Innovative Applications for Wireless Control and Telemetry

www.remotecontroltech.com
Remote Control Technology
Simple Wireless Solutions

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Welcome to Remote Control Technology!
Thank you for your interest in Remote Control Technology’s (RCT) products. In this catalog, you will find valuable information about our products, a brief education of the radio frequency (RF) spectrum and easy-to-follow diagrams showing how RCT provides solutions that are cost-effective and simple to use.

For over 25 years, Remote Control Technology has been a leader in innovative applications of wireless Radio Frequency (RF) remote control and telemetry devices. Remote Control Technology is continually expanding its product offerings and services to meet emerging customer needs. We employ a unique customer and application-focused engineering as well as a systems integration discipline. This enables us to manufacture wireless switching and telemetry devices to meet many diverse customer requirements in a timely and cost-effective manner. Remote Control Technology has designed and manufactured custom wireless systems for Exxon/Mobil, Raytheon, Boeing, Ford, and other Fortune 500 companies, as well as prototypes and small-run production systems for many domestic and international businesses. Applications for our Simple Wireless Solutions range from simple, automated pump control to wireless tactical airfield lighting control to remote temperature monitoring. Anything that can be switched (i.e. on/off and forward/backward) or anything that can send and receive data can do so wirelessly.

Please contact us with questions or comments about how Remote Control Technology can help you save time, stress, and money.

For More Information Contact:
Remote Control Technology
Industrial Sales Manager
13649 NE 126th Suite 202
Kirkland, WA 98034
Phone: (866) 701-1146
FAX: (425) 216-7558
info@remotecontroltech.com
www.remotecontroltech.com

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Why Go Wireless?

Remote Control Technology’s line of dependable, durable wireless switching systems can and will make money for you and your business.

- **Legal issues** – Obtaining access to or traversing properties with hard lines is extremely difficult.

- **No copper wire to steal** – As the price of copper increases, so does the possibility that your wire will be stolen. Using a wireless system means no wire for thieves to steal.

- **Extended range** – Unlike much of the equipment on the market, RCT’s wireless equipment has long-range communication capabilities.

- **Eliminate need for wire and conduit** – Wire and conduit are expensive and high-maintenance. Typical wear-and-tear, digging, rodent damage, theft, etc., are all examples of problems that can damage wire. RCT’s wireless systems put an end to these drawbacks of wired technology.

- **Profitability** – Wireless switching systems eliminate the costly, labor-intensive process of trenching and laying wire. As a result, the contractor can enjoy an increased profitability of 200 percent or more in this facet of the job.

- **No FCC licensing issues** – RCT equipment does not require FCC licensing, whereas much of the other equipment on the market does. This is a significant benefit, as the FCC licensing process alone may take up to 8 weeks.

- **Less maintenance and servicing** – In many states a contractor is obligated by law to maintain pumping systems for up to a year after its installation. RCT switching systems eliminate a majority of these maintenance and servicing issues by automating the job. Fewer service calls mean better profitability while working.

- **Reliability and compatibility** – All of the components that a contractor puts into a project must agree with one another and have the utmost reliability. RCT equipment has proven to be highly compatible with standard equipment used in most industries, as well as offering unparalleled reliability in use with programmable logic controllers (PLCs), various switches and relays, etc.
As people begin to understand the world of wireless technology more clearly, new and different applications for wireless communication surface. Wireless technology is rooted in the broadcast and reception of radio waves, which are sorted by frequency. Different radio frequencies (RFs) have different properties, and it is inaccurate to state that one frequency is best for all wireless applications. Remote Control Technology (RCT) currently has several frequencies available for wireless control and telemetry. RCT offers frequencies in the range of 27 MHz to 900 MHz/2.4 GHz to clients depending on what range they seek, whether he or she has line-of-sight, etc. Custom frequencies for clients are even available upon request. In terms of RF, as the frequency increases, the need for line-of-sight increases; however, the resistance to electrical noise increases as well. The higher the frequency, the more complicated the data that is transmitted can be. Therefore, if one needs to send simple data over long distances, a frequency of 27 MHz would be optimal. No line-of-sight would be necessary. However, if a person wishes to transmit complicated data over a shorter distance, 433 MHz and higher frequencies would be better and more noise resistant.
Simple Wireless Applications

The applications for simple wireless switching are limitless. Nearly any device that can be turned on or off electrically can be controlled remotely using Remote Control Technology’s wireless switching technology. From tactical airfield lighting to automating pump operations, Remote Control Technology’s goal is to provide a Simple Wireless Solution that is easy to install and operate. The following applications are examples of Wireless Switch System usage:

### Wireless Tank Level Automation:
Our Wireless Switch Systems are commonly used to control water tank levels in many major cities, municipalities and water districts. A transmitter connected to a float switch of a water tank allows a receiver that is connected to a pump to maintain the water level of the tank. When the water lowers to a specified low level, the transmitter will send an “ON” transmission to the receiver, turning on the pump. Once the specified high level has been reached, the transmitter sends an “OFF” transmission to the receiver, shutting the pump off.

### Alarm Notification:
Retrofitting different alarm systems, such as severe weather warnings, fire alarms, security alarms, etc., can be costly and time-consuming. Using simple wireless switching from Remote Control Technology eliminates the need for expensive copper wiring and trenching and can be installed quickly.

### Wireless Conveyor Control:
When installed on a conveyer, a Wireless Switch System allows the operator to quickly assess the flow of product along a conveyer without being confined to the location of the control panel. A Wireless Switch System receiver connected to a PLC can be configured to control start, stop, backward, forward, fast and slow conveyor functions. The Wireless Switch System transmitter can be affixed to a vehicle or held by the operator, allowing the operator to load or dump material without having to leave the vehicle.

### Wireless Industrial Automation:
Advances in sensor technology have mirrored the advances in the silicon industry. As processors become smaller, sensors have become smarter, with increased sensitivity and functionality. An analog device, such as a temperature or flow sensor, connected with a 4-20 mA output as well as to one of today’s smart relays can be used in conjunction with a Wireless Switch System. One now has the ability to use the output of the sensor to control a device such as a PLC, conveyer or alarm, as well as lighting, valves, gates and any other device that needs to be remotely switched based on the output of a sensor.

### Wireless Lighting Solutions:
Remote Control Technology’s Wireless Switch Systems are an ideal solution for wireless lighting needs. Lights can be turned on or off from within a radius of up to 5 miles* from any fixed position, such as a control tower, a mobile handheld position, or even an aircraft. The Wireless Switch System allows the user to remotely turn on and off lights without physically flipping a switch, leaving a vehicle, or being exposed to the elements.

*The range of all radio products is dependent of local conditions and antenna selection/location.
Custom Wireless Applications

The applications for simple wireless switching are limitless. If an off-the-shelf system is not ideal for an application, a custom solution must be created. Using Remote Control Technology’s Simple Wireless Solutions, we can design, develop and support wireless systems that can solve almost any industrial problem. The following are examples of custom applications using the Wireless Switch System:

**L3 Communications® Woburn, Massachusetts**

**The Need:** L3 needed to integrate a wireless perimeter detection system into their CX-2500M mobile X-ray screening system using the Southwest Microwaves M.I.L. PAC 385 system. The unit needed to operate at an EU-compliant radio frequency and have multiple safety backups.

**The Solution:** Remote Control Technology modified several Wireless Switch Systems to have an increased rate of transmission so that a barrier penetration or a twelve-second failure to transmit (due to potential vandalism or system error) would be detected. In addition, a custom handheld transmitter was designed to allow operators to enable and disable the system.

**Laser Guidance® Redmond, Washington**

**The Need:** For an application with the U.S. Army, Laser Guidance needed wireless remote controls used for temporary, tactical airfield lighting. This would allow U.S. Army personnel to activate battery-powered runway lights (LED and infrared) from a helicopter.

**The Solution:** Remote Control Technology and Laser Guidance supplied the U.S. Army with a wireless remote system for tactical airfield lighting. The Remote Control Technology system enabled wireless switching of battery-powered airfield runway lights (LED and infrared) for covert military operations. Remote Control Technology’s custom RF receivers were positioned along the edges of a temporary aircraft landing pad or runway. These lights are activated by a handheld FM transmitter or by an approaching helicopter.

**Stoneway Cement® Seattle, Washington**

**The Need:** This application involved a ½ mile conveyor that transported aggregate to a main processing facility. Operators of bulldozers needed to select the source and destination of different gravel types. Using walkie-talkies was ineffective and led to many errors. Hardwiring would have required the operators to exit their equipment and would have been inefficient.

**The Solution:** Remote Control Technology designed a custom 24-output receiver to be used in conjunction with a PLC as part of a control system upgrade. This allowed the plant manager and D-9 Cat operators to select and operate many different conveyors. This application worked so well that popularity demanded RCT to create a standard product: the Wireless Multi-Switch Controller, displayed on pages 18 and 19.

*The range of all radio products is dependent of local conditions and antenna selection/location.*

**www.remotecontroltech.com** **(866) 701-1146**
The Need: Find a simple wireless solution for 757 assembly line mechanics to contact a liaison allowing the mechanics to stay on the airplane.

The Solution: Nine different work stations on part of the 757 assembly line were equipped with Remote Control Technology’s FM transmitters, which allowed the assembly mechanic to notify a liaison. The mechanic could then continue working without stoppage.

Little Rock Air Force Base  Little Rock, Arkansas

The Need: Officials at the U.S. Air Force Base required a means to quickly reconfigure the shape and size of an existing runway and to simulate short runway tactical training.

The Solution: Remote Control Technology utilized multiple Wireless Switch Systems to power and control several groups of runway lights as well as twenty-five tactical light tower assemblies for the runway staging area. A handheld transmitter was used to operate the system from the air traffic control tower.

Ford® Arizona Proving Grounds Yucca, Arizona

The Need: Test drivers at Ford’s test track at the Arizona Proving Grounds needed the ability to wet the track from the test car for splash testing/water ingestion testing.

The Solution: Remote Control Technology provided test drivers with handheld FM transmitters to control irrigation systems used for wetting the test track without having to leave their vehicles.

Northeast Utilities Service Company® Hartford, Connecticut

The Need: Provide a secure method of integrating a wireless remote control to activate and shut down a complete substation using an existing PLC.

The Solution: Remote Control Technology developed a custom transmitter programmed with a six-step, fifteen-key activation process. A specially coded receiver was designed to integrate with an existing PLC and minimize the possibility of the substation being accidentally shut down.

Puget Sound Energy® Bellevue, Washington

The Need: To aid in the protection of the Northwest salmon on the Baker Dam, Puget Sound Energy needed a wireless remote control to operate an underwater fish screen and allow the passage of boats without damaging the screens. The wireless remote had to integrate with the PLC used to raise and lower the screen.

The Solution: Remote Control Technology modified a Handheld Wireless Switch System to integrate with the screen PLC. This allowed maintenance and boat operators to raise and lower the fish screen using a handheld transmitter on the boat and from the dam control center.
Wireless Data Controller part #: 3104

The Wireless Data Controller (WDC) is a Web-to-wireless supervisory control and data acquisition device designed to directly monitor up to 10 digital inputs, which can be dry contacts or 120 VAC. The WDC can also monitor up to three analog inputs and has three remote control relays. Applications can be monitored in near real-time, application status can be evaluated, and if required, corrective action can be implemented right from any Web browser. The WDC automates any application as well as sending critical status alerts to any Web or text-enabled device such as a cell phone, PDA, laptop computer, desktop computer or pager. You can maintain complete situational awareness with critical reports such as power outages, low battery levels, and output status. The WDC includes an integrated cellular modem that communicates over the North American cellular data network’s control channel. This MicroBurst® based radio can be installed anywhere there is analog or digital cellular coverage.

Monitor Hardware
• Command Control
• Emergency Notification

Environmental Monitoring
• Ultra-Long Range Process Control
• Tank Level, Flow Rate, Temperature

PLC Activation
• Oil Fields
• Wireless Automation

Operation and Installation
Installation is simple: configure the inputs/outputs as described in the installation guide and apply power. Once power is applied, the WDC will automatically establish two-way communications over the public cellular network. Simply log onto a custom, private Web page to monitor your system from anywhere in the world. Airtime billing can be configured for monthly, bi-monthly, or annually at www.remotecontroltech.com.

Solar Panel Kits: Turnkey, 12 VDC solar panel kits are available for locations without electricity.

Monitor Hardware: View the last reported status of your equipment, temperature, pressure, fuel levels, water output and switch positions.

Command & Control: Send commands to turn on pumps, shut off valves or shut down the system in near real-time. Data requires only seconds to transmit to (or from) the WDC.

Emergency Notification: Configure selected events to trigger an immediate user notification by voice phone, pager, text messaging or e-mail.

Customizable screen headers: Configure the Web server to reflect your industry or application with simple customization.

Cellular Data Transceiver Specifications

| Power Requirements | Supply Power: 120 VAC to 15 VDC
Optional 12 & 24 VDC configurations
0.8 amp hour back-up battery |
| Data Network | Two-Way Analog/Digital Cellular Modem
(Works virtually anywhere there is cellular coverage in North America)
Transmit Power: 0.6 to 1.2 watts
Frequency: 824 - 849 MHz |
| Inputs / Outputs | 10 Digital (On/Off) Inputs: dry contact or 120 VAC
3 Analog Inputs: 4 - 20 mA
3 Relay Outputs: 8 amps @ 250 VAC
Contact Rating |
| Operating Environment | -22 Degrees to 158 Degrees F (-30 to 70 Degrees C) NEMA 4X enclosure rating |

Includes:
• Cellular data transceiver
• NEMA 4X powder-coated steel enclosure
• One hour of custom Web page setup time to monitor inputs and control outputs through the Internet
Control and monitor your devices from virtually anywhere in the world!

- Send alarms for low fuel, open doors, emergency conditions, etc.
- Monitor oil pressure, water temperature, battery voltage, etc.
- Control motors, pumps, fans, etc.
- Receive emergency notifications on a PDA, cell phone, PC, or other Web-enabled devices.
- Satellite version available for locations without cell phone coverage in North America.
- Performance backed by a one-year warranty.
- Includes 10 digital inputs, 3 analog data inputs, and 3 relay outputs for traditional control and monitoring (pictured) or Modbus connectivity for other intelligent electronic devices.
Long Range Wireless Switch System part #: 01210

The Long Range Wireless Switch System (LRWSS) is designed for long range (up to 5 miles*) and simple wireless switching. The LRWSS is the simple solution for applications where faulty wire replacement or new installation is not possible or practical. Possible applications include:

- Pump Control
- Valve Actuation
- Conveyor Control
- Grain Augers
- Light Control
- Stackers
- PLC Activation
- Engine Control
- Wireless Automation

The LRWSS consists of a six-input transmitter and a six-output (12 VDC) receiver. It comes complete with power supplies and antennas; all you need to do is connect the devices you want to control, and the LRWSS is ready for use and guaranteed to perform.

**Operation**

Operation is simple: connect a switch, relay, or any device with a dry contact closure to the transmitter inputs (terminal block). When a contact is closed, the transmitter will immediately send an “ON” transmission to the receiver, changing the state of the selected receiver output from 0 VDC to 12 VDC @ 1 amp. The receiver output can be used to activate a relay, solenoid, or light. Immediately after a contact is open, the transmitter will send an “OFF” transmission to the receiver, changing the state of the selected output from 12 VDC to 0 VDC and turning off the connected device.

Solar Panel Kits: Turnkey, 12 VDC solar panel kits are available for locations without electricity.

### 6 Dry Contact Input Transmitter Specifications

<table>
<thead>
<tr>
<th>Power Requirements</th>
<th>Supply Power: 12 VDC (power supply included)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>XMIT Current: 200 mA</td>
</tr>
<tr>
<td></td>
<td>STBY Current: 35 mA</td>
</tr>
<tr>
<td>Radio</td>
<td>Output: 4 watts (5 mile* potential range)</td>
</tr>
<tr>
<td></td>
<td>Frequency: 27.255 FM</td>
</tr>
<tr>
<td></td>
<td>Format: PDTFM FSK</td>
</tr>
<tr>
<td></td>
<td>FCC Part 95 Subpart E compliance (no license required)</td>
</tr>
<tr>
<td>Operating Environment</td>
<td>Indoor or Outdoor -40 degrees F to 140 degrees F</td>
</tr>
</tbody>
</table>

### 6 12VDC Output Receiver Specifications

<table>
<thead>
<tr>
<th>Power Requirements</th>
<th>Supply Power: 12 VDC (15 W power supply included)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Output Current: 1 amp per output</td>
</tr>
<tr>
<td></td>
<td>STBY Current: 45 mA</td>
</tr>
<tr>
<td>Radio</td>
<td>Frequency: 26.995 MHz FM superheterodyne FM receiver</td>
</tr>
<tr>
<td></td>
<td>FCC Part 15 Compliance (no license required)</td>
</tr>
<tr>
<td>Operating Environment</td>
<td>Indoor or Outdoor -40 degrees F to 140 degrees F</td>
</tr>
</tbody>
</table>

Mounted in metal NEMA 4X enclosures, the LRWSS is designed for outdoor/indoor industrial applications. Remote Control Technology also offers a three-year warranty for this system. The transmitter has an output power of 4 watts @ 26.995 MHz. The potential range is approximately 5 miles* and, with proper antenna application, is not limited to line-of-sight communication.

*The range of all radio products is dependent on local conditions and antenna selection/location.
The range of devices that can be controlled with this system are limitless; the picture above only shows a few of the possible applications for the LRWSS.

- Control up to six devices from up to 5 miles away without line-of-sight*.
- Performance is backed by a three-year warranty.
- The wiring diagram below gives an example of how to connect the system using a push-button switch to wirelessly control a motor:

![Wiring Diagram](image)

* Range may vary depending on environmental conditions.
Medium Range Wireless Switch System part #: 01240

The Medium Range Wireless Switch System (MRWSS) is designed for medium range (up to 2 miles*) and simple wireless switching. The MRWSS is the simple solution for applications where faulty wire replacement or new installation is not possible or practical. Possible applications include:

- Pump Control
- Valve Actuation
- Conveyor Control
- Grain Augers
- Light Control
- Stackers
- PLC Activation
- Engine Control
- Wireless Automation

The MRWSS consists of a two-input transmitter and a two-output (12 VDC) receiver. The MRWSS comes complete with power supplies and antennas. Simply make your connections, and the MRWSS is ready for use and guaranteed to perform.

**Operation**

Operation is simple: connect a switch, relay, or any device with a dry contact closure to the transmitter inputs (terminal block). When a contact is closed, the transmitter will immediately send an “ON” transmission to the receiver, changing the state of the selected receiver output from 0 VDC to 12 VDC @ 1 amp. The receiver output can be used to activate a relay, solenoid, or light. Immediately after a contact is open, the transmitter will send an “OFF” transmission to the receiver, changing the state of the selected output from 12 VDC to 0 VDC and turning off the connected device.

**Solar Panel Kits:** Turnkey, 12 VDC solar panel kits are available for locations without electricity.

### 2 Dry Contact Input Transmitter Specifications

<table>
<thead>
<tr>
<th>Power Requirements</th>
<th>Supply Power: 12 VDC (15 W power supply included)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>XMIT Current: 200 mA</td>
</tr>
<tr>
<td></td>
<td>STBY Current: 35 mA</td>
</tr>
<tr>
<td>Radio</td>
<td>Output: 2 watts (2 mile* potential range)</td>
</tr>
<tr>
<td></td>
<td>Frequency: 26.995 MHz FM</td>
</tr>
<tr>
<td></td>
<td>Format: PDTFM FSK</td>
</tr>
<tr>
<td></td>
<td>FCC Part 95 Subpart E compliant</td>
</tr>
<tr>
<td></td>
<td>(no license required)</td>
</tr>
<tr>
<td>Operating Environment</td>
<td>Indoor or Outdoor</td>
</tr>
<tr>
<td></td>
<td>-40 degrees F to 140 degrees F</td>
</tr>
</tbody>
</table>

### 2 12VDC Output Receiver Specifications

<table>
<thead>
<tr>
<th>Power Requirements</th>
<th>Supply Power: 12 VDC (15 W power supply included)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Output Current: 1 amp per output</td>
</tr>
<tr>
<td></td>
<td>STBY Current: 45 mA</td>
</tr>
<tr>
<td>Radio</td>
<td>Frequency: 26.995 MHz FM FM</td>
</tr>
<tr>
<td></td>
<td>superheterodyne FM Receiver</td>
</tr>
<tr>
<td></td>
<td>FCC Part 15 compliant</td>
</tr>
<tr>
<td></td>
<td>(no license required)</td>
</tr>
<tr>
<td>Operating Environment</td>
<td>Indoor or Outdoor</td>
</tr>
<tr>
<td></td>
<td>-40 degrees F to 140 degrees F</td>
</tr>
</tbody>
</table>

Mounted in plastic, NEMA 4X enclosures, the MRWSS system is designed for outdoor/indoor industrial applications. Remote Control Technology also offers a three year warranty for this system. The transmitter has an output power of 2 watts @ 26.995 MHz. The potential range is approximately 2 miles* and, with proper antenna application, is not limited to line of sight communication.

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*The range of all radio products is dependent on local conditions and antenna selection/location.
The Problem: Yuba County Water Agency’s water pump and holding tank are separated by a reservoir and a ridgeline that restricts landline and conventional RF line-of-sight control. What could be done?

The Solution: Yuba County Water Agency’s technicians purchased a MRWSS from RCT which wirelessly activates the pump when the water in the tank reaches a specific level. The MRWSS allowed transmission over a large body of water and a ridgeline where landline and line-of-sight control were impractical.

- Activate a pump, relay, solenoid, light, alarm, or other device from up to 2 miles away.
- The 27 MHz transmission frequency does not require line-of-sight.
- Includes a two-input transmitter, a two-output receiver, high-gain antennas, mounts, and coaxial cables for easy setup.
- Performance is backed by a three-year warranty.
- The wiring diagram below gives an example of how to connect a float switch and a well pump for easy wireless pump control:
Wireless Automation System 2 DA part #: 01250

The Medium Range Wireless Automation System 2 DA (WAS2DA) is designed for analog data transfer and simple wireless switching up to 2 miles. WAS2DA is the simple solution for applications where faulty wire replacement or new installation of conduit is not possible or practical. Possible applications include:

- Pump Control
- Flow Rate Monitoring
- Conveyor Control
- Tank Level Monitoring
- Light Control
- Alarm Systems
- PLC Activation
- Data Logging
- Wireless Automation

The WAS2DA includes a transmitter with one discrete digital and one analog data (4–20 mA) input as well as a receiver with one SPDT Class C Relay and one 4–20 mA output. Simply make dry contact closure and analog data connections to the transmitter and connect your discrete and analog outputs from the receiver to your controller or device, and the WAS2DA is ready for use.

Operation

The WAS2DA stationary transmitter operates one analog channel and one discrete digital channel at 151 MHz. The analog channel has sample rates from 2 seconds up to 10 minutes, and the discrete digital channel will transmit indefinitely (at the sample rate) while the contact is closed. The WAS2DA receiver will output the state of the discrete digital contact from the transmitter through a relay contact and the 4–20 mA signal from the transmitter with 10-bit accuracy. As an added security feature, a 12-position DIP switch allows the user to digitally code the transmission to prevent unwanted reception.

Solar Panel Kits: Turnkey, 12 VDC solar panel kits are available for locations without electricity.

### Analog/Discrete Input Transmitter Specifications

| Power Requirements | Supply Power: 12 VDC  
| XMIT Current: 80mA  
| STBY Current: 12mA |
| Radio | Output: 100 mW  
| (2 mile potential range w/ line of sight)  
| Frequency: 151.6 MHz FM  
| Security: 4096 Digital Codes  
| FCC Part 15 compliant |
| Operating Environment | Indoor or Outdoor  
| 23 degrees F to 140 degrees F |

### Analog/Discrete Output Receiver Specifications

| Power Requirements | Supply Power: 12 VDC  
| Relay On/analog current: 65 mA  
| STBY Current: 22mA |
| Radio | Frequency: 151.6 MHz FM  
| Bandwidth: 25 kHz @ -20 dB  
| Security: 4096 Digital Codes  
| FCC Part 15 compliant  
| (no license required) |
| Outputs | Relay Contact Ratings: 5A @ 250 VAC  
| Relay Type: SPDT Class C  
| 4-20 mA current loop, 10 bit |
| Operating Environment | Indoor or Outdoor  
| 23 degrees F to 140 degrees F |
Wireless Automation and Telemetry Made Easy!

The WAS2DA is produced for both analog data transfer and simple switching.

- Analog data can be any 4-20 mA signal such as temperature, pressure, moisture, etc.
- Simple switching can control relays, motors, pumps, alarms, lights, etc.
- The unique 151 MHz FM radio signal is resistant to noise and not fully restricted by line-of-sight like other higher frequencies.
- It simply replaces wire or conduit when new installation is not possible or practical.
- Performance is backed by a one-year warranty.

The wiring diagram below gives an example of how the WAS2DA can be used to both monitor the temperature of a cranberry bog and automate the pump system that irrigates the bog when the temperature is too cold:

![Wiring Diagram](image-url)
Under Pressure from Bad Wiring? Relieve it with a Simple Wireless Solution!

Control up to eight different devices from up to 1/2 mile without line-of-sight. The Short Range Wireless Switch System can be adapted to a wide variety of applications such as pump control, PLC activation, or alarm signaling. The system comes with a transmitter, receiver, high-gain antennas, mounts, coaxial cables, and built-in relays. Performance is backed by a one-year warranty. The wiring diagram below gives an example of how the system can be used for wireless alarm activation from a programmable logic controller:

Transmitter

Receiver activates a siren, strobe light, or other device if a motion sensor is tripped

Motion Sensor

PLC

Siren / Strobe Light

Relay

Transmitter sends an on/off signal to the receiver up to 1/2 mile away

Receiver

27MHz RECEIVER

27 MHz Transmitter

www.remotecontroltech.com   (866) 701-1146
Short Range Wireless Switch System part #s: 01245, 5810XS

The Short Range Wireless Switch System (SRWSS) is designed for short range (up to ½ mile*) and simple wireless switching. The SRWSS is the simple solution for applications where faulty wire replacement or new installation of conduit is not possible or practical. Possible applications include:

- Pump Control
- Valve Actuation
- Conveyor Control
- Grain Augers
- Light Control
- Alarm Systems
- PLC Activation
- Engine Control
- Wireless Automation

The SRWSS consists of a one or eight-input (12 VDC) transmitter and a one or eight-output (SPDT Class C Relay) receiver. The SRWSS comes complete with power supplies and antennas. Simply make your connections, and the SRWSS is ready for use and guaranteed to perform.

**Operation**

The SRWSS is designed to be mounted to a wall or in another enclosure; the transmitter is triggered by supplying 12 VDC to the terminal blocks. This sends a coded set of instructions to the receiver. A two-position DIP switch allows the user to select from four modes of operation which control transmission duration. The receiver has several modes of operation. These modes determine how the output(s) function once a properly coded signal is received. A set of DIP switches located next to the microcontroller allows the user to select the mode of operation for the output(s).

**Solar Panel Kits:** Turnkey, 12 VDC solar panel kits are available for locations without electricity.

### 1 or 8 Dry Contact Input Transmitter Specifications

<table>
<thead>
<tr>
<th>Power Requirements</th>
<th>SRWSS Transmitter Part #s:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Power: 12 VDC ((\text{power supply included}))</td>
<td>Model</td>
</tr>
<tr>
<td>XMIT Current: 300 mA</td>
<td>SRWSS 1 Tx</td>
</tr>
<tr>
<td>STBY Current: 12 mA</td>
<td>SRWSS 8 Tx</td>
</tr>
</tbody>
</table>

Includes:
- One or eight input transmitter
- NEMA 4X plastic enclosure
- Power supply
- High-gain antenna, mount, and coaxial cable

The SRWSS 27 MHz Radio Signal is not limited by line-of-sight and can transmit over small buildings and through trees.

### 1 or 8 Relay Output Receiver Specifications

<table>
<thead>
<tr>
<th>Power Requirements</th>
<th>SRWSS Receiver Part #s:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Power: 12 VDC ((\text{power supply included}))</td>
<td>Model</td>
</tr>
<tr>
<td>Relay ON Current: 45 mA</td>
<td>SRWSS 1 Rx</td>
</tr>
<tr>
<td>STBY Current: 10 mA</td>
<td>SRWSS 8 Rx</td>
</tr>
</tbody>
</table>

Includes:
- One or eight output receiver
- Relays with 5A @ 250 VAC Rating
- NEMA 4X plastic enclosure
- Power supply
- High-gain antenna, mount, and coaxial cable

*The range and performance of all radio products is dependent on local conditions and antenna selection/location.*
Wireless Multi-Switch Controller part #: 01260

The Wireless Multi-Switch Controller (WMSC) is designed for long range (up to 2 Miles) and simple wireless switching. The WMSC is the simple solution where faulty wire replacement is required, new installation is not possible or practical, or many different pieces of equipment need to be controlled. Applications for the WMSC include:

- Pump Control
- Valve Actuation
- Conveyor Control
- Grain Augers
- Light Control
- Stackers
- PLC Activation
- Engine Control
- Wireless Automation

The WMSC consists of a 15-key, handheld transmitter and a 16-output (12 VDC), addressable receiver. The WMSC comes complete with power supply and antennas. Simply connect the devices you want to control, and the WMSC is ready for use and guaranteed to perform.

Operation

Operation is simple: select the receiver number you wish to activate, enter it on the keypad and press the “REC#” key (you can control up to 199 different receivers from one transmitter). Then, select an output to activate, enter it on the keypad and press the “ON” key. The transmitter will immediately send an “ON” transmission to the receiver, changing the state of the selected receiver output from 0 VDC to 12 VDC @ 1 amp. The receiver output can be used to activate a relay, solenoid, light, PLC, etc. Immediately after pressing the “OFF” key, the transmitter will send an “OFF” transmission to the receiver, changing the state of the selected output from 12 VDC to 0 VDC and turning off the connected device.

Solar Panel Kits: Turnkey, 12 VDC solar panel kits are available for locations without electricity.

Handheld Transmitter Specifications

| Power Requirements | Supply Power: 9 VDC alkaline battery  
XMIT Current: 600 mA  
STBY Current: 1 mA |
|---------------------|------------------------------------------|
| Radio               | Output: 2 Watts (2 mile potential range)  
Frequency: 26.995 FM  
Format: PDTFM FSK  
FCC Part 95 Sub part E compliant (no license required) |
| Operating Environment | Indoor or Outdoor  
-40 degrees F to 140 degrees F |

WMSC Transmitter

- Includes:
  - Rugged handheld aluminum enclosure
  - 2-watt radio transmitter
  - Ability to control up to 199 receivers
  - 9 VDC Battery
  - 8” whip antenna
  - Belt clip

16 Output Receiver Specifications

| Power Requirements | Supply Power: 12 VDC  
(15 W power supply included)  
Output Current: 1 amp per output  
STBY Current: 30 mA |
|---------------------|---------------------------------------------------|
| Radio               | Frequency: 26.995 MHz FM  
Superheterodyne FM Receiver  
FCC Part 15 compliant (no license required) |
| Operating Environment | Indoor or Outdoor  
-40 degrees F to 140 degrees F |

WMSC Receiver

- Includes:
  - 16-output receiver
  - 15-watt power supply  
(110 VAC to 240 VAC Input, 12 VDC Output)  
-NEMA 4X Enclosure  
- 42” high-gain antenna  
- right-angle antenna mount  
- 25’ coaxial cable w/BNC connectors

Mounted in a NEMA 4X enclosure, the WMSC system is designed for outdoor/indoor industrial applications. The transmitter itself is housed in a time-tested, rugged, aluminum extrusion and is designed to provide years of service. Remote Control Technology backs that up with a three-year warranty. The transmitter has an output power of 2 watts @ 26.995 MHz. Potential range is approximately 2 miles and, with proper antenna application, is not limited to line-of-sight communication.
Have the Power to Control Any Device in the Palm of Your Hand!

Simple Wireless Solutions

The Wireless Multi-Switch Controller is the most powerful and capable handheld switch system on the market today. For questions about which system would work best for your application, please call and speak with an Account Executive.

- This list shows only some of the many applications for the Wireless Multi-Switch Controller.
- Each transmitter can control up to 199 receivers, each of which can connect to 16 different devices.
- Devices that can be controlled with the WMSC include, but are not limited to, alarms, lighting systems, actuators, conveyors, and control valves.
- With a range of up to 2 miles, the WMSC truly gives you the power to control any device right in the palm of your hand.
- Performance is backed by a three-year warranty.

www.remotecontroltech.com (866) 701-1146
Short Range Wireless Switch System Handheld

The Short Range Wireless Switch System Handheld (SRWSSHH) is designed for short range (up to 350 yards*) and simple wireless switching. The SRWSSHH is the simple solution where faulty wire replacement is required, new installation is not possible or practical, or many different pieces of equipment need to be controlled. Possible applications include:

- Pump Control
- Valve Actuation
- Conveyor Control
- Grain Augers
- Light Control
- Stackers
- PLC Activation
- Engine Control
- Wireless Automation

The SRWSSHH consists of one, two, four, or eight-key handheld transmitters and a one, two, four, or eight-output (SPDT Class C relay) receiver with either 27 MHz or 433 MHz radios. Simply connect the devices you want to control to the SRWSSHH, and the SRWSSHH is ready for use and guaranteed to perform.

**Operation**

The SRWSSHH transmitter is a momentary, push-button, handheld transmitter in a heavy-duty aluminum enclosure. Each button can be programmed individually or sequentially to suit your needs. As an added security feature, the transmitter is digitally coded to match the receiver’s random security code to prevent unwanted reception. Over 4 billion code combinations are available. The SRWSS receiver is designed to be mounted to a wall or in an enclosure. The receiver has several modes of operation. These modes determine how the output functions once a properly coded signal is received. A set of DIP switches located next to the microcontroller allows the user to select the mode of operation for the output and is used to program the transmitter push buttons. The programming port on the receiver and transmitter allows the user to digitally code the transmitter to match the random digital code generated by the receiver. This digital code is easily reset.

**Solar Panel Kits:** Turnkey, 12 VDC solar panel kits are available for locations without electricity.

**1, 2, 4, or 8 Push Button Handheld Transmitter Specifications**

<table>
<thead>
<tr>
<th>Power Requirements</th>
<th>Supply Power: 9 VDC alkaline battery XMIT Current: 40 mA STBY Current: 0 mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio</td>
<td>Output: .25W@27 MHz or .01W@433 MHz (350 yard potential range*) Frequency: 27.195 MHz/433.920 MHz Security: Over 4 billion digital codes FCC Part 15 and 95 Sub part E compliant (no license required)</td>
</tr>
<tr>
<td>Operating Environment</td>
<td>Indoor or Outdoor -40 degrees F to 140 degrees F</td>
</tr>
</tbody>
</table>

**SRWSSHH Transmitter Part #s:**

<table>
<thead>
<tr>
<th>Model</th>
<th>27MHz</th>
<th>433MHz</th>
<th>Buttons</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRWSSHH 1</td>
<td>5109THD</td>
<td>6109THD</td>
<td>1</td>
</tr>
<tr>
<td>SRWSSHH 2</td>
<td>5209THD</td>
<td>6209THD</td>
<td>2</td>
</tr>
<tr>
<td>SRWSSHH 4</td>
<td>5409THD</td>
<td>6409THD</td>
<td>4</td>
</tr>
<tr>
<td>SRWSSHH 8</td>
<td>5809THD</td>
<td>6809THD</td>
<td>8</td>
</tr>
</tbody>
</table>

Includes:
- Rugged hand-held aluminium enclosure with 1, 2, 4, or 8 push buttons
- .25 watts @ 27 MHz or .01 watt @ 433 MHz radio transmitter
- 9 VDC battery

**1, 2, 4, or 8 Relay Output Receiver Specifications**

<table>
<thead>
<tr>
<th>Power Requirements</th>
<th>Supply Power: 12 VDC or 110-240 VAC Relay ON Current: 70 mA STBY Current: 10 mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio</td>
<td>Frequency: 27.195 MHz/433.920 MHz Bandwidth: Less than +/- 5.0 KHz FCC Part 15 Compliant (no license required)</td>
</tr>
<tr>
<td>Modes of Operation</td>
<td>Relay Contact Rating: 5A @ 250 VAC Relay Type: SPDT Class C Mode 1: Momentary (MOM) Mode 2: Flip Flop (FF) Mode 3: Latching-On SRWSS1 Rx Only: Off Delay 1sec-300sec</td>
</tr>
<tr>
<td>Operating Environment</td>
<td>Indoor or Outdoor -40 degrees F to 140 degrees F</td>
</tr>
</tbody>
</table>

**SRWSS Receiver Part #s:**

<table>
<thead>
<tr>
<th>Model</th>
<th>27MHz</th>
<th>433MHz</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRWSS 1</td>
<td>5112RHD</td>
<td>6112RHD</td>
<td>1</td>
</tr>
<tr>
<td>SRWSS 2</td>
<td>5212RHD</td>
<td>6212RHD</td>
<td>2</td>
</tr>
<tr>
<td>SRWSS 4</td>
<td>5412RHD</td>
<td>6412RHD</td>
<td>4</td>
</tr>
<tr>
<td>SRWSS 8</td>
<td>5812RHD</td>
<td>6812RHD</td>
<td>8</td>
</tr>
</tbody>
</table>

Includes:
- 1, 2, 4 or 8 output receiver
- Relays with 5A @ 250 VAC rating
- NEMA 4X plastic enclosure
- High-gain antenna/coaxial cable/ mount
- Power supply

*The range of all radio products is dependent on local conditions and antenna selection/location. Transmitters and receivers are sold separately.*
Versatility and Mobility, All in One System!

- The SRWSSHH is available in 27 MHz for solutions that require non-line-of-sight operation and 433 MHz for solutions that require resistance to electrical noise.
- The system consists of a one, two, four, or eight-button handheld transmitter and a one, two, four, or eight-relay output receiver.
- With a range of up to 350 yards, one has the flexibility to control a wide variety of devices such as valves, servomotors, pumps, and lights.
- Performance is backed by a one-year warranty.
- The illustration above and the wiring diagram below show how the SRWSSHH can be used to control an air-intake shut-off valve on a diesel well drilling rig:
The Remote Control Technology 55 W and 10 W Solar Power Systems are complete, fully integrated power sources designed to provide 12 VDC. Each system provides safe and reliable power generation without the need and expense of installing utility power. The sealed, maintenance-free battery is designed for deep-cycle operation and extended life in solar power applications. Remote Control Technology’s Solar Power Systems are also designed to withstand the rigors of transportation to remote sites. The aluminum-array support structure and battery enclosures are strong, lightweight, and corrosion-resistant, making them ideal for harsh marine locations or severe weather locations. The system is fully assembled for factory testing before shipment.

**Features and Benefits**

- Solar modules are fully encapsulated to resist harsh conditions
- Low voltage load disconnect for battery protection
- Sealed, lead-acid battery designed for deep discharge cycling
- NEC code-compliant, over-current protection and safety disconnect
- Corrosion resistant control/battery enclosure
- Temperature compensated battery charging
- Solid state electronics for improved efficiency and reliability
- Pre-assembled, pre-wired systems to minimize installation time and eliminate wiring errors
- Low maintenance and operating cost
- Complete systems reduce specifying and buying time
- Full system and performance warranty available on pre-packaged systems

### 55 watt Solar Power System

| Power Output | Rated Power: 55 watts  
|--------------|-------------------------------------------------|
|             | Rated Voltage: 17.4 VDC  
|             | Rated Current: 3.15 amps  
| Battery     | Voltage: 12 VDC  
|             | Capacity: 65 A h  
|             | Includes a NEMA 3R aluminum enclosure  
| Operating Environment | Outdoor  
|             | -40 degrees F to 140 degrees F  

**Part # 09164**

- The 55 watt Solar Power System uses square-shaped solar cells to provide the highest power density possible.
- The mono-crystalline solar cells are coated with an anti-reflection material for maximum output ratios.
- Highly transparent tempered glass delivers more power and ensures high impact resistance and protection against hail, snow, ice, and snow.

### 10 watt Solar Power System

| Power Output | Rated Power: 10 watts  
|--------------|--------------------------------|
|             | Rated Voltage: 16.7 VDC  
|             | Rated Current: .61 amps  
| Battery     | Voltage: 12 VDC  
|             | Capacity: 65 A h  
|             | Includes a NEMA 3R aluminum enclosure  
| Operating Environment | Outdoor  
|             | -40 degrees F to 140 degrees F  

**Part # 09163**

- The 10 watt Solar Power System consists of a module of 36 solar cells for maximum charging power.
- Each cell is encapsulated in multiple layers of ethylene vinyl acetate and laminated with a white Tedlar™ backing to ensure longevity even in the most adverse weather conditions.
- The glass covering is impact resistant and allows the maximum amount of light to reach the solar cells.
Harness the Power of the Sun!

Solar Power Systems

The Problem: You need a wireless solution, but you have no power available at your transmitter or receiver.

The Solution: Power any Wireless Switch System with a 10 or 55 watt Solar Power System from Remote Control Technology!

- The 10 and 55 watt solar power systems are fully integrated power sources that supply 12 VDC to your Remote Control Technology Simple Wireless Solution and the devices that you are monitoring or controlling.
- These systems are ruggedly built to withstand the rigors of extended operation in remote locations and require virtually no maintenance after initial installation.
- The wiring diagram below demonstrates how the Solar Power Systems integrate with your transmitter, receiver, or device:
Antennas
Choosing the correct antenna and location for your Wireless Switch System is a critical factor in determining how well the system will perform. While there are many antennas on the market, Remote Control Technology can provide the options that work best with our products.

ANTENNAS

Applications Include:
- Pumps, Valves, Relays, Conveyors, Grain Augers,
- Alarm Systems, PLC Activation, Stackers, Automation

ANTENNA INSTALLATION

Successful wireless communication range is achievable in most locations as long as the following installation practices are observed. Remote Control Technology can supply connectors and RG-58 coaxial cable in lengths of 3, 10, 25, 50, and 100 feet (specify when ordering). Your range will be maximized by following these guidelines:

- 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. Otherwise, the receiver may have trouble distinguishing the FM transmitter signal from this noise.
- When using 27 MHz systems, mount all antennas outdoors. This frequency has great characteristics for long range, but the signals will not go through metal-reinforced concrete walls. For equipment located indoors, run a length of RG-58 coaxial cable from the receiver to an antenna mounted outdoors.
- When using 151 MHz or 433 MHz systems, be sure that the antennas have a line-of-sight (a straight line could be drawn between the antennas without going through any solid objects). These systems are recommended for all indoor applications.
- Mount antennas as high as possible, at least 3 feet away from vertical surfaces and above awnings.
- Use only high-quality cables and connectors, which are available from RCT.
- Do not loop excess coaxial cable into a coil. This will cause a radio frequency choke and reduce your signal range. Loosely route it back and forth in an “S” configuration.

The range of all radio products is dependent on local conditions and antenna selection/location.