

# Installation and Operation Guide

*It's Under Control®*

## ZM-24

2.4 GHz Transceiver Module



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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.



**IC (Canada): 3166A-RTI1400**



### **DECLARATION OF CONFORMITY (DOC)**

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

**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 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 RTI ZigBee Transceiver Module (ZM-24) 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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ZigBee is a registered trademark of the ZigBee Alliance.

ZM-24, *Integration Designer*, and the RTI logo are registered trademarks of Remote Technologies Incorporated.

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 RTI ZM-24 2.4 GHz Transceiver Module.**

Utilizing the latest in wireless technology, the RTI ZM-24 Transceiver Module is capable of more than just receiving signals - it can transmit signals as well. This creates a bi-directional communication link between ZigBee® enabled RTI control processors and handheld remote controls. Feedback, such as song meta-data or volume level from supported devices can now be viewed on the remote control.

ZigBee® is a communication standard (IEEE 802.15.4) that uses radio frequency transmission at 2.4GHz to create a self-healing wireless mesh network. Designed for easy network expansion, multiple ZM-24 Transceiver Modules may be widely deployed, providing ultra-reliable and low-cost control of very large areas.

The ZM-24 is easy to install. Each RTI control processor, that is utilizing ZigBee® communication, needs only one ZM-24 hardwired to it. To extend the range of the wireless mesh network, additional ZM-24 "repeater" modules can be added by simply powering them from any electrical outlet within communication range of other ZM-24 modules. When multiple ZM-24 modules have been installed, a self-healing mesh network will be created, which adapts to changes or problems with the communication path.

### **IMPORTANT NOTES**

Please read these important notes about the ZM-24:

- **DO NOT WIRE A ZM-24 TO A CONTROL PROCESSOR AND A POWER SUPPLY SIMULTANEOUSLY.**
- When the ZM-24 is being used as a "repeater" it should only be powered from the power supply that comes with the ZM-24.
- The ZM-24 should be placed in an area where it is around normal room temperature (between 60°F to 90°F).
- Avoid installing the ZM-24 in a location where it can come in contact with direct sunlight.
- Do not let the ZM-24 get wet. It should not be handled with wet hands or placed in an area where it could get wet.
- Do not subject the ZM-24 to smoke, dust, or vibrations.
- Do not disassemble the unit. Service of the ZM-24 should be performed by authorized personnel only.

## PRODUCT CONTENTS

Contents within the box include the following items:

- One (1) RTI ZM-24 2.4 GHz Transceiver Module
- One (1) ZM-24 mounting bracket
- Two (2) 6 - 32 x 3 inch flathead mounting screws
- One (1) 1/2-wave antenna
- One (1) 6 ft. (2m) CAT5 cable with RJ45 ends
- One (1) operation manual
- One (1) power supply, 12V 1A

## UNPACKING AND INSPECTION

After unpacking your new RTI ZM-24 2.4 GHz Transceiver Module, save all of the packing materials in case you ever have to ship the unit.

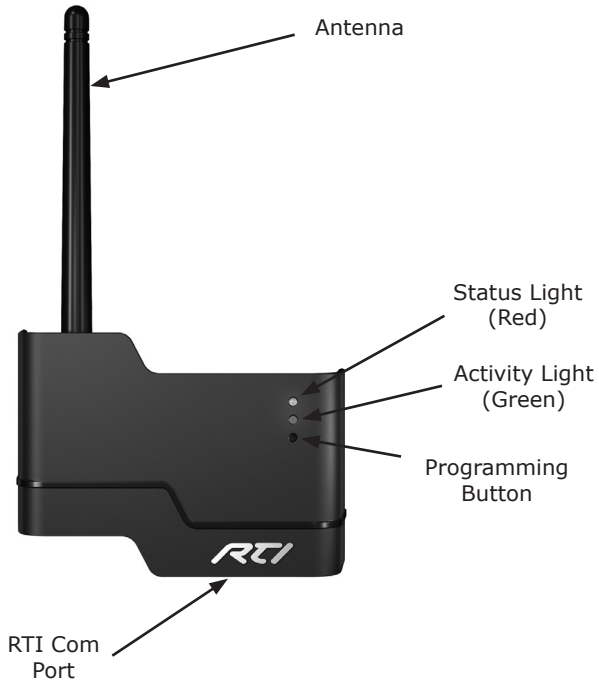
Thoroughly inspect the ZM-24 and packing materials for signs of damage. Report any damage to the carrier immediately. Report any equipment malfunctions to RTI or an authorized RTI distributor.

## CHAPTER 2 | FEATURES

The ZM-24 provides superior quality and reliability as well as these specific features:

- Enables bi-directional communication between ZigBee® enabled RTI remote controls and processors.
- Wireless ZigBee® communication range between compatible devices up to 100 feet (30m).
- Connects to an RTI control processor from up to 1000 feet (300m) away using standard Cat5 cable.
- Wireless coverage is easily expanded by adding ZM-24 modules, simply powering them from any electrical outlet within communication range of other ZM-24 modules.
- Utilizes IEEE 802.15.4 wireless ZigBee® communication at 2.4GHz.
- Durable plastic enclosure and adjustable antenna.
- Receives power from an RTI control processor or from the included power supply.
- Easy mounting with a detachable wall bracket.

### ZM-24 REFERENCE





## CHAPTER 3 | INSTALLATION AND OPERATION

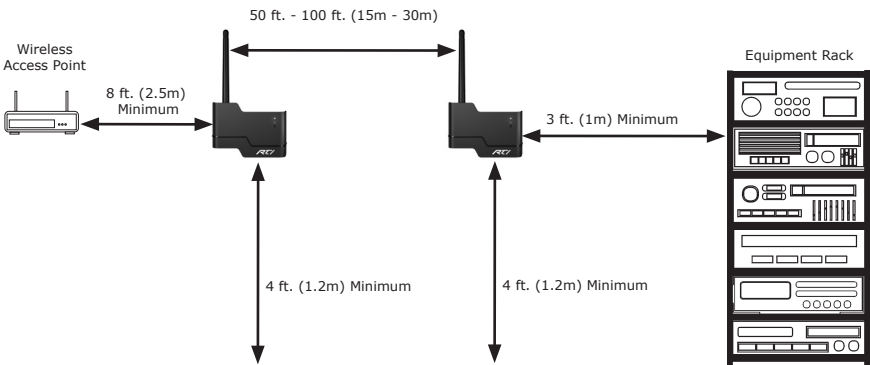
### MOUNTING AND LOCATION

The ZM-24 can be mounted on a shelf, wall, or cabinet. See below for recommended positioning. To extend the coverage area, additional ZM-24 modules may be installed 50-100 feet (15-30m) away from another ZM-24 module.

#### IMPORTANT INSTALLATION NOTES:

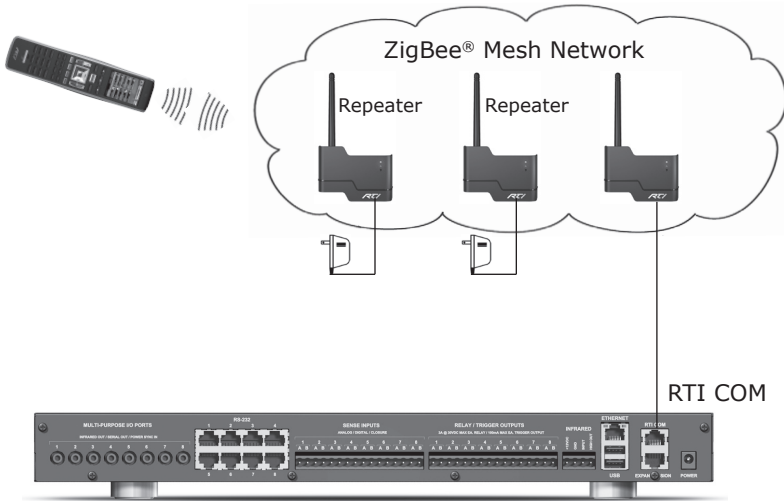
- The power supply that comes with the ZM-24 should only be used to power the ZM-24 when it is being used as a "repeater". Do not plug the power supply into a ZM-24 that is wired directly to a control processor.
- Every control processor must have a ZM-24 module plugged into it to enable communication.
- No Ethernet networking components (routers, hubs, switches) should be used for extending wiring from control processor to ZM-24.
- ZM-24 modules should be placed at least 3 feet (1m) from electronic components and at least 8 feet (2.5m) from 2.4GHz wireless access points or cordless phone systems.
- If additional ZM-24 modules are used to extend range, a slow down in network performance may occur.

#### INSTALLATION



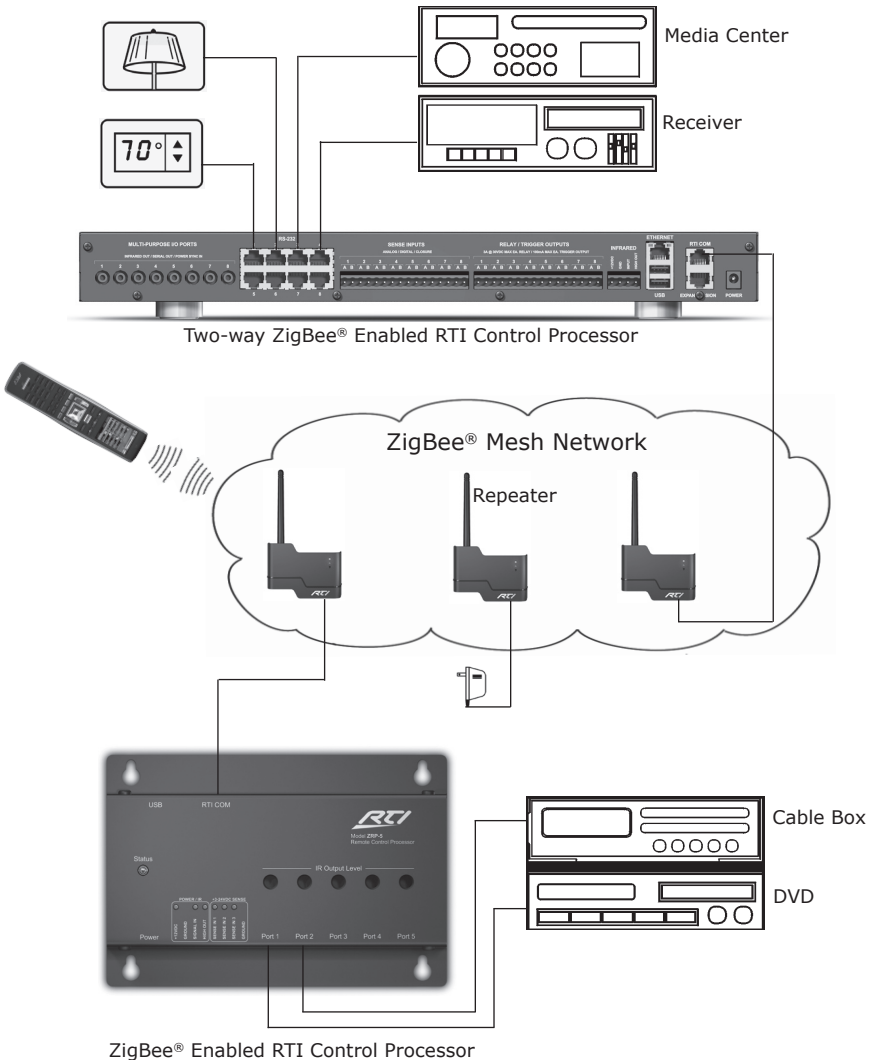
## CONNECTION OPTIONS

Wiring between the ZM-24 and a ZigBee® enabled RTI control processor should be cat5 cable with an RJ-45 termination (568B). Plug the cable into the RTI COM port on the control processor and the ZM-24 up to 1000 feet (300m) away. Additional ZM-24 modules may be used in “repeater” mode to extend wireless coverage.



**CONNECTION OPTIONS - CONTINUED**

Installations with more than one processor must have ZM-24 modules plugged into each processor. As long as the ZM-24 modules are within communication range of each other, a wireless mesh network will be established. Additional ZM-24 modules may be used in "repeater" mode to extend wireless coverage.



## PROGRAMMING

The ZM-24 connected to an RTI control processor will become the “coordinator” module and no additional programming is required. Additional ZM-24 modules may be used in “repeater” mode, creating a self-healing mesh network to extend wireless coverage. ZM-24 modules used in “repeater” mode must be programmed using a ZB-Pro Professional 2.4GHz Network Management Tool.

Programming a ZM-24 for “repeater” mode:

- Plug in and attach the ZM-24 power supply.
- Open the Integration Designer programming software and system file.
- Open the “Communications” menu and click on “Configure ZM-24 Wireless Repeater”.
- Follow the steps of the ZM-24 update wizard.

## PROGRAMMING NOTES:

- Please refer to the ZB-Pro operation guide for instructions on its use.
- ZM-24 must be within 10 feet (3m) of a ZB-Pro for an update to occur.
- The ZM-24 update process requires the programming button to be pressed.



## CHAPTER 4 | SPECIFICATIONS

Power	+9VDC to +16VDC, 60mA
RTI Com Port	Two-way ZigBee® Communication Port, RJ45 Connection, drives up to 1000 ft (300 m) of wire
Wireless Networking	IEEE 802.15.4 (ZigBee® Wireless Mesh Networking)
RF Frequency Range	2.4GHz
Operating Temperature	+32°F to +122°F (0°C to +50°C)
Operating Humidity	5% to 95% Non-condensing
Enclosure	High-impact molded ABS plastic, black
Mounting	Detachable bracket
Dimensions - Antenna Flat (W x H x D)	3.5" (89mm) x 4.0" (101mm) x 1.1" (28mm)
Dimensions - Antenna Extend. (W x H x D)	3.5" (89mm) x 7.25" (184mm) x 1.1" (28mm)
Weight	4 oz (113g)
Warranty	One Year (Parts & Labor)

All specifications subject to change without notice.



## CHAPTER 5 | TROUBLESHOOTING

If you are having problems with your RTI ZM-24 Transceiver Module, use the troubleshooting steps below.

If you continue to have problems:

- Refer to the Dealer section of the RTI website for further troubleshooting steps: [www.rticorp.com/dealers](http://www.rticorp.com/dealers)
- Refer to Chapter 7 for more information on contacting RTI technical support.

### STATUS LIGHT ACTIVITY

#### LIGHTS

Status = Red

Activity = Green

The ZM-24 configuration mode and network connection status can be determined by looking at the Status and Activity LEDs. Please refer to the Dealer section of the RTI website ([www.rticorp.com/dealers](http://www.rticorp.com/dealers)) for the latest description of the LED states (On/Off/Blinking) and what they mean.

### RF COMMUNICATION ISSUES

- Verify that ZM-24 modules being used as “repeaters” have been programmed using the ZB-Pro.
- Try a different ZM-24 removable antenna.
- If a wireless network is not established, try moving ZM-24 modules closer together.



## **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](http://www.rticorp.com)

### **CONTACTING RTI**

For general info, you can contact RTI at:

Tel. (952) 253-3100

Fax (952) 253-3131

[info@rticorp.com](mailto: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 ZM-24, software, or accessories, contact RTI at:

(952) 253-3137

[support@rticorp.com](mailto:support@rticorp.com)

[www.rticorp.com](http://www.rticorp.com)

For questions regarding service or repair of your ZM-24, contact RTI at:

(952) 253-3136

[service@rticorp.com](mailto:service@rticorp.com)

[www.rticorp.com](http://www.rticorp.com)

**Please do not return products to RTI without return authorization.**

### CHAPTER 6 | SERVICE AND SUPPORT

#### Shipment of ZM-24 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 ZM-24 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 ZM-24 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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