

Short Range Wireless Switch System 1 Installation and Operation Guide

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Introduction

Thank you for choosing Remote Control Technology's Short Range Wireless Switch System 1 (SRWSS 1). This versatile device has numerous practical applications and will surely become a mainstay in your business and production structure. This guide will show you how to install and customize your system to meet your needs.

This system consists of:

- 1 wireless radio transmitter
- 1 wireless radio receiver
- 2 plastic NEMA 4X enclosures with built-in power supplies
- 2 sets of wall mounting brackets included with the enclosures
- 2 42" high-gain antennas
- 2 right angle mounting brackets
- 2 lightning arrestors

Before Installation

- Remote Control Technology recommends that you have your new wireless switch system installed by a professional electrician.
- Be sure to install the receiver and transmitter at least 20-40 feet away from any other device that would cause interference such as variable frequency drives, large power transformers, and other radio equipment.
- Keep AC and DC wiring in separate bundles.
- Use a multi-conductor shielded cable to connect any devices.
- Provide a good earth ground to the receiver and transmitter power supply.
- Locate the receiver and transmitter antennas away from any device that would cause interference.
- Be sure to bench test the system before installation.

To Test: Separate the transmitter and receiver by at least 20ft. Do not install the receiver antenna while testing. Never transmit without attaching the transmitter antenna.

Receiver Installation

1. Connect one side of the device to be switched to the common (COM) contact of the terminal block. The other side is connected to the normally open (NO) contact or the normally closed (NC) contact.
2. Attach the antenna to the antenna mount assembly. The lightning arrestor is shipped connected to the antenna mount. Do not disassemble the antenna mount or the lightning arrestor.
3. Connect the antenna assembly to the coaxial cable provided and connect the cable to the BNC connector on the top of receiver enclosure.

Note: Do not loop excess coaxial cable into a coil. This will cause a radio frequency choke and reduce your signal range. Lay excess cable in a straight line or loosely route it back and forth in an "S" configuration.

4. Affix the wall mounting brackets included with the system to the back of the enclosure and mount the enclosure to a wall, pole, or another enclosure.
5. Connect 110–220 VAC power to the 12 VDC power supply. Alternatively, connect a 12 VDC power source directly to the supply terminals marked “–” and “+” on the receiver.

Caution: Check all wiring connections before applying power. Failure to do so can result in serious damage to your product.

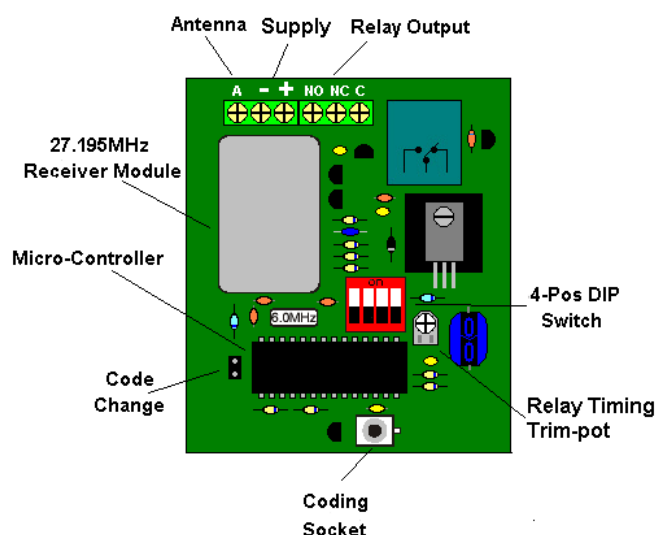


Figure 1. SRWSS 1 Receiver Board

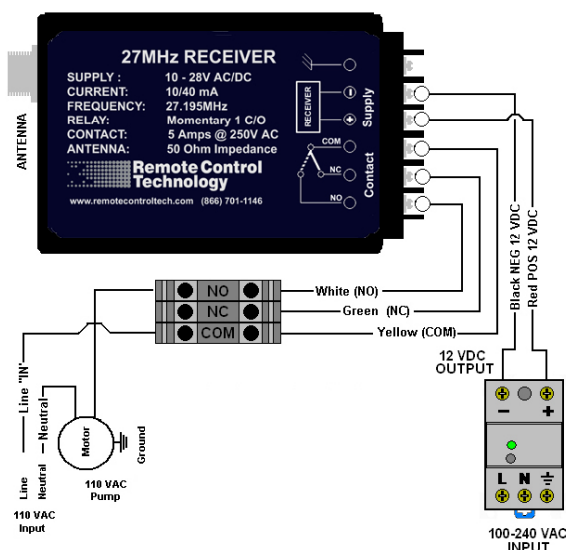


Figure 2. SRWSS 1 Receiver Wiring

Transmitter Installation

1. Connect a dry contact closure such as a switch to the terminal block.
2. Attach the antenna to the antenna mount assembly. The lightning arrestor is shipped connected to the antenna mount. Do not disassemble the antenna mount or the lightning arrestor.
3. Connect the antenna mount assembly to the coaxial cable provided, and connect the cable to the BNC connector on the top of transmitter enclosure.

Note: Do not loop excess coaxial cable into a coil. This will cause a radio frequency choke and reduce your signal range. Lay excess cable in a straight line or loosely route it back and forth in an "S" configuration.

4. Affix the wall mounting brackets included with the system to the back of the enclosure and mount the enclosure to a wall, pole, or another enclosure.
5. Connect a 110-220 VAC power source to the built-in power supply. Alternatively, connect a 12 VDC power source directly to the transmitter

Caution: Check all wiring connections before applying power. Failure to do so can result in serious damage to your product.

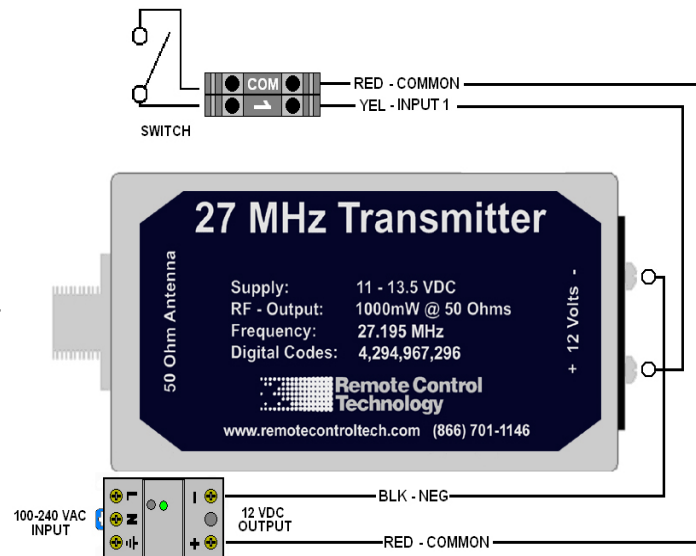
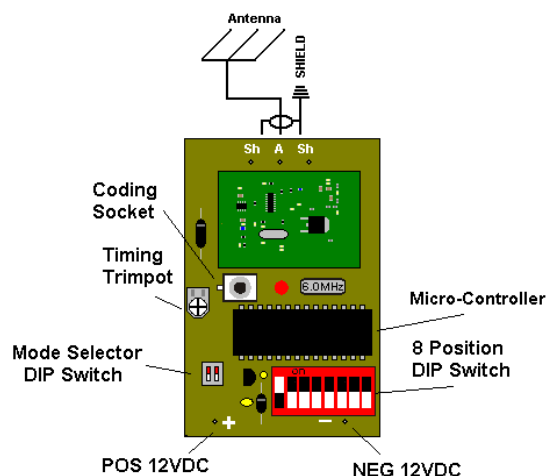


Figure 3. SRWSS 1 Transmitter Board

Figure 4. Transmitter Wiring Diagram

Programming

The SRWSS 1 receiver and transmitter are shipped pre-programmed to communicate with each other, which allows them to be installed and used as soon as they have been received. However, there are situations where it may be necessary to reprogram the system which are generally limited to the addition of more receivers or transmitters to an existing system.

To program the SRWSS 1:

1. Remove the blue inside covers of the receiver and transmitter to reveal their coding sockets. Refer to Figure 1 on page 3 to find the receiver coding sockets and Figure 3 on page 4 to find the transmitter coding sockets.
2. Connect the 110-220 VAC power to each device's power supply. Alternatively, connect a 12 VDC power source directly to the devices.
3. If a new security code is needed, momentarily short the code change pins marked by the "CC" symbol using either the jumper found on one of the coding pins or a flat-bladed screwdriver. Refer to Figure 1 on page 3 to locate the code change pins.
4. Connect the link cable to the coding sockets of the receiver and transmitter. The red LED of the transmitter should glow steadily.
5. Close the input terminal on the transmitter for two seconds to program the transmitter. The red LED on the transmitter should blink twice and then shut off, indicating a successful code transfer.
6. Remove the link cable from the receiver and the transmitter.
7. Select the receiver and transmitter operation modes (see Operation below).
8. Disconnect power from the receiver and transmitter and replace the receiver and transmitter covers.

Multi-transmitter Programming

A SRWSS 1 receiver can be controlled by multiple transmitters. Configuring the receiver to accept commands from multiple transmitters is useful for applications such as alarms where multiple transmitters connected to sensor devices can send signals to a single receiver that is connected to an alarm system.

To program multiple transmitters to control one receiver:

1. Apply power to the SRWSS 1 receiver as shown in Receiver Installation and apply power to the receiver.
2. To randomly generate a new receiver code, momentarily short the code change pins marked by the “CC” symbol. Refer to Figure 1 on page 3 to locate the code change pins.
3. Follow steps 4 and 5 of Programming for each transmitter to be installed.
4. Using the DIP switch on the receiver, select the mode of operation for the outputs (see Receiver Operation Modes).

Multi-receiver Programming

In the same way that one SRWSS 1 receiver can receive commands from multiple transmitters, multiple receivers can be controlled by one transmitter. This is useful in applications such as pump control where one transmitter can control multiple pumps simultaneously.

To program one transmitter to control multiple receivers:

1. Apply power to the receivers and transmitter as shown in Receiver Installation and Transmitter Installation.
2. Short the two code change pins marked with the symbol “CC” on each receiver by sliding the jumper that comes with each receiver over the pins. Refer to Figure 1 on page 3 to locate the code change pins. Maintain all shorts until programming for all receivers is complete.
3. Connect the transmitter to a receiver using the red link cable. The transmitter LED will not illuminate when the link cable is installed.
4. Close the input on the transmitter for two seconds. The LED will blink rapidly when the input is closed to program the receiver.
5. Disconnect the transmitter from the receiver and repeat step 4 for each receiver being installed.

Operation

The Short Range Wireless Switch System 1 (SRWSS 1) 1-Watt system is suitable for applications where shorter ranges (up to ½ mile) and simple wireless switching are needed. Operation is simple; connect a switch, relay, or any other device with a dry contact closure to the transmitter input. When the contact is closed, the transmitter will immediately transmit to the receiver, changing the state of the receiver output. The output relay built in to the receiver is a SPDT Class C relay rated for 5 amps @ 250 VAC with normally open (NO), normally closed (NC), and common (C) contacts.

Receiver Operation Modes

The receiver has eight modes that control how the outputs function. These modes are selected using the four-position DIP switch on the receiver. All time durations for each operating mode can be adjusted using the trimpot. Turning the trimpot clockwise increases time durations and turning it counter-clockwise decreases the duration. Refer to Figure 1 on page 3 to find the trimpot on the receiver. Table 1 below lists and describes each operation mode. The white boxes in the diagram represent the position of the DIP switches.

Table 1. SWRSS 1 Receiver Output Operation Modes


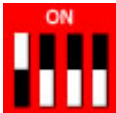
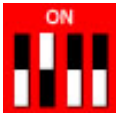
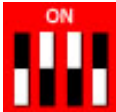
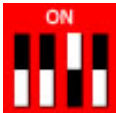
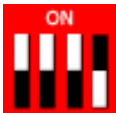
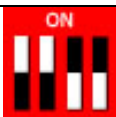
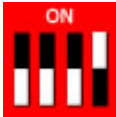
DIP Switch Position	Receiver Operation Mode
	Momentary: In momentary mode, the output will change its state and maintain it for the duration of the transmission received.
	Flip-Flop: In flip-flop mode, the output will change its state and maintain it until a matching transmission is received.
	Delayed Off 1: In delayed off 1 mode, the output will change its state and maintain it for 1-10 seconds. This is the default operating mode with the delay set to 10 seconds.
	Delayed Off 2: In delayed off 2 mode, the output will change its state and maintain it for 10-300 seconds.
	Pulsing: In pulsing mode, the output will change its state repeatedly for 10-300 seconds.
	Latching: In latching mode, the output will change its state and maintain it until power to the receiver is removed or interrupted.





Table 1. Continued

DIP Switch Position	Receiver Operation Mode
 	<p>On-Off: On-Off mode requires a two-input transmitter. Push-button "1" changes the state of the output. Push-button "2" returns the output to it's original state.</p> <p>Test: In test mode, the output will change its state and maintain it until position 4 on the DIP switch is in the off position.</p>

Transmitter Operation Modes

Transmitter operation modes are selected using the two-position DIP Switch on the transmitter. The time durations of the transmitter operation modes can be adjusted using the trimpot. Refer to Figure 3 on page 4 to locate the trimpot on the transmitter. Table 2 below describes the operation modes, and the white boxes in the diagrams represent the position of the DIP switch.

Table 2. SRWSS 1 Transmitter Operation Modes

DIP Switch Position	Transmitter Operation Mode
	<p>2 to 62 second Repeat Transmission Transmitter will transmit a 1.5 second transmission burst and then repeat the burst transmission every 2-62 seconds if at least one code switch from the eight-position DIP switch is ON and power is connected. This is the default operation mode, with the transmitter set to repeat its transmission every two seconds.</p>
	<p>1 to 10 Minute Repeat Transmission Same as mode 1, except the repeat burst transmission is 1-10 minutes.</p>
	<p>Continuous Five-Minute Transmission Transmitter will transmit continuously for up to five minutes as long as the input is closed. Once the input is open or five minutes have elapsed, the transmission will end.</p>
	<p>One Burst Transmission Transmitter will transmit for a duration between 1.5 seconds to 10 seconds and then go into sleep mode.</p>
Special	<p>Sleep Mode Sleep Mode is activated when all switches on the eight-position DIP switch are OFF. This overrides all four other modes.</p>

Optimizing Your Wireless Switch System

Following these guidelines will help you maximize the range your signal:

- Supply the antennas for the receiver and the transmitter with a good ground plane. To do this, apply a 10 AWG or larger wire from the lightning arrestor to an earth ground or mount the antenna to a metal pole or conduit connected to an earth ground.
- Mount the antennas at least 40 feet away from electric motors, large power transformers, power lines, VFDs, or any equipment that produces ambient electrical noise.
- Mount all antennas outdoors. For equipment located indoors, run a length of RG-58 coaxial cable from the receiver to an antenna mounted outdoors.
- Mount antennas as high as possible, at least 3 feet away from vertical surfaces and not under roof awnings. If mounting the antenna on a building, mount it at the apex or the highest point of the building.
- When mounting the antenna to a metal pole, mount the antenna at the top of the pole or at least 3 feet away from the pole.
- Avoid mounting the antenna on the same pole as the power service.
- Avoid mounting the antenna on or near a chain link fence. If necessary, the antenna can be mounted at least 3 feet above the fence.
- Use only high-quality antenna and cable connectors, which are available from Remote Control Technology.
- Make sure that the antenna-mounting bracket is assembled as shown to the right.

