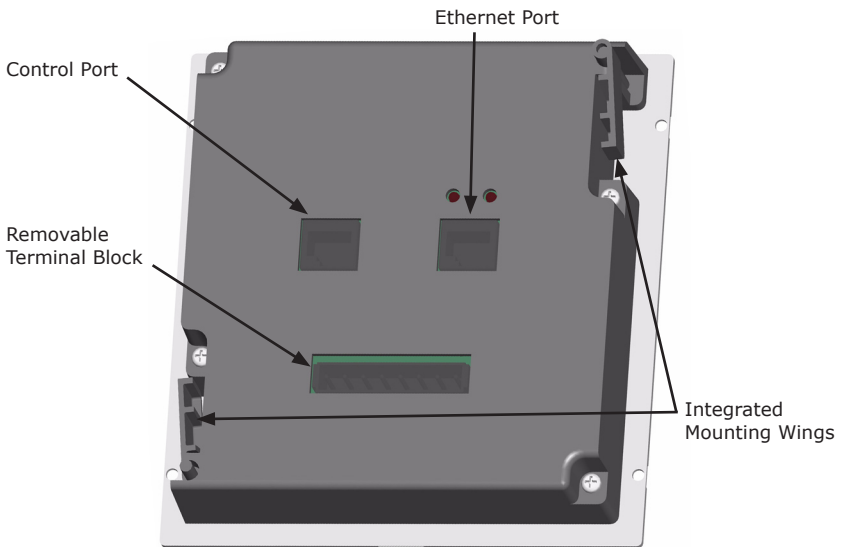Please read these important notes about the RK3-V:

- The RK3-V 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 RK3-V in a location where it can come in contact with direct sunlight.
- Do not install the RK3-V directly adjacent to thermostats. Heat generated by the RK3-V 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 RK3-V get wet. It should not be handled with wet hands or placed in an area where it could get wet.
- Do not subject the RK3-V 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 RK3-V. Using the wrong type of power supply may result in damage.
- Do not disassemble the unit. Service of the RK3-V should be performed by authorized personnel only.

RK3-V In-Wall Controller

CHAPTER 2 | INTRODUCTION

REMOTE REFERENCE

Plasma Friendly Infrared Sensor and Ambient Light Sensor

Reset Button

USB Programming Port

Touchpanel LCD Display

Function Buttons

Mono Speaker

Page Scroll Buttons

Power LED

Home Page Button

Power Button

Front

Ethernet Port

Control Port

Removable Terminal Block
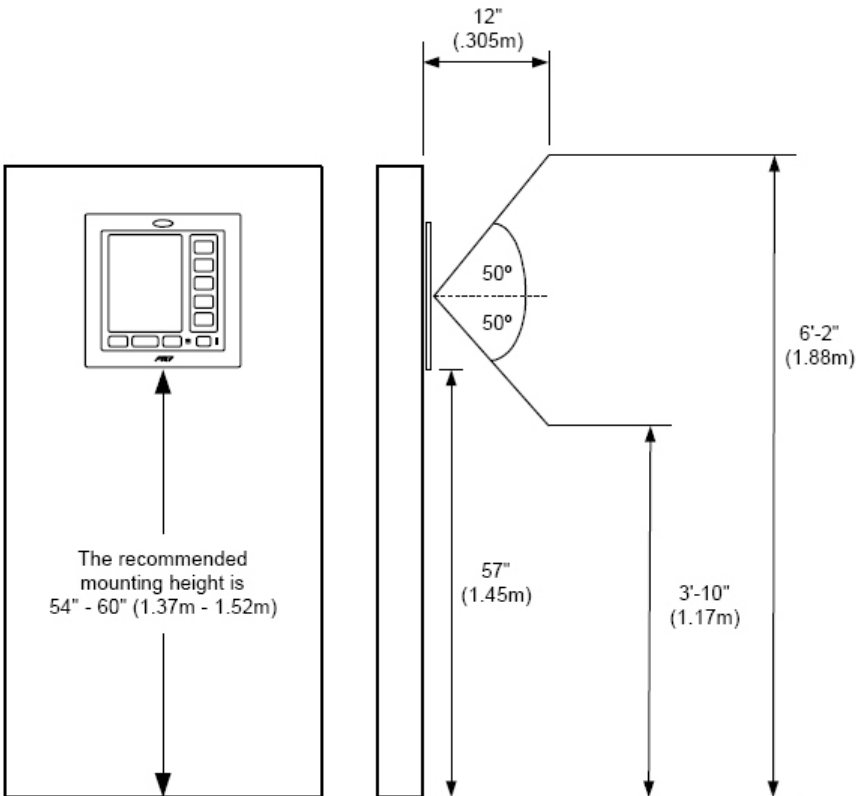
Integrated Mounting Wings

Back

CHAPTER 3 | INSTALLATION

The RK3-V is designed for flush-mount installations in walls or cabinets. It requires an available mounting depth of 2.5 inches (63mm) from the front surface of the wall. There are numerous options for mounting and wiring the RK3-V.

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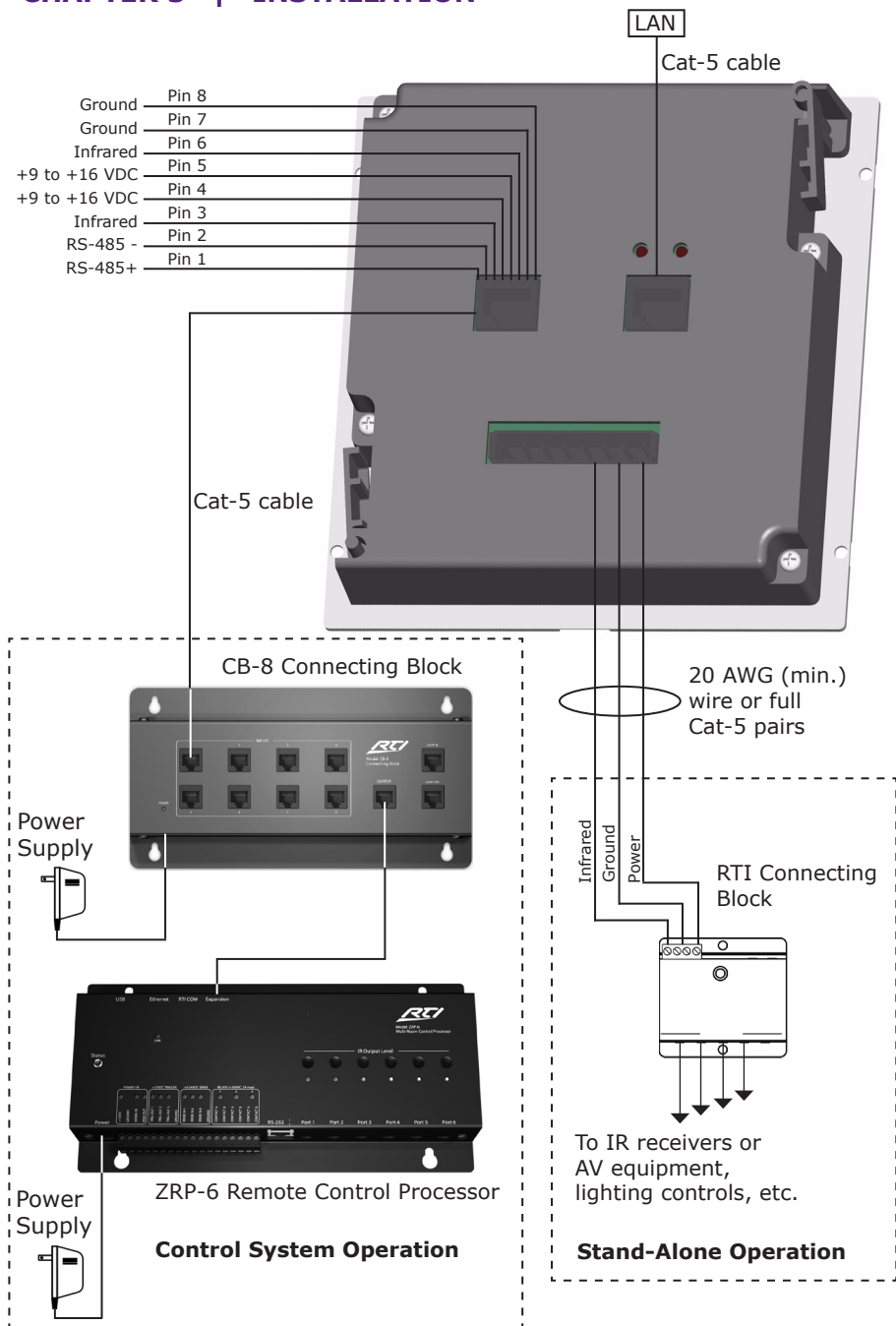
MOUNTING HEIGHT

The recommended mounting height for the RK3-V is between 54" (1.37m) and 60" (1.52m) from the bottom of the faceplate.

RK3-V side view: Viewing angle at 57"

RK3-V In-Wall Controller

CHAPTER 3 | INSTALLATION

LAN

Cat-5 cable

Ground — Pin 8
Ground — Pin 7
Infrared — Pin 6
+9 to +16 VDC — Pin 5
+9 to +16 VDC — Pin 4
Infrared — Pin 3
RS-485 - — Pin 2
RS-485+ — Pin 1

Cat-5 cable

CB-8 Connecting Block

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

Power Supply

Infrared Ground Power

RTI Connecting Block

ZRP-6 Remote Control Processor

Power Supply

Control System Operation

To IR receivers or AV equipment, lighting controls, etc.

Stand-Alone Operation

CHAPTER 3 | INSTALLATION

TERMINALS

- **+16VDC**

  Positive power supply connection. This should be connected to a 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 or an IR blaster, delivering IR trigger codes to a control processor, 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.

- **RELAY CTRL**

  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.

- **AUX 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.

- **TRIG OUT**

  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.

RK3-V In-Wall Controller

CHAPTER 3 | INSTALLATION

MOUNTING OPTIONS

The RK3-V has integrated mounting wings for retrofit installation in new or existing construction. Additionally, the RK3-V can be directly attached to certain walls (wood, etc.) using screws. An optional drywall rough-in bracket (RTI part #: 40-210294-22) and preconstruction back box (RTI part #: 30-210153-15) is available for conveniently locating the RK3-V in new construction installations.

WIRING CONNECTION OPTIONS

The RK3-V 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 RK3-V 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:

Wire Size	Distance
20 AWG	1300' (400m)
18 AWG	2000' (600m)

NOTE: The IR Data connection does not need to be connected if the RK3-V will be using an Ethernet connection for control.

CHAPTER 4 | OPERATION

GETTING STARTED

The RK3-V is turned-on by simply applying power to it.

There are two power supply options which are sold separately:

<u>Single Unit Power Supply (PS-16)</u>

- 16VDC, 1.6Amp
- Provides power for up to four RK3-V's
- Part Number: 40-210285-22

<u>CB-8 Connecting Block</u>

- Includes 12VDC, 4.0Amp power supply
- Provides power for up to twelve RK3-V's
- Provides a convenient connection hub
- Part Number: 10-210205-11

After power is applied, the RK3-V will take approximately ten seconds to load the operating system, the application software, and the user program. This long delay only occurs from a power down state. During normal use the RK3-V turns-on instantly from its sleep mode.

After powering down, the RK3-V is activated by touching any area of the touchpanel display, or any hard button.

RK3-V In-Wall Controller

CHAPTER 4 | OPERATION

THE TOUCHSCREEN DISPLAY

The RK3-V 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 RK3-V 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 RK3-V will support a maximum of 200 pages including the Home page.

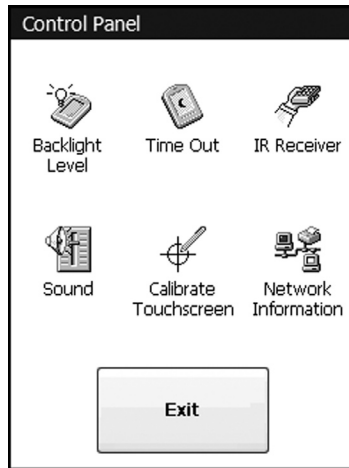A representation of a programmed Home page is shown below:

CHAPTER 4 | OPERATION

THE CONTROL PANEL PAGE

The Control Panel page can be displayed by pressing and holding the home button while momentarily depressing the reset button. Continue to hold the home button until the loading bar appears on the screen, then release the home button.

You can also access the Control Panel page by assigning a "Control Panel" page link to a button using the *Integration Designer®* software.

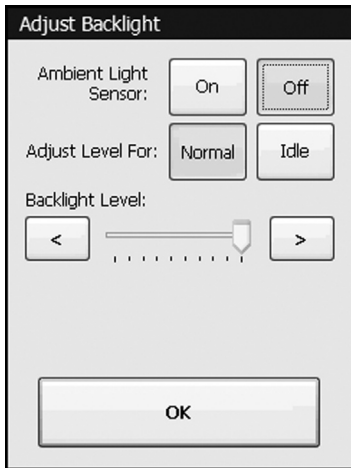A representation of the Control Panel page is shown below:

To return to the user program, press Exit.
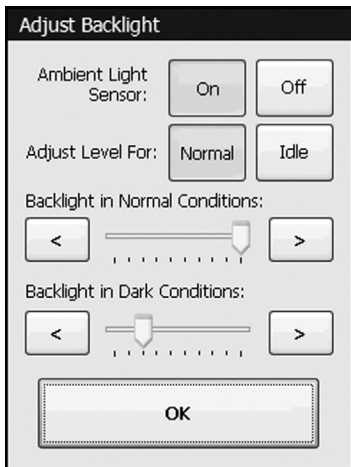
CHAPTER 4 | OPERATION

BACKLIGHT LEVEL

This button displays a window that allows you to adjust the backlight brightness and enable/disable the Ambient Light Sensor.

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

With the light sensor disabled, the backlight brightness will always stay at the same level whenever the RK3-V is turned-on. The backlight level can, however, be set differently for the unit's Normal and Idle modes.

If the light sensor is enabled, there are two backlight levels to adjust. Press the left arrow or right arrow buttons to adjust. Press the OK button 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 Normal and Idle modes.
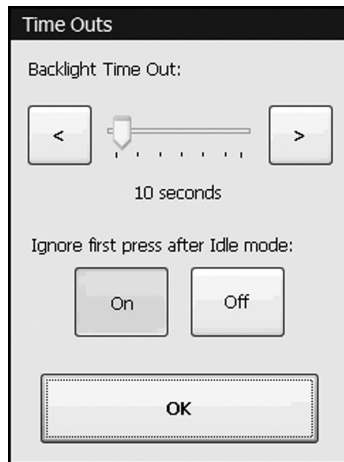
CHAPTER 4 | OPERATION

TIME OUT

This button displays a window that allows you to adjust the amount of time the unit stays awake after the last button press. The time is variable from 1 second to 120 seconds (the default is 10 seconds). Press the arrows to the left or right of the Time Out setting to adjust the time.

If the backlight is programmed to turn off in idle mode, it is a good idea to ignore the initial press of the touchscreen that turns the backlight on. This will prevent unwanted button activations from occurring (since you may not see what you're pressing on the touchscreen when the backlight is off). Select On to ignore the first press, or Off to accept the first press. Press the OK button when finished.
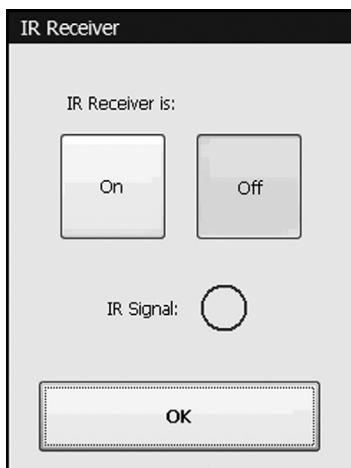
CHAPTER 4 | OPERATION

IR RECEIVER

This button displays a window that allows you to enable or disable the front panel IR Receiver. The IR Signal graphic turns red 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.
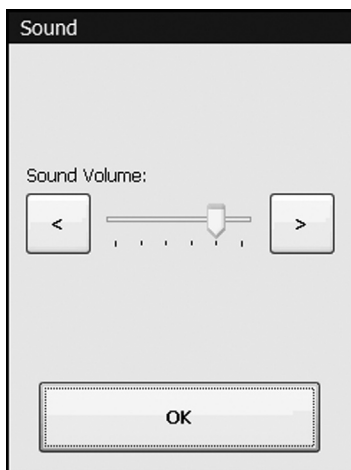
Press the OK button when finished.

SOUND

This button displays a window that allows you to adjust the volume of the audible speaker. The speaker sound provides feedback that a button was pressed. Press the arrows to the left or right to adjust the volume.

Press the OK button when finished.

There are six discrete volume settings. The lowest setting disables the speaker.

CHAPTER 4 | OPERATION

CALIBRATE TOUCHSCREEN

This button runs a routine that allows you to calibrate the touchscreen. Since it normally should not be necessary to calibrate the touchscreen, this routine is included as a precaution only.

Warning: *Do not attempt to calibrate the touchscreen with your fingertip. Proper calibration requires a stylus or other fine tip. Do not use metal objects such as ball point pens or screwdrivers that can damage the surface of the touchscreen*.
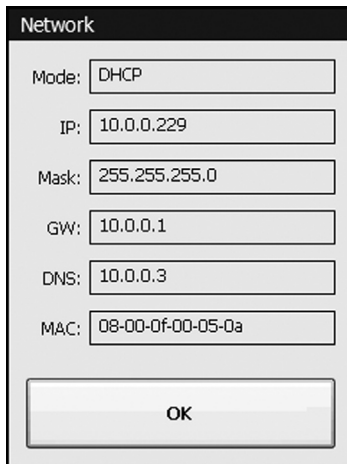
Press the Calibrate button to continue.

Follow the directions on the display to complete the calibration process.

NETWORK INFORMATION

This button displays a window that allows you to view the Ethernet network information. This is mainly for troubleshooting purposes.

Press the OK button when finished.

CHAPTER 4 | OPERATION

THE WEB BROWSER

The RK3-V includes Internet Explorer® for web browsing on the internet. Although most website content is compatible with the RK3-V, please note that plug-ins such as JAVA® and Flash®8 or higher, streaming video, and persistent cookies are not supported.

A graphical representation of a keyboard will automatically popup on the display whenever text entry is required. The keyboard can be dragged around the display by using its title bar. It can be dismissed by touching anywhere on the display that is outside of the keyboard.

CHAPTER 5 | SPECIFICATIONS

Power	+9VDC to +16VDC, .5A max or 802.3af Power-over-Ethernet
Power Management	Adjustable backlight brightness/power down time
Touchscreen Display	High-brightness color TFT LCD, Full VGA (480x640 pixels) with 65K colors, integrated high-resolution resistive touchscreen
Display Size	3.5 in (89mm) diagonal
Backlights	White LED (Display), Blue/Amber LED (Keypad)
Infrared Output Port	200mA output, drives up to 1000 ft (300 m) of wire
Ethernet Port	10/100Base-T with Power-over-Ethernet
Operating Temperature	+32°F to +122°F (0°C to +50°C)
Operating Humidity	5% to 95% Non-condensing
Total System Memory	512M Bytes Flash (non-volatile) memory
Device Capability	Total number of devices is limited only by memory
Macro Capability	Unlimited steps 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
Front Plate	High-impact molded ABS plastic, gray or black
Mounting	Integrated mounting wings, or screws through front bezel
Front Plate Dimensions (H x W)	5 3/4 in (146mm) x 5 1/2 in (140mm)
Installation Cut-Out (H x W)	5 1/8 in (130mm) x 4 3/4 in (120mm)
Total Depth in Wall	1/8 in (29mm) plus cables
Weight	10 oz (284 g)
Warranty	One Year (Parts & Labor)

All specifications subject to change without notice.

CHAPTER 6 | TROUBLESHOOTING

If you are having problems with your RK3-V In-Wall Controller, please read the information below 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 RK3-V, and it is functioning properly.
- Try adjusting the backlight level from the Control Panel page (Refer to Chapter 4 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 XP® or later.
- Verify that the RK3-V USB driver was installed the first time the RK3-V was connected to your PC.
- Verify that the RK3-V is present in 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 RK3-V. 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 resending 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 *Integration 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 7 | SERVICE AND SUPPORT

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

www.rticorp.com

CONTACTING RTI

For general info, you can contact RTI at:

Tel. (952) 253-3100
Fax (952) 253-3131
info@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 you computer when you place your call. This will considerably speed up the troubleshooting process.

For technical support or assistance with your RK3-V, software, or accessories, contact RTI at:

(952) 253-3137
support@rticorp.com
www.rticorp.com

For questions regarding service or repair of your RK3-V, contact RTI at:

(952) 253-3136
service@rticorp.com
www.rticorp.com

Please do not return products to RTI without return authorization.

CHAPTER 7 | SERVICE AND SUPPORT

Shipment of RK3-V for Service

RTI will pay all labor and material expenses for all repairs covered by this product's warranty. If necessary repairs are not covered by warranty, or if a unit is examined which is not in need of repair, you may be charged for the repairs or examination.

If it is necessary to ship the RK3-V In-Wall Controller for service:

- Please pack it securely (we suggest that it be insured).
- Do not include accessories such as power cords or manuals unless instructed to do so.

You must pay any shipping charges incurred in getting your RK3-V In-Wall Controller to RTI. RTI will pay reasonable return shipping charges via a carrier of our choice to any destination within the United States if the repairs are covered under warranty.

A copy of the original dated sales receipt must be provided whenever warranty service is required. You will need this receipt to establish the date of purchase.

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It's Under Control®

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