

User's Guide

Instructions for Installation and Operation



Keyfob Transmitters

Models KTX433C1
KTX433C2
KTX433C3 KTXW433C3

Remote Control Receiver w/Relays

Models RCR303C3R
RCR433C3R



This page intentionally left blank.

Applied Wireless Inc.

Remote Control Transmitters

Models KTX433C1, KTX433C2, KTX433C3

Remote Control Receivers

Models RCR303C3R, RCR433C3R

Product Descriptions

These remote control receivers and transmitters are designed to provide a quick and cost effective solution for a variety of wireless remote control applications. The receiver includes three low voltage, internal, 10-Amp, SPDT relays and an external whip antenna. Expected range with these products is 300 to 600 feet*. The range may be increased substantially through the use of an external dipole antenna (DP300A, DP400A) at the receiver. The receiver offers excellent sensitivity and selectivity by utilization of SAW (Surface Acoustic Wave) technology and state of the art low noise amplifiers.

The receiver runs on 12 to 24 Volts AC or DC (supply not included).

Through the use of jumper settings on the receiver board, the receiver can be operated in momentary, latched (one button on, one button off), or toggle modes.

The receiver can quickly "learn" up to four Applied Wireless transmitters with different address codes. Alternatively, for applications requiring many transmitters operating the same receiver, Applied Wireless can provide transmitters with all the same address codes. Unless specified otherwise, all keyfob transmitters come from the factory with a unique ID code. A receiver will only respond to the transmitter whose ID code has been "learned". All other transmissions from transmitters with different ID codes will be ignored.

Keyfob transmitters are available with 1, 2 or 3 buttons. Power for the keyfob is supplied by a widely available 12V battery (included). An indicator LED indicates the transmitter is transmitting.

* Unobstructed, straight line-of-sight range, when used with the standard antennas included with the transmitter and receiver.

Installation Instructions

Before Beginning the Installation

Plan your installation carefully. The physical location and orientation of the receiver will have a significant influence on reception, particularly at longest ranges. For best results, **the receiver antenna, should be positioned vertically (pointing either up or down)**. If using an optional dipole antenna, it should also be oriented vertically. If necessary, use double-sided foam tape or hook & loop fasteners (not supplied) to secure the transmitter to a non-metallic vertical surface. Also, keep in mind that the RF signal from the transmitter will travel through most non-metallic building materials (wood, stucco, brick, etc.), however *maximum stated reception range is based on unobstructed line of sight conditions*.

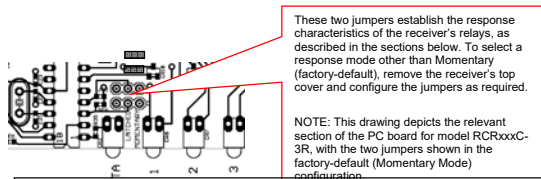
Keyfob Button/ Relay Assignment

The number of buttons on the KTX transmitter determines which relay in the RCRC-3R receiver responds to each button, as illustrated below:

Transmitter Type	Transmitter Button Number	Corresponding Relay in RCRC-3R Receiver
Single Button KTXxxxC1	1	Relay #2
Two-Button KTXxxxC2	1	Relay #1
	2	Relay #3
Three-Button KTXxxxC3	1	Relay #1
	2	Relay #2
	3	Relay #3

Selecting the Mode of Operation

RCRC3R remote control receiver may be configured for three different output response modes: Momentary Mode (factory-default), Latched Mode, or Toggle Mode (sometimes called "Push On / Push Off" Mode). The configuration selected applies to all three of the receiver's on-board relays. This section describes the characteristics of, and configuration settings for, the three Output Response Modes.



Momentary Mode (factory default)

A relay energizes when its associated button on the remote is depressed. The relay remains energized only until the transmitter's button is released (or reception of the remote's signal ceases).

Latched Mode

A relay energizes when its associated button on the remote is depressed, and remains energized after the button is released. When a different button on the remote is pressed, the currently energized relay will deactivate, and the relay corresponding to the button just pressed will energize. In this mode, only one relay can be active at any given time.

Toggle Mode

A relay energizes when its associated button on the remote is depressed, and remains energized after the button is released. A subsequent press of the same button on the remote will deactivate the relay. In this mode, each of the relays is completely independent of the others, thus any combination of one, two, three, or no relays may be energized at any given time.

Learn Mode Instructions

The receiver will learn up to 4 transmitter IDs. To learn a transmitter:

- 1) Power up the receiver,
- 2) Remove the receiver antenna
- 3) Press the "Learn" button.

The "Learn" LED will then light.

- 4) With the transmitter within 1 foot of the receiver, press any button on the transmitter.

When the LED goes out, the transmitter has been learned. To learn another transmitter, repeat the process.

When the fifth transmitter is learned, the first transmitter that was learned is eliminated from memory.

The receiver will retain this memory, even if power is discontinued from the receiver.

LED Indicators (Receiver)

Power LED: Indicates that voltage is applied to the receiver.

Data LED: LED indicates reception of data signal at the receiver's frequency of operation. For troubleshooting purposes, it can indicate the following:

- 1) Whether the transmitter is actually transmitting.
- 2) Whether there are interfering signals at the receiver's frequency of operation. The LED should remain off if the transmitter button is not being pressed. Any LED indication would indicate that an interfering signal is present, the severity of which is indicated by how much the LED is activated.

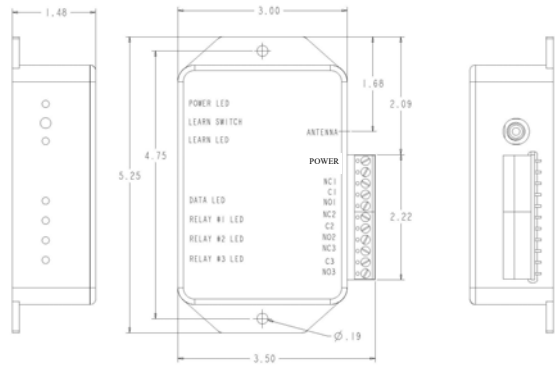
Relay LED's (3): They indicate for each relay whether the relay is activated.

Learn LED: Indicates when "Learn" mode is activated.

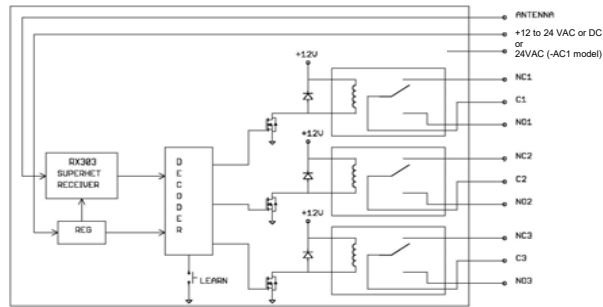
Controlling 120V Circuits and High Amperage Loads

The RCR receiver is not UL listed, and 110 or higher voltage circuits should not be directly connected to the receiver. These circuits can be controlled however by using a contactor with a 24-VAC coil (AW PN 269006, 30A contactor). For low voltage loads over 10 Amps, Applied Wireless offers high current relays (AWPN 269007, 30A 12VDC Relay) that can be controlled by the RCR receiver.

Receiver Package Information



NC-Normally Closed Contact
 C1- Common Contact
 NO- Normally Open Contact-
 Terminal Strips may be "unplugged" for ease of installation.



Block Diagram

This page intentionally left blank

Ordering Information

Frequency (MHz)	Model Number	Model Number (High Transient Suppression)	Matching Keyfob Transmitter	Watertight Keyfob Transmitter
303.825	RCR303C-3R	RCR303C-3R-AC1	KTX303Cx	KTXW303Cx
433.920	RCR433C-3R	RCR433C-3R-AC1	KTX433Cx	KTXW433Cx

²x=Number of buttons: 1, 2, or 3

Receiver Electrical Characteristics

Parameter	Min	Typ	Max	Unit
Operating Voltage Range (AC or DC)	10	12-24	30	Volts
-AC1 Model Operating Voltage Range		24	30	VAC
Operating Current, Unactivated		20	24	mA
Operating Current, Activated		58	63	mA
Relay Contact Ratings @ 28VDC			10	A
Receiver Sensitivity		-112		dBm
Center Frequency		See chart		
Antenna Input Impedance		50		Ohms
Operating Temperature	-20		+60	C
Number of Address Codes Possible			16	Million

KTX Transmitter

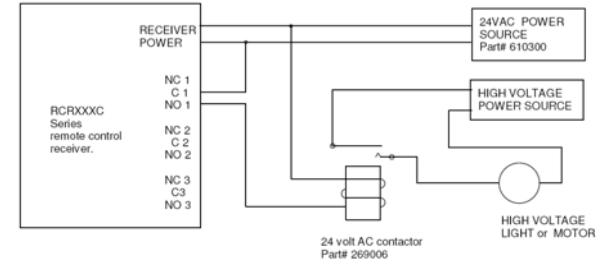
Battery: 12VDC Alkaline, type 23A
 Size: 2.41 x 1.45 x 0.53 inches (61 x 37 x 13.5mm)

Related Optional Products

AW Part Number	Description
DP300A	Dipole Antenna, 303 MHz, with 7' Cable
DP400A	Dipole Antenna, 433 MHz, with 7' Cable
610307	AC Power Adapter, 120VAC -12VDC, 200mA
610300	AC Power Transformer, 120VAC-24VAC, 20VA
800216	AC Power Adapter, 120VAC-12VDC, 500mA
269006	AC Power Line Contactor, SPST, 30A, 24VAC coil
610347	AC Power Adapter, 120VAC-24VDC, 0.8A

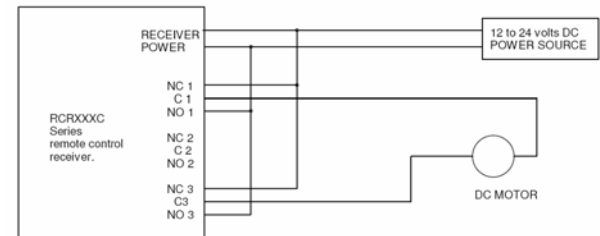
Application Drawings

Application Circuit - Light/Motor ON/OFF, With Contactor for High Voltage Switching

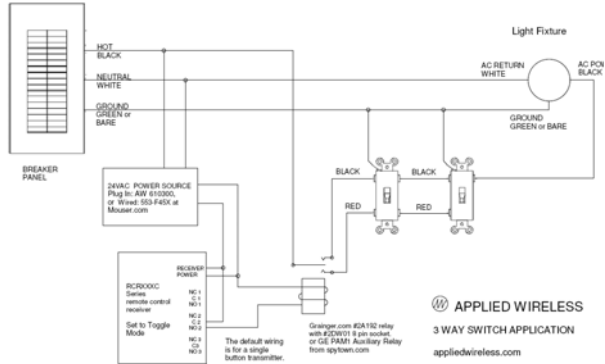


Low voltage power source as the lamp requires, 12 to 24 volts AC or DC (for RCRXXXX Series.)
 The receiver mode would typically be set for toggle (push on - push off) or latching (push #1 on - push #3 off).
 A voltage above 24 volts must be isolated from the receiver circuitry by a contactor.
 (RCRXXXX Series requires 12 volts DC only for receiver power.)

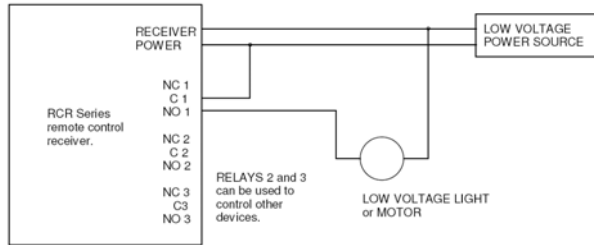
Application Circuit - Motor Forward/Reverse, Low Voltage



3 Way Switch Operation with Remote Control



Application Circuit - Light/Motor ON/OFF, Low Voltage



Low voltage power source as the lamp requires, 12 to 24 volts AC or DC (for RCR000C Series.)
The receiver mode would typically be set for toggle (push on - push off) or latching (push #1 on - push #3 off).
The receiver can be powered separately for lower lamp voltages.
(RCR000B Series requires 12 volts DC source for receiver power.)

For Models: KTX303n, KTXW303n, KTX433n and KTXW433n, where n=number of channels:

FCC ID: QY4KTX433

"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, and (2) this device must accept any interference received, including interference that may cause undesired operation."

INSTRUCTION TO THE USER

Note: 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:

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an experienced radio/TV technician for help.
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.

Changes or modifications not expressly approved by *Applied Wireless* could void the user's authority to operate the equipment.

ONE YEAR LIMITED WARRANTY (USA)

Products manufactured by APPLIED WIRELESS, INC. (AW) and sold to purchasers in the USA are warranted by AW according to the following terms and conditions. You should read this Warranty thoroughly.

● WHAT IS COVERED, AND DURATION OF COVERAGE:

AW warrants the product to be free from defects in materials and workmanship for one (1) year from the date of purchase by the original end user purchaser.

● WHAT IS NOT COVERED:

This warranty does not apply to the following:

1. Damage caused by accident, physical or electrical misuse or abuse, improper installation, failure to follow instructions contained in the User's Guide, any use contrary to the product's intended function, unauthorized service or alteration (i.e. service or alteration by anyone other than AW).
2. Damage occurring during shipment.
3. Damage caused by acts of God, including without limitation: earthquake, fire, flood, storms, or other acts of nature.
4. Damage or malfunction caused by the intrusion of moisture or other contamination within the product.
5. Batteries supplied by AW in or for the product.
6. Cosmetic deterioration of chassis, cases, or pushbuttons resulting from wear and tear typical of normal use.
7. Any cost or expense related to troubleshooting to determine whether a malfunction is due to a defect in the product itself, in the installation, or any combination thereof.
8. Any cost or expense related to repairing or correcting the installation of an AW product.
9. Any cost or expense related to the removal or reinstallation of the product.
10. Any product whose serial number or date code is altered, defaced, obliterated, destroyed, or removed.

This warranty is extended to the original purchaser of the product(s) only, and is not transferable to any subsequent owner or owners of the product(s). AW reserves the right to make changes or improvements in its products without incurring any obligation to similarly alter products previously purchased.

● EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES:

AW expressly disclaims liability for incidental and consequential damages caused (or allegedly caused) by the product. The term "incidental or consequential damages" refers (but is not limited) to:

1. Expenses of transporting the product to AW to obtain service.
2. Loss of use of the product.
3. Loss of the original purchaser's time.

● LIMITATION OF IMPLIED WARRANTIES:

This warranty limits AW's liability to the repair or replacement of the product. AW makes no express warranty of merchantability or fitness for use. Any implied warranties, including fitness for use and merchantability, are limited in duration to the period of the one (1) year express limited warranty set forth herein. The remedies provided under this warranty are exclusive and in lieu of all others. AW neither assumes nor authorizes any person or organization to make any warranties or assume any liability in connection with the sale, installation, or use of this product.

Some states do not allow limitations on how long an implied warranty lasts, and some states do not allow the exclusion or limitation of liability for incidental or consequential damages so the limitations or exclusions stated herein may not apply to you. This warranty gives you specific legal rights and you may have other rights which vary from state to state.

(continued on next page)

ONE YEAR LIMITED WARRANTY (USA), cont.

● HOW TO OBTAIN WARRANTY SERVICE:

If a product covered by this warranty and sold in the USA by AW proves to be defective during the warranty period AW will, at its sole option, repair it or replace it with a comparable new or reconditioned product without charge for parts and labor, when said product is returned in compliance with the following requirements:

1. You must first contact AW at the following address/phone for assistance:

APPLIED WIRELESS, INC.
1250 Avenida Acaso, Suite F
Camarillo, CA 93012
Phone: (805) 383-9600

If you are instructed to return your product directly to the factory, a Return Merchandise Authorization number (RMA) will be issued to you.

2. You must package the product carefully and ship it insured and prepaid. The RMA number must be clearly indicated on the outside of the shipping container. *Any product returned without an RMA number will be refused delivery.*
3. In order for AW to perform service under warranty, you must include the following:
 - (a) Your name, return shipping address (not a PO Box), and daytime telephone number.
 - (b) Proof of purchase showing the date of purchase.
 - (c) A detailed description of the defect or problem.

Upon completion of service, AW will ship the product to the specified return shipping address. The method of shipping shall be at AW's sole discretion. The cost of return shipping (within USA) shall be borne by AW.

Troubleshooting Guide

Symptom	Possible Problem	Notes
Poor Range	Antenna	Receiver Antenna connected, vertically oriented and placed preferably at least 7' high and away from metal surfaces. Antenna will not work inside a metal box.
	EMI Interference	Receivers located very close to some computers, certain motors or battery chargers may cause reception problems.
	RF Interference	Check equipment operation at a different location.
	Battery	If the remote transmitter has an indicator LED, does it light brightly when button is pressed? If not, replace battery.
Doesn't Work	Power	Check power to receiver (power LED lights?)
	Data Reception	Check that Data LED on receiver flashes when remote button is pressed. If Data LED flashes without pressing a remote button, it may be an interference issue (see above). If Data LED flashes only when remote button is pressed, continue down this list.
	Relay Connection	Verify connected to the correct Relay-For 1-button remotes, Relay 2 is used; for 2-button remotes, relays 1 and 3 are used.
	ID Code Match	Re-"Learn" remote to receiver. MUST BE DONE WITH ANTENNA REMOVED.
	Re-Boot Needed	Remove power from receiver for at least 5 seconds.



Applied Wireless products are designed and manufactured with pride in the United States of America

© Copyright 2007 by Applied Wireless, Inc. All rights reserved.
Specifications subject to change without notice.

APPLIED WIRELESS, INC.
1250 Avenida Acaso, Camarillo, CA 93012
Phone: 805-383-9600 Fax: 805-383-9001
Email: info@appliedwireless.com
www.appliedwireless.com