

Wireless Automation System 2 DA Installation and Operation Guide

Introduction

Thank you for choosing Remote Control Technology's Wireless Automation System (WAS2DA). This versatile device has numerous practical applications and will surely become a mainstay in your business and production structure. This guide will help you install your new wireless switch system and show you how to operate and customize it to fit your needs.

This system consists of:

- 1 wireless receiver
- 1 wireless transmitter
- 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
- 25' ft of coaxial cable
- 2 right angle mounting brackets

Before Installation

- Remote Control Technology recommends that you have your new wireless switch system installed by a professional electrician.
- Remember to 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 supplies.
- Keep the receiver and transmitter antennas away from any device that would cause interference.
- Be sure to bench test the system before it is installed.

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. Remove the four screws from the receiver cover to reveal the relay and security DIP switches. The 1-position DIP switch is the relay switch, and the 12-position DIP switch is the security switch.
2. Enable or disable the output relay with the relay switch and set your security code with the 12-position DIP switch. Replace the receiver cover.
3. Connect the positive side of an analog device to contact labeled ANG on the terminal block and connect the negative side of the analog device to the position labeled NEG on the terminal block. The analog output of the receiver may be connected to any device that accepts two wire 4–20 mA analog signals.
4. If the output relay is enabled, connect a device such as a valve or pump control to output terminals. The output terminals consist of a normally open (NO) contact, a normally closed (NC) contact, and a common (C) contact.

Note: The receiver output relay is a SPDT Class C relay rated for 8 A @ 250 VAC.

5. Attach the antenna to the antenna bracket assembly.
6. Connect the assembly to the coaxial cable provided and attach the cable to the BNC connector at the bottom of the 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.

7. 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.
8. Connect a 110–220 VAC power source to the 12 VDC power supply. Alternately, a 12 VDC power source can be connected directly to the receiver.

Transmitter Installation

1. Remove the four screws of the transmitter cover to reveal the mode-select and security code DIP switches. The 1-position DIP switch is the mode-select switch, and the 12-position DIP switch is the security code switch.
2. Use the mode-select switch to choose a transmitter mode (see Transmitter Operation) and match the settings on the security code DIP switch with the settings used on the receiver security code DIP switch. Replace the transmitter cover.
3. Connect the output of your analog sensor to the analog input of the transmitter, which is position 1 on the terminal block, and connect the negative output of the sensor power source to the common contact of the terminal block.

Note: The transmitter has an internal 200-ohm resistor, which must be accounted for when deciding on what supply is used for the sensor. The transmitter will accommodate a sensor with a supply voltage of 12–40 VDC.

4. Connect your dry contact closure to the common contact and position 2 of the terminal block.
5. Attach the antenna to the antenna bracket assembly.
6. Connect the assembly to the coaxial cable provided and attach the cable to the BNC connector at the top of the 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.

7. 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.
8. Connect a 110–220 VAC power source to 12 VDC power supply. Alternately, a 12 VDC power source can be connected directly to the transmitter.

Operation

The Wireless Automation System 2 DA (WAS2DA) is designed for analog data transfer and simple wireless switching. With one analog channel and one digital channel, the WAS2DA can transfer the data of any two-wire 4–20mA sensor connected to it. The analog channel has sample rates that range from 2 seconds to 10 minutes. Analog data is sampled with a 10-bit resolution. The discrete digital channel will transmit indefinitely at the sample rate while the dry contact connected to it is closed. If the digital channel is activated between the sample periods, the digital status will change immediately to reflect the status change.

Receiver Operation

The output relay is a SPDT Class C relay rated for 8 A @ 250 VAC with normally open (NO), normally closed (NC), and common (C) contacts. A single-position DIP switch is used to enable and disable the relay.

To disable the relay, turn the DIP switch to the **on** position (the DIP switch is by default in the off position, enabling the relay).

Transmitter Operation

The transmitter has three modes of operation. All mode changes are made using the one-position DIP switch on the transmitter. The transmitter operation modes are described below in Table 1.

Table 1. Transmitter Operation Modes

DIP Switch Position	Operation Mode
Off	2 to 62 second Repeat Transmission When the DIP switch is in the off position, the transmitter will transmit a 1.5 second transmission burst and then stop for the time set. The time delay is between 2 to 62 seconds and is adjusted using the trimpot on the transmitter. If the digital input is activated during the time delay period, the new data will be transmitted immediately. The transmitter will transmit indefinitely if power is connected.
On	1 to 10 minute Repeat Transmission When the DIP switch is in the on position, the transmitter will send 1.5 second burst transmissions every 1 to 10 minutes instead of every 2 to 62 seconds. The time delay can be adjusted with the trimpot on the transmitter.
Special	Sleep mode The transmitter enters sleep mode when all 12 positions on the security switch are off. This mode will override the other two operation modes.

Optimizing your Wireless Switch System

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

- Supply the antennas for the receiver and transmitter with a good ground plane by either attaching a 10 AWG or larger wire from the lightning arrestor to an earth ground or by mounting 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.