Installation and Operation Guide

It's Under Control®

MRP-64

Multi-Room Control Processor

70-210039-22 V1.0

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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 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 MRP-64 Multi-Room 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

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Other brands and their products are trademarks or registered trademarks of their respective holders.

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CHAPTER 1 | WELCOME

Thank you for using the MRP-64 Multi-Room Control Processor.

The MRP-64 embraces a new concept in distributed audio by acting as the interface between a multi-zone audio/video receiver and an assortment of RTI in-wall and handheld controllers.

The MRP-64 allows the homeowner to take full advantage of the multi-zone features built into their surround receiver – expanding the entertainment beyond the media room.

The MRP-64 is a powerhouse of control in a small package. Loaded with features, the MRP-64 has six keypad ports for RTI In-wall controllers, four independent IR output ports, three voltage trigger outputs, three voltage sense inputs and an IR signal input. The MRP-64 also comes equipped with advanced features such as an Ethernet port for programming, two-way RS-232 communication, support for Zigbee® wireless communication, and other expansion capabilities.

IMPORTANT NOTES

Please read these important notes about the MRP-64:

- The MRP-64 should be placed in an area where it is around normal room temperature (between 60°F to 90°F).
- Avoid installing the MRP-64 in a location where it can come in contact with direct sunlight.
- Do not let the MRP-64 get wet. It should not be handled with wet hands or placed in an area where it could get wet.
- Do not subject the MRP-64 to smoke, dust, or vibrations.
- Only use the power supply that is specified for the MRP-64. Using the wrong type of power supply may result in damage.
- Do not disassemble the unit. Service of the MRP-64 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® or later version of Microsoft operating system.

CHAPTER 1 | PRODUCT CONTENTS

Contents within the box include the following items:

- One (1) MRP-64 Multi-Room 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 MRP-64 Multi-Room Control Processor, save all of the packing materials in case you ever have to ship the unit.

Thoroughly inspect the MRP-64 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.

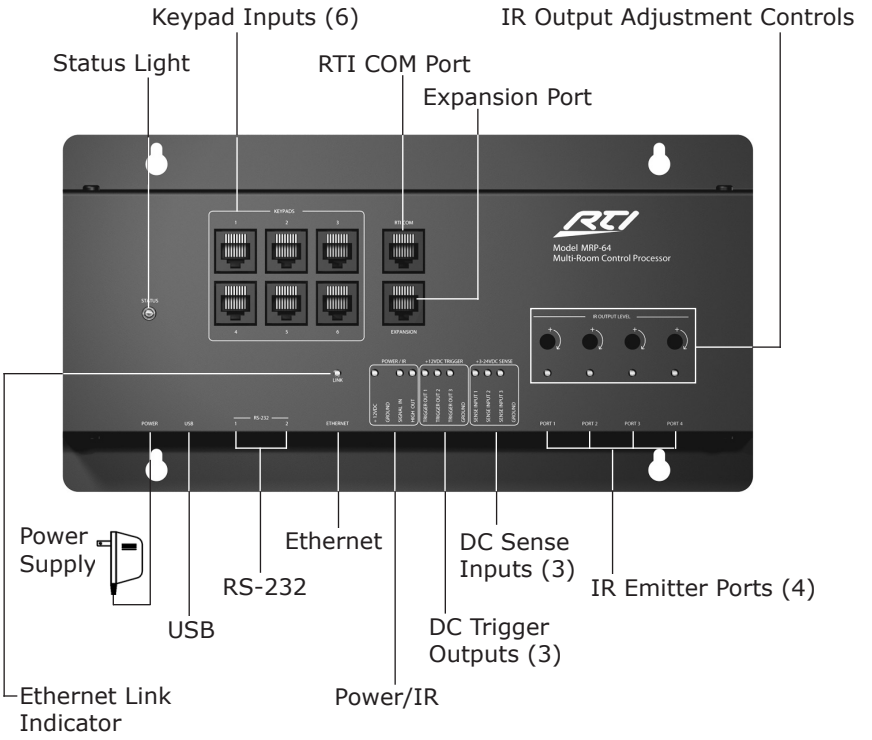
CHAPTER 2 | FEATURES

The MRP-64 provides superior quality and reliability as well as these specific features:

- Expands supported home theater/multi-zone receivers into a distributed audio system.
- Six keypad inputs provide power and communication.*
- Two RS-232 ports for bi-directional communication.
- Compatible with RTI ZM-24 Transceiver Modules utilizing Zigbee® wireless communication.
- Compatible with RTI RM-433 RF Antenna Module for one-way communication.
- Preprogrammed RS-232 drivers for many popular multi-zone receivers.
- Three programmable 12VDC trigger outputs.
- Three assignable voltage sense inputs.
- IR input for IR pass-through or control.
- Four addressable IR emitter ports are compatible with industry standard IR emitters and repeater systems.
- One addressable high IR output for connecting additional IR connecting block/emitters.
- All output ports incorporate both short-circuit and overload protection.
- Variable power on all IR output ports.
- Programmed using *Integration Designer*® software.
- Non-volatile Flash memory stores your system configuration even when power is not present.
- USB and Ethernet programming.

* The number and type of keypad used may have restrictions on cable length. See Chapter 3 for cabling instructions.

CHAPTER 2 | FEATURES

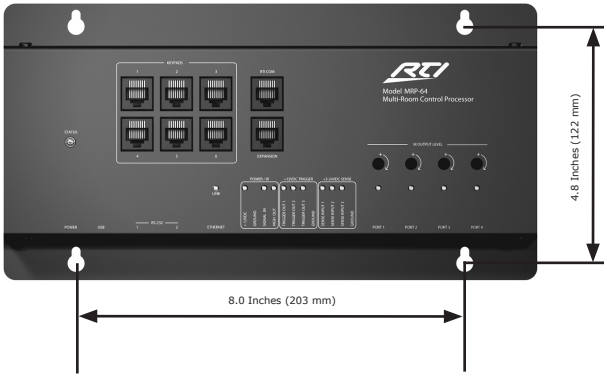


CHAPTER 3 | INSTALLATION AND OPERATION

MOUNTING

The MRP-64 can be wall mounted (details below) or free standing. Because the IR output ports can drive up to 1000 feet of wire, the MRP-64 does not need to be mounted near the equipment being controlled.
NOTE: Cabling for RS-232 communication should be limited to 50-100ft.

MOUNTING PATTERN



POWER

The included AC adapter should be connected to the POWER jack on the MRP-64. 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.

POWER/IR TERMINALS AND CONNECTIONS

- **TERMINAL: +12VDC or +16VDC**

  Positive power supply connection. It is internally tied to the Power jack. This can be used to power external IR or RF receivers. 12 or 16 VDC power supply may be used.

  Warning: If a 16V power supply is used, trigger outputs and the IR High Out will be 16V.

- **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

KEYPAD INPUTS

- Six (6) RJ-45
- Standard CAT5 cable
- Provide power output, IR signal input and RS-485 communication for any combination of any six RTI keypads (excluding K4 and similar large in-wall touchpanels which are limited to no more than three).

CONNECTING IR EMITTERS TO OUTPUT PORTS

The IR output ports on the MRP-64 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 MRP-64 using #22 AWG (minimum) wire.
NOTE: The IR output ports on the MRP-64 are NOT compatible with RTI communication and sensing modules such as the CM-232, VPS-1 and SPS-1.

ADJUSTING IR OUTPUT GAIN

The IR output gain can be separately adjusted for each of the four output ports. The MRP-64 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 MRP-64 clockwise for higher output power, or counter-clockwise for lower output power.

INFRARED HIGH OUT

The MRP-64 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**.

INFRARED RECEIVERS

The MRP-64 is compatible with all RTI keypads and touchpanels as well as industry standard IR receivers and repeater systems. Connect the SIGNAL INPUT, GROUND, and +12VDC (if power is needed) terminals to the signal out, ground, and power (if needed) terminals of the desired device.

If the MRP-64 sees an incoming system trigger code with a matching zone ID, it will execute the command or macro associated with that code. The MRP-64 can be programmed to either block or pass miscellaneous IR data through its output ports.

CHAPTER 3 | INSTALLATION AND OPERATION

RF RECEIVERS

The MRP-64 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.

RTI COM

This RJ-45 port allows connection to an RTI ZM-24 Zigbee® Transceiver Module. 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 touchpanels through a touchpanel connecting block (CB-4/CB-8). It also enables two-way serial communication (RS-485) with in-wall touchpanels or expansion devices such as the RCM-12 (Relay Control Module).

VOLTAGE TRIGGER OUTPUT

The MRP-64 has three voltage trigger outputs (12VDC @ 100mA) that are configured 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 MRP-64.

- 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 MRP-64 voltage trigger Ground terminal.

VOLTAGE SENSE INPUT

The MRP-64 has three voltage sense inputs (+3-24 VDC) that are configured 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.

ETHERNET

This RJ-45 port allows connection to a 10/100 Base-T Ethernet network (LAN) and can be used to download system files to the MRP-64. The Ethernet Link indicator will be lit red when the MRP-64 is connected to a LAN.

NOTE: The network settings such as the IP address are configured within *Integration Designer*®. The initial download of the system file containing this network information must be done using the USB port, subsequent downloads may use the Ethernet port.

CHAPTER 3 | INSTALLATION AND OPERATION

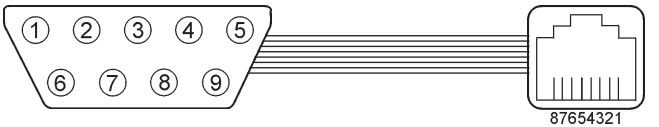
USB PORT

This is a host port for programming updates.

RS-232 PORTS

The MRP-64 is capable of two-way communication via two dedicated RS-232 ports. Use industry standard cat5 cable with RJ-45 termination (568B) and two RJ-45 > RS-232 adapters are included if a DB-9 connection is required by the equipment being controlled. The RS-232 transmits on pin #3 of the adapter DB-9, so if the equipment being controlled receives on pin #2, you will need a null modem adapter
NOTE: RS-232 communication has a distance limitation of 50-100 feet.

RJ-45 > DB-9 ADAPTER PINOUT



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 MRP-64

The MRP-64 must be programmed to operate. All programming is done using RTI's *Integration Designer*® software and is downloaded using the USB port.

Important Note: The MRP-64 will not respond to trigger codes or execute commands while the USB cable is attached to a PC. You must detach the MRP-64 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 an MRP-64 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 MRP-64 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 MRP-64 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 MRP-64 does not contain a valid program.

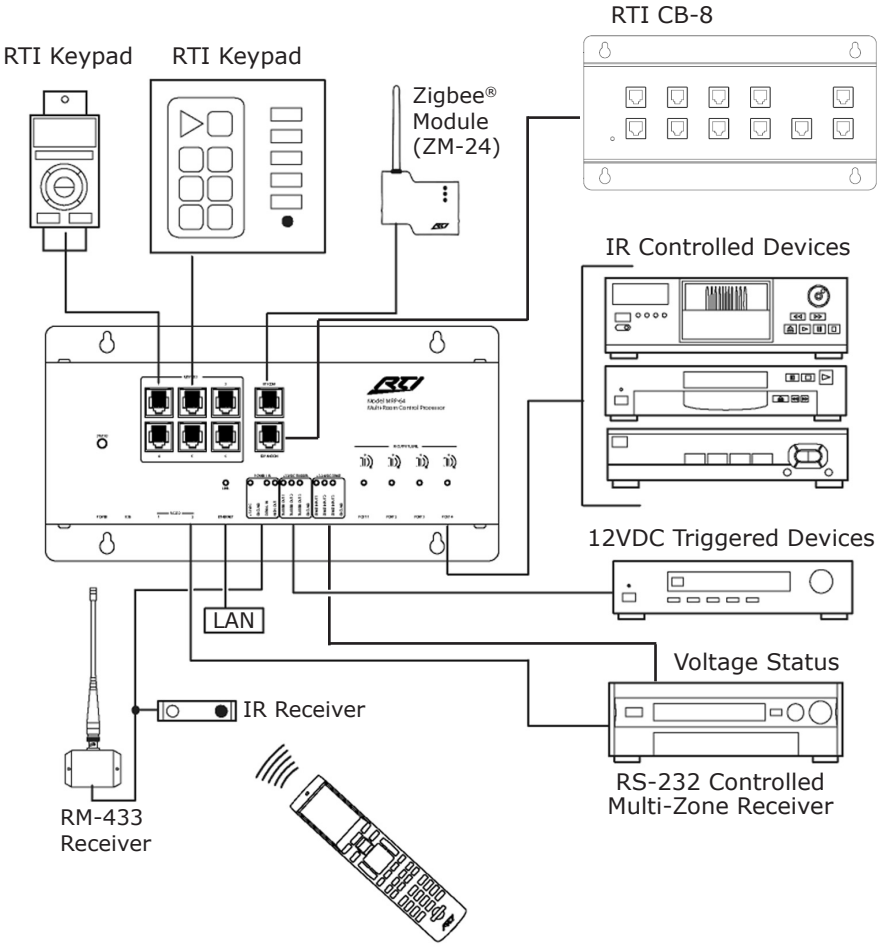
The status LED will also illuminate Green to indicate an active USB connection. A communication problem is indicated if the status LED is illuminated red while the USB cable is attached to a PC.

SETTING THE ZONE CODE

If the MRP-64 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. It is not necessary to set the Zone Code for RTI Zigbee® transceiver modules.

CHAPTER 3 | INSTALLATION AND OPERATION

CONNECTION OPTIONS



CHAPTER 4 | SPECIFICATIONS

Power Supply	+12 VDC, 4A
Infrared Output Port	Four 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, 12VDC, 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 Programming
Expansion Port	RS-485 / IR / Pwr, RJ45 Connection
RTI Com Port	Two-way Zigbee® Communication Port, RJ45 Connection
Keypad Ports	Six, RS-485 / IR/ Pwr
Mounting	Wall-mount or free standing
Dimensions (W x H x D)	11.0" (279mm) x 1.1" (28mm) x 5.7" (145mm)
Weight	2 lb. 13 oz. (944g)
Warranty	One Year (Parts & Labor)

All specifications subject to change without notice.

CHAPTER 5 | TROUBLESHOOTING

If you are having problems with your MRP-64 Multi-Room 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.

MRP-64 DOES NOT FUNCTION PROPERLY

- Verify that the USB cable is removed from either the MRP-64 or the PC. The MRP-64 will not function normally while there is an active USB connection with a PC.
- Verify the MRP-64 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 MRP-64. 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 MRP-64 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 MRP-64 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. Also verify that an IR emitter adapter cable is being used between the MRP-64 and the IR emitter plug.

MRP-64 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®.

MRP-64 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 MRP-64, software, or accessories, contact RTI at:

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

For questions regarding service or repair of your MRP-64, 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 MRP-64 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 MRP-64 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 MRP-64 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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