Installation and Operation Guide

It's Under Control®

ZRP-6

Remote Control Processor

RTI

ZRP-6 **Remote Control Processor**

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.

117 612 914

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 only to the power supply that was included with 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 cords at plugs, at convenient 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 this installation and operation 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:

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

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 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 ZRP-6 Remote Control Processor 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 using the ZRP-6 Remote Control Processor.

The second generation of the award-winning RP-6 Control Processor, the ZRP-6 raises the level of automation capabilities of any electronics system. Loaded with features to provide sophisticated control, the ZRP-6 has built-in IR routing and pass-through, relay control, 12VDC trigger outputs, voltage sense inputs and Ethernet for program updating. The addition of two dedicated RS-232 ports allows bi-directional communication from compatible devices for status feedback such as lighting and volume levels. Finally, the ZRP-6 stores all of the systems commands for more reliable macro execution and powerful automation.

The ZRP-6 is the ideal centerpiece for any control system. While the ZRP-6 continues to support communication from RTI 433MHz RF receivers and in-wall controllers, the next generation of control is at your fingertips when it is used with separate RTI 2.4GHz transceiver modules (ZM-24) and remote controls (utilizing ZigBee® mesh network technology).

IMPORTANT NOTES

Please read these important notes about the ZRP-6:

- The ZRP-6 should be placed in an area where it is around normal room temperature (between 60°F to 90°F).
- Avoid installing the ZRP-6 in a location where it can come in contact with direct sunlight.
- Do not let the ZRP-6 get wet. It should not be handled with wet hands or placed in an area where it could get wet.
- Do not subject the ZRP-6 to smoke, dust, or vibrations.
- Only use the power supply that is specified for the ZRP-6. Using the wrong type of power supply may result in damage.
- Do not disassemble the unit. Service of the ZRP-6 should be performed by authorized personnel only.

COMPATIBILITY

An IR input insures compatibility with all RTI in-wall and handheld controllers as well as industry standard IR repeater systems.

SOFTWARE REQUIREMENTS

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

- Windows XP®, Windows Vista®, Windows 7®or later version of Microsoft operating system.

CHAPTER 1 | PRODUCT CONTENTS

Contents within the box include the following items:

- One (1) ZRP-6 Remote Control Processor
- One (1) Installation Guide
- One (1) Universal Power Supply
- One (1) Power Cord
- Two (2) RS-232 adapters

UNPACKING AND INSPECTION

After unpacking your new ZRP-6 Remote Control Processor, save all of the packing materials in case you ever have to ship the unit.
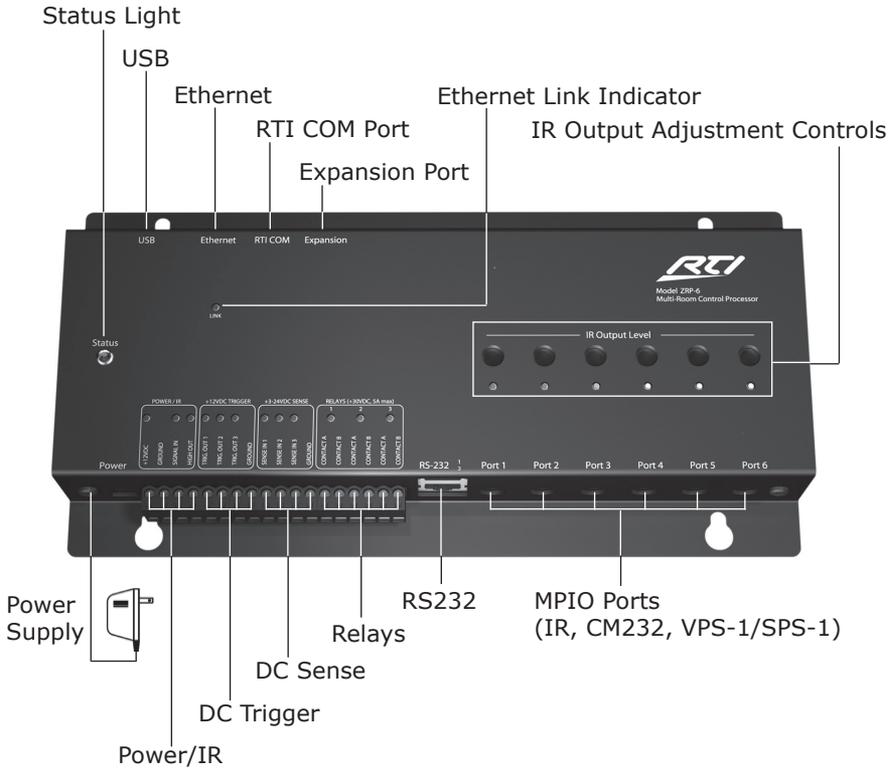
Thoroughly inspect the ZRP-6 and packing materials for signs of damage. Report any damage to the carrier immediately. Report any equipment malfunctions to RTI or an authorized RTI distributor.

CHAPTER 2 | FEATURES

The ZRP-6 provides superior quality and reliability as well as these specific features:

- Six multi-purpose I/O ports.
- Three programmable 12VDC trigger outputs.
- Three assignable voltage sense inputs.
- Three programmable relay outputs.
- Two RS-232 ports for bi-directional communication.
- Compatible with RTI ZM-24 Transceiver Modules utilizing ZigBee® wireless mesh networking.
- Compatible with RTI RM-433 RF Receiver modules for one-way communication.
- I/O ports are compatible with industry standard IR emitters, blasters, receivers and repeater systems.
- All output ports incorporate both short-circuit and overload protection.
- Variable IR output on all ports.
- I/O ports support all optional RTI power sensing and communications modules.
- Programmed using the *Integration Designer*® Software.
- Non-volatile Flash memory stores your system configuration even when power is not present.
- USB and Ethernet programming.
- Field upgradable firmware.

CHAPTER 2 | FEATURES

Status Light

USB

Ethernet

Ethernet Link Indicator

RTI COM Port

IR Output Adjustment Controls

Expansion Port

Power Supply

RS232

MPIO Ports
(IR, CM232, VPS-1/SPS-1)

Relays

DC Sense

DC Trigger

Power/IR

CHAPTER 3 | INSTALLATION AND OPERATION

MOUNTING

The ZRP-6 can be wall mounted (details below) or free standing.

The ZRP-6 does not need to be mounted near the equipment being controlled. The IR output ports and the optional Power Sensor modules can be extended up to 1000 feet. If RS-232 control ports or Communication Module (CM-232) are used, the distance limitation is 50-100 feet.

MOUNTING PATTERN

4.4 x Inches (112 mm)

8.0 Inches (203 mm)
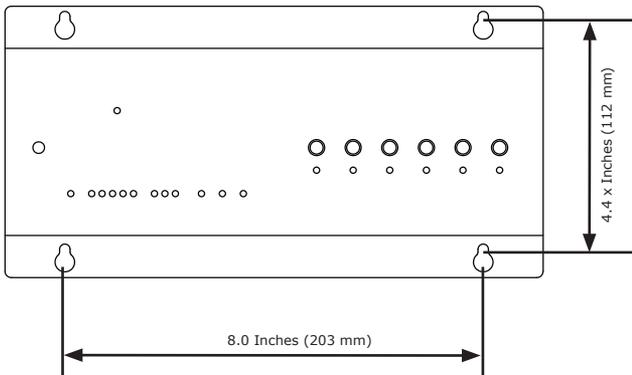
POWER

The included AC adapter should be connected to the POWER jack on the ZRP-6. The power LED will turn-on and the output LEDs will toggle on and off in sequence to confirm that the unit is running properly.

Use only the supplied AC adapter to power the ZRP-6. Using a different power supply could result in damage to the ZRP-6 or poor performance.

POWER/IR TERMINALS AND CONNECTIONS

■ **TERMINAL: +12VDC**

Positive power supply connection. It is internally tied to the Power jack. This can be used to power external IR or RF receivers.

■ **TERMINAL: GROUND**

Common ground connection. Use this ground reference for any device that is connected to the +12VDC, SIGNAL IN, OR HIGH OUT terminals.

■ **TERMINAL: SIGNAL IN**

Input connection for system trigger codes. This should be connected to an RTI RF receiver or industry standard IR repeater system.

■ **TERMINAL: HIGH OUT**

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).

CHAPTER 3 | INSTALLATION AND OPERATION

CONNECTING IR EMITTERS TO OUTPUT PORTS

The multi-purpose output (MPIO) ports on the ZRP-6 are compatible with industry standard infrared emitters and infrared repeating systems. Each output port is capable of driving up to four infrared emitters directly. More than four infrared emitters requires an amplified connecting block. A connecting block can be wired up to 1000 feet away from the ZRP-6 using #22 AWG (minimum) wire.

ADJUSTING IR OUTPUT GAIN

The IR output gain can be separately adjusted for each of the six output ports. The ZRP-6 is shipped with the IR gain set to the optimum level for most equipment, and it should only need to be adjusted if the attached equipment is not responding reliably.

If adjustment is needed, rotate the IR output controls on the front of the ZRP-6 clockwise for higher output power, or counter-clockwise for lower output power.

INFRARED RECEIVERS

The ZRP-6 is compatible with industry standard IR receivers, repeater systems, and keypads. Connect the SIGNAL INPUT, GROUND, and +12VDC (if power is needed) terminals on the ZRP-6 to the signal out, ground, and power (if needed) terminals of the desired device.

If the ZRP-6 sees an incoming system trigger code with a matching zone ID, it will execute the command or macro associated with that code. The ZRP-6 can also be programmed to either block or pass miscellaneous IR data through its output ports.

RF RECEIVERS

The ZRP-6 is compatible with RTI RF receiver modules (e.g. RM-433). Up to 10 RM-433 receiver modules can be connected with a maximum total wire run of 1000 ft. Follow the guide included with the modules for installation instructions.

INFRARED HIGH OUT

The ZRP-6 is compatible with industry standard IR connecting blocks. Connect the HIGH OUT and GROUND terminals to the signal input and ground terminals on the connecting block. This is useful if you have many devices to control, or you want to extend control into other rooms.

This output has short circuit protection, but does not provide a series resistor for current limiting. **It should not be connected directly to IR emitters**.

CHAPTER 3 | INSTALLATION AND OPERATION

CONNECTING POWER SENSOR MODULES

The multi-purpose output ports on the ZRP-6 are compatible with RTI power sensing modules (e.g. VPS-1 and SPS-1). Follow the guide included with the modules for installation instructions, and follow the instructions in the *Integration Designer*® software guide for programming details.

CONNECTING COMMUNICATION MODULES

The multi-purpose output ports on the ZRP-6 are compatible with RTI communication modules (e.g. CM-232). Follow the guide included with the modules for installation instructions, and follow the instructions in the *Integration Designer*® software guide for programming details.

IMPORTANT NOTE: Baud rate 115,200bps is not supported using the CM-232 module with the ZRP-6. You must use one of the two dedicated RS-232 ports if this baud rate is required.

VOLTAGE TRIGGER OUTPUT

The ZRP-6 has three voltage trigger outputs (12VDC @ 100mA) that are configurable within *Integration Designer*®. These voltage triggers are Normally Off, but they can be programmed to be Normally On (activated) as long as power is applied to the ZRP-6.

- Connect the positive lead from the device to one of the three Trig Out 1-2-3 terminals and connect the ground side of the desired device to the ZRP-6 voltage trigger Ground terminal.

VOLTAGE SENSE INPUT

The ZRP-6 has three voltage sense inputs (+3-24 VDC) that are configurable within *Integration Designer*®. During the execution of a macro events can be triggered such as IR commands, RS-232 commands, relay closure, etc. based on the status of the voltage sense input.

- Connect positive lead from voltage source to Sense In 1, 2, or 3 terminal input and negative lead to Ground terminal.

RELAYS

The three relays in the ZRP-6 can provide contact closure or switching control for loads up to 5A/30VDC each. All three relays are Normally Open when not energized, but they can be programmed to behave Normally Closed as long as power is applied to the ZRP-6.

- For contact closure control, simply connect the A and B contact terminals of a relay to the desired device.

CHAPTER 3 | INSTALLATION AND OPERATION

ETHERNET

This RJ-45 port allows connection to a 10/100 Base-T Ethernet network (LAN). Network settings such as the IP address are configurable within *Integration Designer*®. Ethernet can be used to download system files to the ZRP-6.

USB PORT

Used to download programming software or firmware into the ZRP-6.

RTI COM

This RJ-45 port allows connection to RTI ZM-24 Transceiver Modules utilizing ZigBee® wireless communication. The connection supports full duplex two-way communication for use with compatible RTI handheld controllers. Refer to the ZM-24 Transceiver Module operation guide for installation instructions.

EXPANSION PORT

This RJ-45 port provides a convenient connection for receiving IR signals from in-wall controllers through an RTI connecting block (CB-8). It also enables two-way serial communication (RS-485) with in-wall touchpanels or expansion devices.

RS-232 PORTS

The ZRP-6 is capable of two-way RS-232 communication and uses industry standard cat5 cable with RJ-45 termination (568B).
NOTE: RS-232 communication has a distance limitation of 50-100 feet.

RJ-45 TO DB-9 ADAPTER PINOUT

87654321
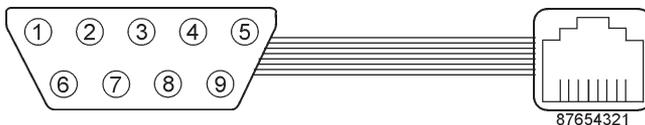
DB-9 Connector Pin Out

Pin	Signal Name	Signal Description
1	DCD	Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Signal Ground/Common
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	NC	Not Connected

RJ-45 Connector Pin Out

Pin	Signal Name	Signal Description
1	DSR	Data Set Ready
2	DCD	Carrier Detect
3	DTR	Data Terminal Ready
4	GND	Signal Ground/Common
5	RXD	Receive Data
6	TXD	Transmit Data
7	CTS	Clear To Send
8	RTS	Request To Send

CHAPTER 3 | INSTALLATION AND OPERATION

PROGRAMMING THE ZRP-6

The ZRP-6 must be programmed to operate. All programming is done using RTI's *Integration Designer®* software and is downloaded using the USB port.

After the ethernet parameters are configured, system files can be downloaded over ethernet.

Important Note: The ZRP-6 will not respond to trigger codes or execute commands while the USB cable is attached to a PC. You must detach the ZRP-6 USB port from your PC for normal operation.

The software allows you to create actions (e.g. commands and macros) that are associated with button presses on one or more RTI remote controls. The software transparently creates all of the system trigger codes, and generates the correct download for every device in the system. Unless you implement some of the software's advanced features, programming a system that uses a ZRP-6 is just as easy as programming one that doesn't.

STATUS LED

The status LED will illuminate Green if a valid system trigger code is detected. The LED will stay on while the ZRP-6 is busy processing the action associated with the trigger code.

The status LED will flicker Green if an invalid system trigger code is detected. A trigger code is invalid if there is no action associated with it (i.e. the ZRP-6 programming does not match the programming in the device that is transmitting the trigger code), or if the system zone code does not match. The status LED will illuminate Red if the ZRP-6 does not contain a valid program.

The status LED will also illuminate Green to indicate an active USB connection. A communication problem is indicated if the status LED is illuminated red while the USB cable is attached to a PC.
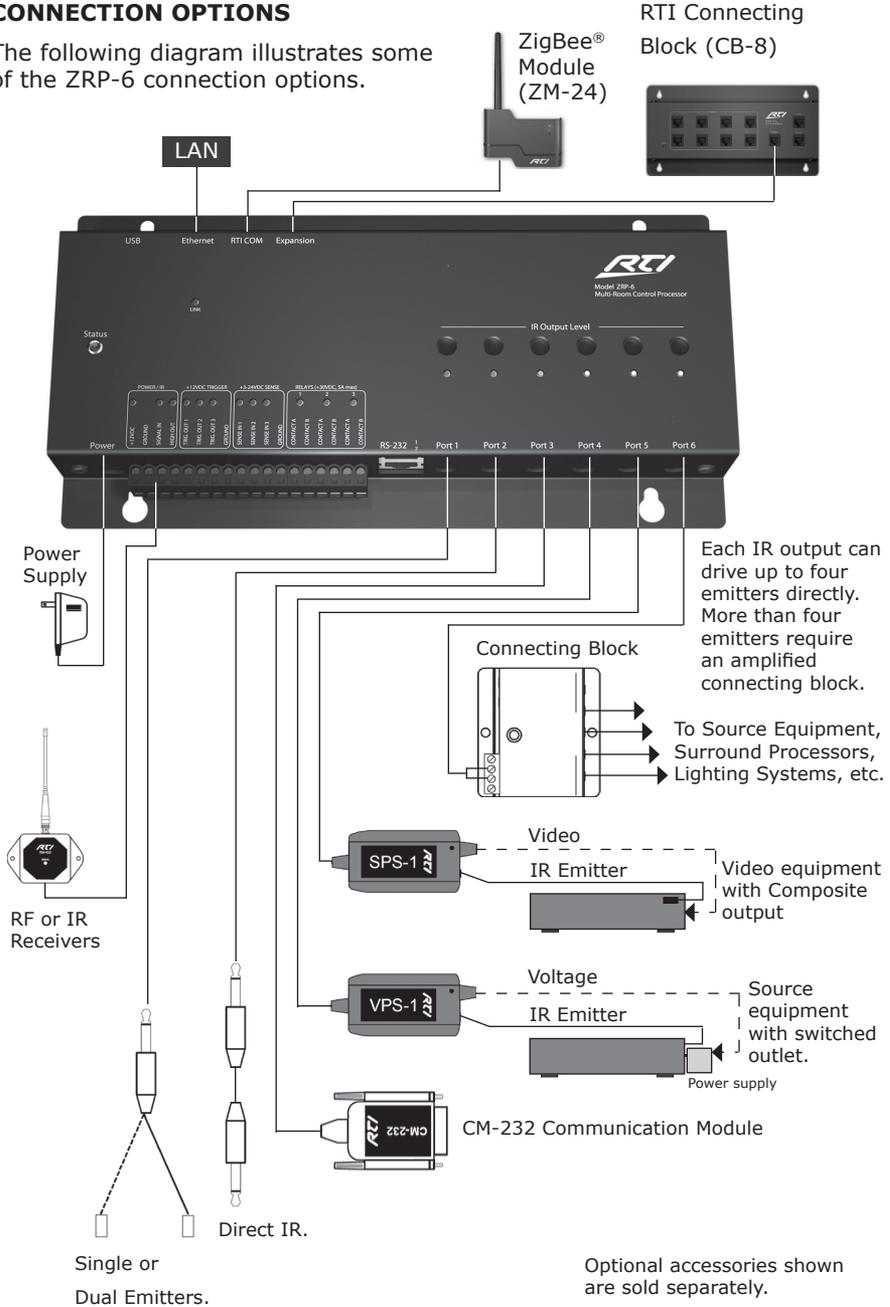
SETTING THE ZONE CODE

If the ZRP-6 is installed in close proximity to others, the system Zone Code can be changed in the *Integration Designer®* software. This allows up to 256 separate control systems to operate in the same general area such as multi-dwelling units or homes with more than one media system.

ZRP-6 Remote Control Processor

CHAPTER 3 | INSTALLATION AND OPERATION

CONNECTION OPTIONS

The following diagram illustrates some of the ZRP-6 connection options.

ZigBee® Module (ZM-24)

RTI Connecting Block (CB-8)

LAN

Power Supply

Each IR output can drive up to four emitters directly. More than four emitters require an amplified connecting block.

Connecting Block

To Source Equipment, Surround Processors, Lighting Systems, etc.

Video

IR Emitter

Video equipment with Composite output

RF or IR Receivers

Voltage

IR Emitter

Source equipment with switched outlet.

Power supply

CM-232 Communication Module

Direct IR.

Single or Dual Emitters.

Optional accessories shown are sold separately.

CHAPTER 3 | INSTALLATION AND OPERATION

CONNECTION OPTIONS (CONTINUED)

ZRP-6 connection examples:

RS-232 Control (cat5)

Adapter TV

Lighting

Relay Control

Drapes

Voltage Sense Input

Receiver

Voltage Trigger Output

Screen Lift
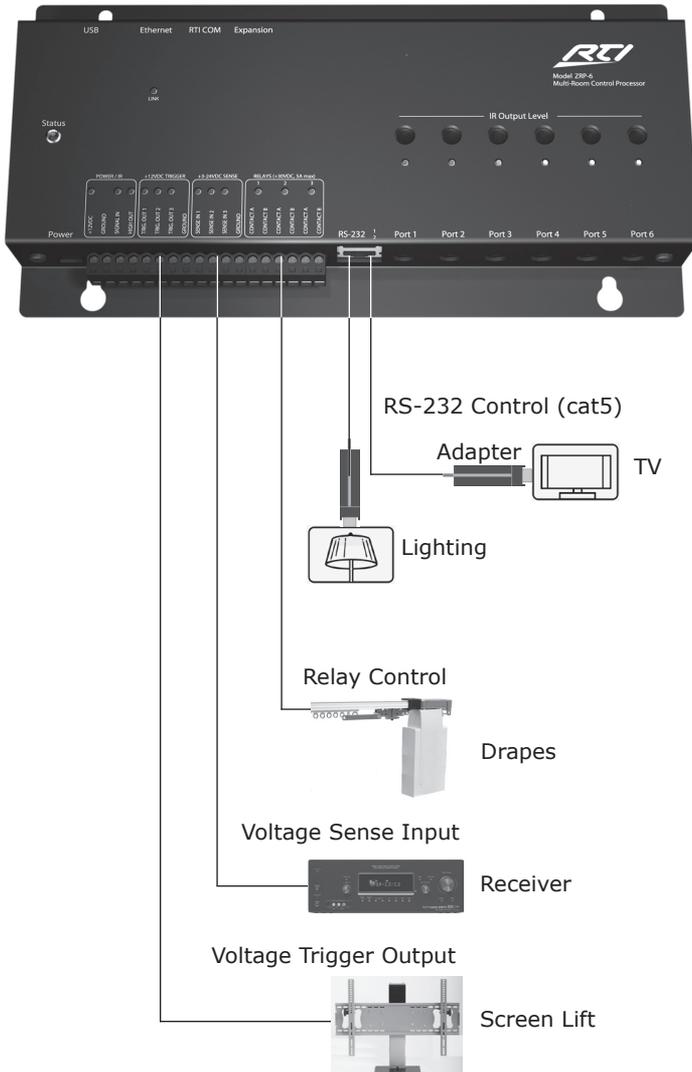
Optional accessories shown
are sold separately.

CHAPTER 4 | SPECIFICATIONS

Power Supply	+12V DC, 1A
Infrared Output Port	Six 3.5mm jacks, compatible with industry standard IR emitters
Infrared Output Drive	100mA maximum (per port, adjustable) 200mA maximum (high IR output port)
Infrared Frequency Transmission Range	15kHz - 460kHz
Infrared Input	Compatible with industry-standard repeaters and receivers
Trigger Outputs	Three, +12 VDC, 100mA max each
Sense Inputs.	Three, +3-24VDC
RS-232 Ports	Two, Bi-directional RJ45 Connections
Ethernet Port	10/100Base-T, RJ45 Connection
USB Ports	1 Type B Programming
Expansion Port	RS-485 / IR / Pwr, RJ45 Connection
RTI Com Port	Two-way ZigBee® Communication Port, RJ45 Connection
Relays	Three, 5 Amps @ 30 VDC Max
Mounting	Wall-mount or free standing
Dimensions (W x H x D)	10.3" (262mm) x 5.25" (134mm) x 1.5" (38mm)
Weight	2 lb. 2 oz. (970g)
Warranty	One Year (Parts & Labor)

All specifications subject to change without notice.

CHAPTER 5 | TROUBLESHOOTING

If you are having problems with your ZRP-6 Remote Control Processor, 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.

ZRP-6 DOES NOT FUNCTION PROPERLY

- Verify that the USB cable is removed from either the ZRP-6 or the PC. The ZRP-6 will not function normally while there is an active USB connection with a PC.
- Verify the ZRP-6 is receiving a signal from an attached IR or RF receiver. The Signal In LED should flash when a signal is present.
- Make sure the original factory power supply is plugged into a known good, non-switched outlet and the connector is seated properly on the ZRP-6. The Power LED should be turned on.
- Verify the button on the remote is programmed to output system trigger codes. Also verify that the programmed output method (IR or RF) matches the receiver being used.
- Try re-programming both the ZRP-6 and the remote control to make sure the programming is up-to-date (i.e. "in sync") in each of them.
- Make sure the IR or RF receiver wire is attached to the ZRP-6 properly.
- Make sure the IR or RF receiver is mounted away from strong electro-magnetic energy sources.
- Make sure you are using known good IR emitters, and they are attached to the correct location on the device being controlled.

POWER SENSOR MODULES ARE NOT FUNCTIONING

- Verify that the modules are programmed to use the correct output port and the proper conditional statement is used in the *Integration Designer*® software.
- Make sure you are using a known good IR emitter, and it is attached to the correct location on the device being controlled.

ZRP-6 USB PROGRAMMING PORT DOES NOT WORK

- Verify that your PC is using Windows XP® or higher. The *Integration Designer*® software requires a USB device driver that may not be installed on earlier versions of Windows®.

ZRP-6 ETHERNET PROGRAMMING DOES NOT WORK

- Make certain that you have downloaded the IP address settings from *Integration Designer*® via the USB cable before attempting to use the Ethernet programming port.

CHAPTER 6 | 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 ZRP-6, software, or accessories, contact RTI at:

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

For questions regarding service or repair of your ZRP-6, contact RTI at:

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

Please do not return products to RTI without return authorization.

CHAPTER 6 | SERVICE AND SUPPORT

Shipment of ZRP-6 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 ZRP-6 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 ZRP-6 sent 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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Remote Technologies Incorporated
5775 12th Avenue East, Suite 180
Shakopee, MN 55379
Tel: 952-253-3100
Fax: 952-253-3131
www.rticorp.com