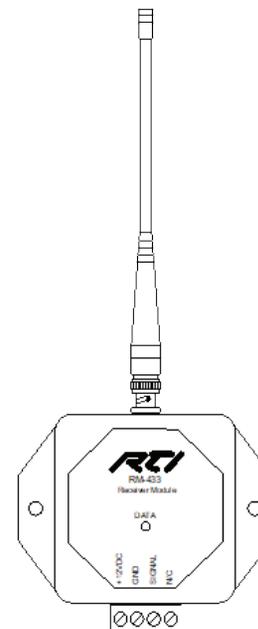




# RM-433 Radio Frequency Receiver Module

## Reference Guide



The RM-433 is a radio frequency receiving device that operates at 433MHz. It is designed to receive signals that are transmitted by RTI remote controls.

The RM-433 contains a microprocessor that monitors all received signals so that RF noise and data from non-RTI transmitters is filtered out. When valid RTI data is detected, the RM-433 passes the signal through its output driver which allows the data to travel long distances over wire. The output driver is compatible with industry standard infrared repeating systems, and can be wired together with those systems or with additional RM-433 units. This allows RTI control systems to be controlled from almost any location with either IR or RF transmitters.

### Key Features

The RM-433 provides superior quality and reliability as well as these specific features:

- Reliable RF reception due to matched antenna, connector, and PCB
- Modular design that allows multiple RM-433 units to be wired together. This allows for any desired coverage area.
- Output signal is compatible with industry standard infrared repeating systems. This allows multiple IR and/or RF receivers to be wired together into an RTI control system configured in "repeater" mode.
- No dedicated power supply required. Power is derived directly from the RTI control system.
- A feedback LED confirms operation.

## FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the Federal Communications Commission (FCC) Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the device.

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.

## Industry Canada Compliance Statement

This device complies with Industry Canada license-exempt RSS standard(s). 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.

Cet appareil est conforme avec Industrie Canada exempts de licence standard RSS (s). Son fonctionnement est soumis aux deux conditions suivantes:

1. Ce dispositif ne peut causer des interférences nuisibles.
2. Cet appareil doit accepter toute interférence reçue y compris des interférences qui peuvent provoquer un fonctionnement indésirable.



### DECLARATION OF CONFORMITY (DOC)

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

## Safety Suggestions

**Read and Follow 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.

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

**Power Sources.** Use only power sources of the type described in the operating instructions, or as marked on 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.

**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 has been exposed to rain.
- 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.

## Limited Warranty

RTI warrants its products for a period of three (3) years (one year for included battery packs); or for a period of time compliant with local laws when applicable from the date of purchase from RTI or an authorized RTI 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.

## Contacting RTI

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)

For general information, contact RTI at:  
Remote Technologies Incorporated  
5775 12th Ave. E Suite 180  
Shakopee, MN 55379  
Tel. (952) 253-3100  
[info@rticontrol.com](mailto:info@rticontrol.com)

## Service & Support

If you are encountering any problems or have a question about your RTI product, please contact RTI Technical Support for assistance (see the Contacting RTI section of this guide for contact details).

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

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

### Product Contents

- Contents within the box include the following items:
- One (1) RM-433 Radio Frequency Receiver Module
  - One (1) Flexible 1/2-Wave Whip Antenna
  - One (1) 10 ft. (3m) Hook-Up Wire
  - One (1) Reference guide

### Operation

The RM-433 is designed to operate with an RTI universal system controller and central control system. It receives RF data that was transmitted by the universal system controller, converts it to an electrical signal, and transfers it to the central control system using 3-conductor wire. Power is derived from the control system, and no programming or setup is required.

While power is applied to the RM-433, it will constantly monitor the air for signals modulated at 433MHz. The Data feedback LED indicates the presence of these signals:

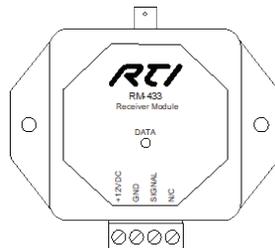
#### DATA LED

- Off = No 433MHz signal detected
- Red = Noise or invalid data detected
- Green = Valid data detected

Whenever the Data LED is green the RM-433 is sending the received data through its output driver. If the Data LED is off or red, the output driver is shut off. This prevents noise that is being received by one RM-433 from interfering with valid data that is being output by another RM-433 (if they are wired together to the same control system).

### RM-433 Reference

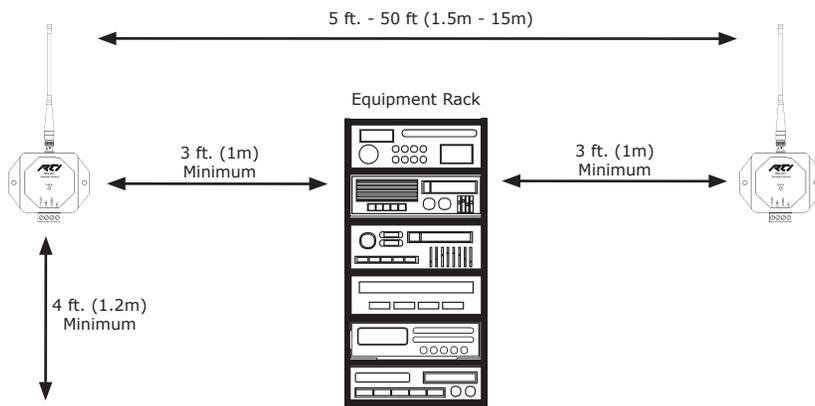
- +12VDC:** Positive power supply connection. Connect to +12VDC on RTI control system.
- GND:** Common ground connection. Connect to GROUND on RTI control system.
- SIGNAL:** Data output connection. Connect to SIGNAL IN on RTI control system.
- N/C:** No Connect. Do not connect this terminal.



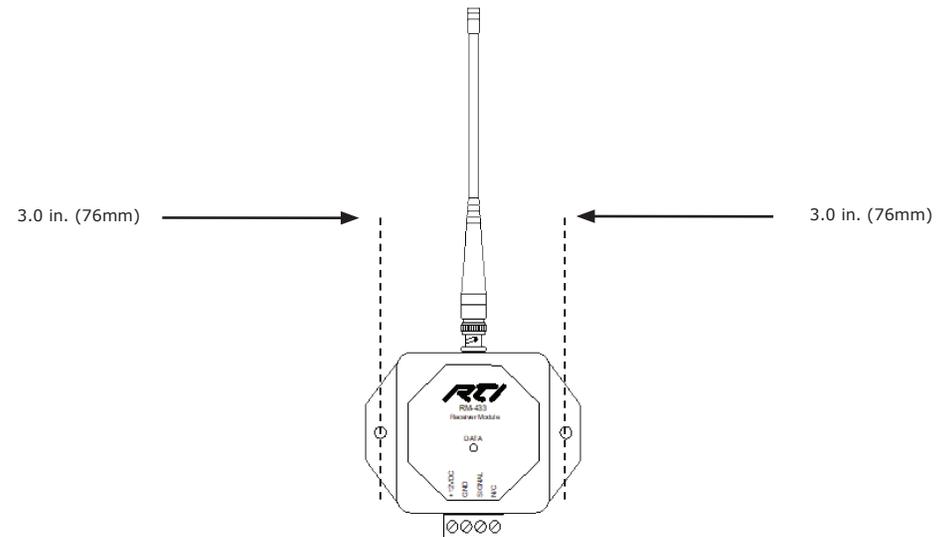
Use 22awg wire or larger. If Cat 5/6 wire is used, maintain pairs for each connection.

### Installation

The RM-433 can be mounted on a shelf, wall, or cabinet. See below for recommended positioning. For the best reception connect two or more RM-433 units together. This will help eliminate RF reception drop-out due to multi-path interference. Up to ten RM-433 units can be connected together as long as the total wire length does not exceed 1000 ft. (300m).



### Mounting Hole Pattern



### Troubleshooting

If you are having problems with your RM-433 please read these troubleshooting tips before contacting technical support.

#### The Data LED is constantly flashing red

- This does not necessarily indicate a problem that will effect performance. If it does, move the RM-433 to a different area.

#### The Data LED never turns green

- Make sure the RM-433 is wired correctly to the central control system, and verify the control system is powered-up.
- Make sure the RTI universal system controller is programmed to output RF data.

#### The Data LED turns green when it receives a command, but the control system does not respond

- Make sure the Signal terminal on the RM-433 is wired to the Signal In terminal on the central control system. The Signal In LED on the control system should illuminate.
- If there is also an infrared repeater connected to the control system, make sure it is not injecting noise onto the signal line.
- Make sure the programming in the central control system matches the universal system controller.

### Specifications

Power Requirements	+9VDC to +16VDC @ 60mA
RF Carrier Frequency	433.92 MhZ
Output Drive	200mA maximum
Operating Temperature	+32°F to +122°F (+0°C to +50°C)
Operating Humidity	5% to 95% non-condensing
Module Dimensions	3.5 in. x 3.4 in. x 1.0 in. (89mm x 86mm x 25mm)
Antenna Length	13 in. (330mm)
Weight	4.4 oz. (125 grams)

All specifications are subject to change.