Short Range Wireless Switch System Light Duty 900 MHz Handheld Installation Guide

CHECK ALL WIRING CONNECTIONS BEFORE APPLYING POWER

Operation

The Short Range Wireless Switch System (SRWSS) 902-928 MHz Systems use a 1, 2, 4 or 8 button handheld transmitter and a 1, 2, 4 or 8 output receiver to provide wireless control of multiple devices. The transmitter is used to send a coded set of instructions to the receiver activating corresponding relay outputs.

A 12-position DIP switch allows the user to digitally code the receiver to match the transmitter input. Multiple transmitters can be programmed to one receiver, and a single transmitter can operate multiple receivers.

The receiver output relay has two modes that control how the relays function. The relay output modes are selectable using a 1, 2 or 4 position DIP switch on the receiver. Each relay is a SPDT Class C rated for 5 amps@ 250VAC (or 5A @ 30 VDC) with Normally Open (NO), Normally Closed (NC), and Common (C) contacts.

The receivers and transmitters use fast frequency hopping (FFH) to allow up to eight receivers to be used in the same area. No interference or jamming will occur.

Both transmitters and receivers use a dual digital coding technology to provide secure, interference-free operation. The operator has a choice between using the 12-position DIP switch and encrypted coding. The 12-position DIP switch allows for simple programming and involves simply matching the 12-position dip switch on both the transmitter and receiver. The encrypted coding is a random generated code, which is programmed wirelessly to the transmitter and receiver. The encrypted code is usually used when more codes are required for high security applications.

Light Duty Hand-Held Transmitters

Key components of the receiver are:

- Supply Connections
- SMA and Terminal Block Antenna Connections
- Position Relay Mode DIP Switch(es)
- 902-928MHz Receiver
- 12 Position Receiver Code DIP Switch
- Relay Connections
- Signal Strength Indicator (see below)
- Receiver Status Indicator
- Output Relay Test Button
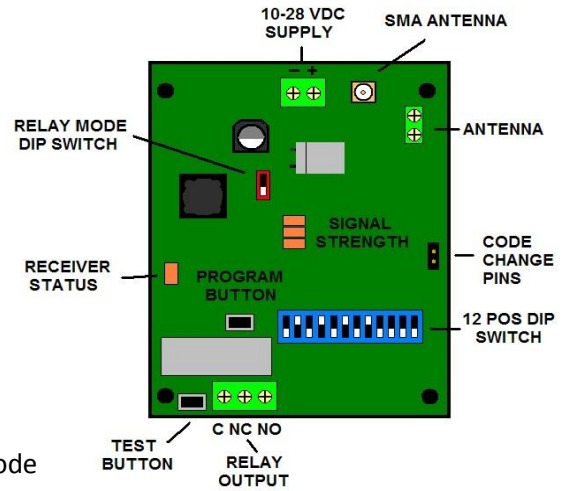
By default, the receiver's code in preset and the relay output mode is set to Momentary mode. This must be taken into consideration when setting up the receiver.

Note: Bench test the system prior to the final installation to ease setup and gain a better understanding of how the system functions.

Signal Strength Indicator

Most receivers in the 902-928MHz series include a signal strength indicator*, which is useful for troubleshooting.

1-Relay Output Receiver – Three yellow LEDs

2-Relay Output Receiver – Three yellow LEDs

The three LEDs indicate different levels of signal strength.

3 LEDs	-80dBm	Very Strong Signal	Very Reliable Operating Conditions
2 LEDs	-90dBm	Strong Signal	Very Reliable Operating Conditions
1 LED	-100dBm	Good Signal	Reliable Operating Conditions

4-Relay Output Receiver – No signal strength LEDs

8-Relay Output Receiver – One red "signal acknowledgement" LED

*Subject to change

Relay Output Modes

Relay outputs on the receivers can function in either Momentary or Flip-Flop (Toggle) mode. By default the mode is set to Momentary. The relay output modes are selectable using the DIP switch.

- **Momentary** – Output is active for as long as the transmitter button is pressed. This is a standard mode on most automatic gates or garage door openers.

- **Flip-Flop** – Output remains active until next press of the transmitter button. Similar to switching "on" and "off" a light.

9112R-001-002   **1-Relay Output Receiver**

9212R-001-002   **2-Relay Output Receiver**

9412R-001-002   **4-Relay Output Receiver**

The 1, 2 & 4 relay output receivers have two modes that control how the relay output functions. These modes are user selectable using the 1, 2 or 4 position DIP switch on the receiver. Each DIP switch number matches the corresponding relay output.

The two Mode functions are as follows:

Momentary
Move the switch position to "OFF" to set the selected relay(s) in momentary mode. In momentary mode, the selected relay(s) will change its state and maintain it for the duration of the transmission received. Once the transmission is terminated, the relay will change back to its original state.
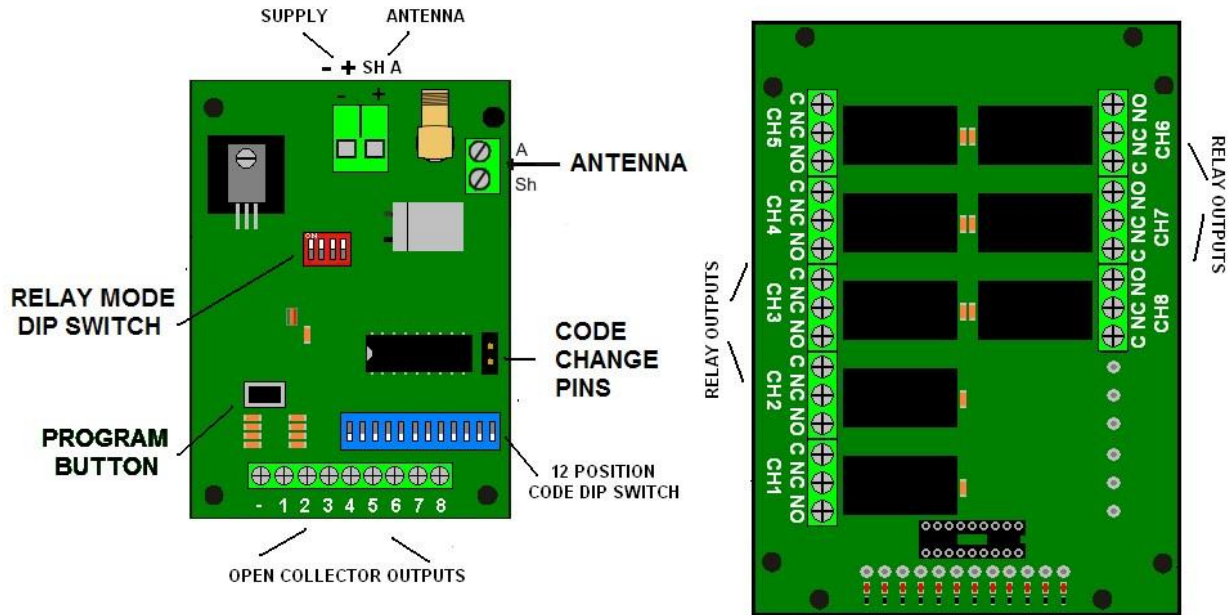
Flip-Flop
Move the switch position to "ON" to set the selected relay(s) in Flip-Flop mode. In Flip-Flop mode, the selected relay(s) will change its state and maintain it until a matching transmission is received. Every time a transmission is received the relay will change its state and maintain it until another transmission is received.
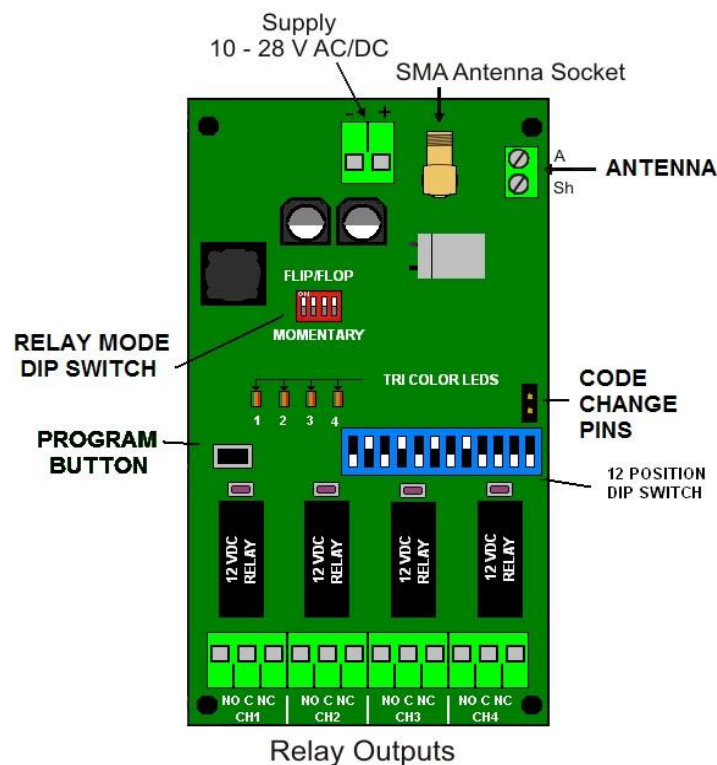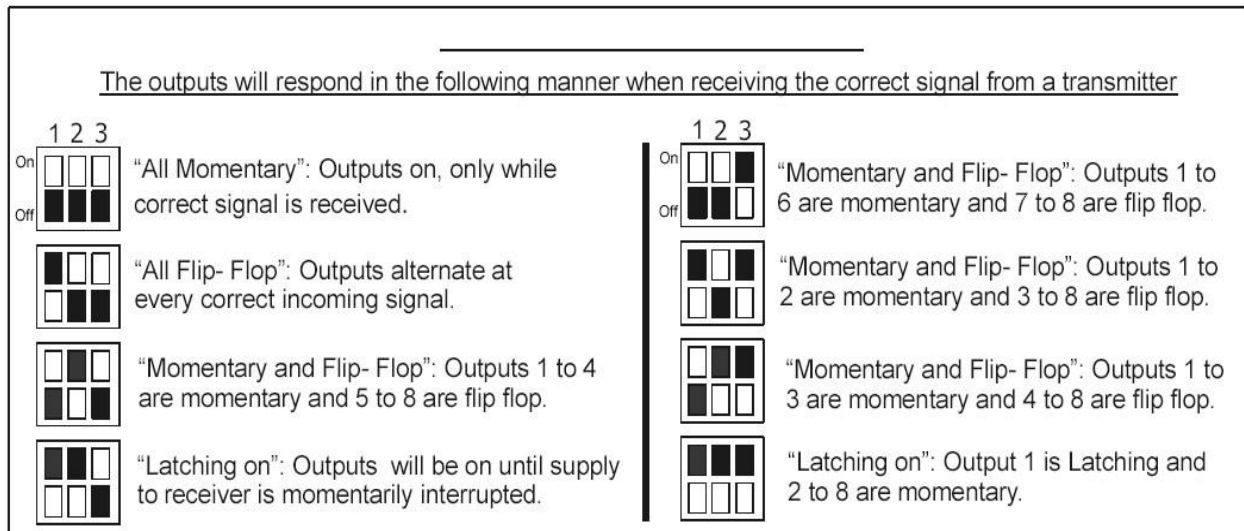

Relay Outputs

9812R-001-002   8-Relay Output Receiver

The 8-relay output receiver has eight modes that control how the relay output functions. These modes are user selectable using the 4 Position DIP switch on the receiver. The chart below displays the DIP switch position accompanied by a description of the relay functions.

4 Position DIP Switch Mode Settings

The outputs will respond in the following manner when receiving the correct signal from a transmitter

"All Momentary": Outputs on, only while correct signal is received.

"All Flip-Flop": Outputs alternate at every correct incoming signal.

"Momentary and Flip-Flop": Outputs 1 to 4 are momentary and 5 to 8 are flip flop.

"Latching on": Outputs will be on until supply to receiver is momentarily interrupted.

"Momentary and Flip-Flop": Outputs 1 to 6 are momentary and 7 to 8 are flip flop.

"Momentary and Flip-Flop": Outputs 1 to 2 are momentary and 3 to 8 are flip flop.

"Momentary and Flip-Flop": Outputs 1 to 3 are momentary and 4 to 8 are flip flop.

"Latching on": Output 1 is Latching and 2 to 8 are momentary.

NOTE: The 4th position of the DIP switch is not used

Receiver Installation

The Receiver is designed for mounting on a wall or in a larger enclosure. As with any RF receiver, care must be taken in choosing the installation location. Installing the receiver in a location with variable frequency drives (VFDs), large power transformers, other radio equipment, or any unshielded electrical device may cause interference with the operation of the receiver. A good location would be 10-40 feet from any device that would cause interference, but this is not always possible. For those situations, further steps must be taken to shield the receiver from external interference. Here are a few suggestions to provide some additional shielding:

- Wire AC and DC wiring in separate bundles
- Use a multi-conductor shielded cable to connect devices to the output relay
- Relocate the receiver antenna away from any device that would cause interference

Receiver Installation Steps:

1. Mount the receiver enclosure to a wall or pole

2. Connect a device to the 3 position terminal block(s).
   - Position (NO) the Normally Open contact of the relay.
   - Position (NC) the Normally Closed contact to the relay.
   - Position (C) a Common contact of the relay.

3. Attach the antenna to the antenna mount on top of enclosure.

4. **Connect a 12/24 VDC power source directly to the receiver.**

   Red = *Positive*
   Black = *Negative*
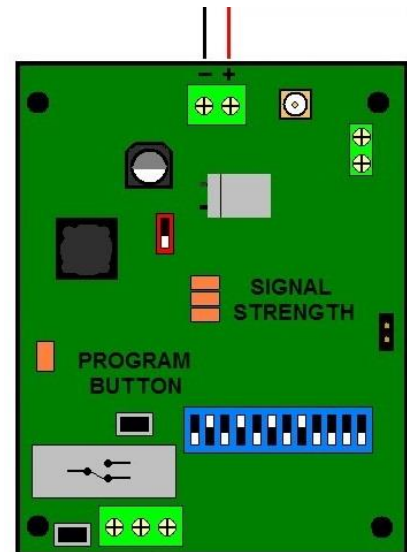
CAUTION:
Check all wiring connections prior to applying power.
Failure to do so can result in serious damage to your product.

Programming

Encrypted Coding Setup Instructions

The encrypted code is a randomly selected code out of 16 million different combinations. The user can change the code by shorting out the Add/Delete pin on the receiver. The orange LED turns on when the Add/Delete pins are shorted to confirm the change of code was successful. Once this is done, all transmitters and receivers need to be programmed again with the new code.

Programming Steps

Receiver to Transmitter

1. Apply power to transmitter (install 9VDC battery)
2. Apply power to receiver (12/24VDC)
3. On the receiver's 12-Position DIP switch, make sure all twelve (12) switches are in the "OFF" position
4. Using the black plastic jumper, short the "Code Change" pins together on the receiver to create a random code; the receiver's orange LED comes on to confirm the change of code was successful
5. Remove the black plastic jumper from the Code Change pins and place it back over one pin

   Note: Any previously programmed transmitters/receivers will need to be re-programmed at this point

6. To broadcast the receiver's code, turn DIP switch 12 "ON" and then "OFF" …this is confirmed by the green LED being on for 10 seconds
7. While the receiver is broadcasting the code, press button 1 on the transmitter for 1 second and then release the button; the orange LED on the transmitter will flash twice to confirm successful programming

   Note: If orange LED on transmitter did not flash twice, try again, but move closer to the broadcasting receiver

8. Once the green LED on the broadcasting receiver goes out, the system will be ready to use

   Receiver to Receiver

1. Apply power to both receivers
2. On the broadcasting receiver's 12-Position DIP switch, make sure all twelve (12) switches are in the "OFF" position
3. Short the "Code Change" pins together on the receiver to select a random code; the receiver's orange LED turns on to confirm the change of code was successful

   Note: Any previously programmed transmitters/receivers will need to be re-programmed at this point

4. To broadcast the receiver's code, turn DIP switch 12 "ON" and then "OFF"; this is confirmed by the green LED being on for 10 seconds
5. While the receiver is broadcasting the code, press the "Program" button on the additional receiver for 1 second and then release the button; the orange LED will flash twice to confirm successful programming

   Note: If orange LED on target receiver did not flash twice, try again, but move closer to the broadcasting receiver

6. Once the green LED on the broadcasting receiver goes out, the system will be ready for use
   During programming all channels are sequentially programmed; that is, Button 1 to Relay 1, etc.
   This programming method allows a user to program unlimited number of transmitters to the receiver or vice versa.

Date of Purchase	
Place of Purchase	
Transmitter Serial #	
Receiver Serial #	

NOTES:

Other reliable products from Remote Control Technology

Stationary Solutions

Ranging from Short to Long Range Wireless Remote Control Systems. Learn how our solutions can help your company save time and money.

Handheld Solutions

Remote Control Technology has designed and manufactured custom wireless applications for a number of Fortune 500 companies.

Irrigation Control

Since 1982, Remote Control Technology has taken the lead in RF radio frequency wireless remote controls for irrigation controllers.

At Remote Control Technology, we are committed to quality and service.
With nearly 40 years of experience, we manufacture and sell the highest quality systems in the industry.