

## **Ground Cover Radio System Installation Manual**

### **Important Notices**

- 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.
- To satisfy RF Exposure requirements, The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.
- 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:
  - Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer, installer, or an experienced radio/TV technician for help.
- This device contains FCC ID: RZD-JTS1
- Installation and configuring of this system can ONLY be performed by a properly trained professional that has received training in the installation and the configuring of this system.
- Changes or modifications not expressly approved by Sparks Systems, LLC could void the user's authority to operate the equipment.

### **System Component Description**

The Ground Cover Radio System is a wireless data acquisition and data logging system designed to operate for 8 + years on a single "D" cell Lithium battery. The basic system consist of a *master transceiver* an any number of battery powered *slave units*.

**Master Transceiver:** The master transceiver unit comes in two configurations, a handheld version and a vehicle mounted unit. The most common is the vehicle mounted unit. The vehicle mounted master transceiver consists of a small box that contains the transceiver, a roof top mounted antenna, a 12 VDC power cord and a serial port cable. The handheld version come pre-installed in a small portable handheld computer and requires no installation.

**Slave Units:** The Slave Units is a self contained, battery powered data packet radio in a hermetically sealed enclosure designed to interface to utility meters, SCADA systems, pump control systems, and level, pressure, temperature, or other data and control applications. The I/O on the slave units consists of a RS-232 port, two 5 volt 100 mA outputs, two buffered inputs, and a tamper line. These units are designed for outside and underground installations. They can be mounted in meter pits and vaults, basements, on exterior walls and fences, etc.

### **Installing the Master Transceiver:**

**Mounting:** The Master Transceiver typically is mounted in a vehicle and attached to a mobile computer or laptop. The Master Transceiver box can be mounted to the floor of the vehicle under a seat or on the back wall of pickup cab utilizing the mounting tabs on the enclosure. Route the power and communication cables to the computer mounting area in a manner that they will be protected from abrasion or damage. If the Master Transceiver is mounted to the computer or the computer mounting bracket, be sure and secure the excess power and communication cable appropriately with cable ties. The antenna cable is routed from the Master Transceiver to the selected roof top or trunk lid antenna location in a manner that it will be protected from abrasion or damage. Install the antenna according to the antenna manufacturer's instructions included with the antenna.

### ***Cable Connections:***

The communication cable may be either RS-232 serial or USB. Connect this cable to the appropriate connection on the laptop or portable computer. Make sure that any connector screws employed are appropriately tightened.

The power cable typically plugs into a 12 VDC outlet. Do not modify the fused power connector or wire directly to vehicle power. Doing so may create an unsafe condition and a fire hazard.

The antenna cable is connected to the Master Transceiver SMA connector and tightened. The antenna connection is made according to the antenna manufacturer's instructions included with the antenna. Do not modify the antenna provided with the system or substitute any other antenna for the one provided. The system is designed to work optimally with the antenna provided.

### ***Configuration and Testing:***

The Master Transceiver is controlled completely by the software installed on the laptop or portable computer. Follow the instructions included with the software to set up the system and test it.

### **Installing the Slave Unit:**

**Mounting:** The Slave Unit typically is mounted near the utility meter or other data source. The Slave Unit box can be mounted to the lid of a meter enclosure using cable ties through the holes in the edges of the unit and foam tape backed cable tie mounts. The Slave Unit box can be mounted to an interior or exterior wall using the holes in the edges of the unit. The Slave Unit box can be installed in a dirt floor pit utilizing the stake mounting kit. Always mount the Slave Unit vertical with the label right side up. Always mount the Slave Unit as high as possible in an underground or basement installation. When ever possible mount with a flat side facing the direction that the Master Transceiver will be going by. If mounting must be done a metal vault, try to mount the Slave Unit to the top of the vault as close as possible to the lid or door. Route the cable to the utility meter or data source in a manner that it will be protected from abrasion or damage.

### ***Cable Connections:***

The communication cable may be either RS-232 serial or a six conductor cable. Connect this cable to the utility meter according to the connection diagram provide in the configuration section of the software and as described in the meter or data source documentation.

***Configuration and Testing:***

The Slave Unit is controlled by the Master Transceiver, and that is controlled completely by the software installed on the laptop or portable computer. Follow the instructions included with the software to set up the system and configure the Slave Unit.

**Training, Problems, or Questions:**

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