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Certification Exhibit

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FCC Rule Part: 15.247

IC Radio Standards Specification: RSS-247

ACS Project Number: 15-0299

Manufacturer: Southern States, LLC

Model: ICS Receiver

Manual

ICS

Intelligent Circuit Sensor

Receiver Module Installation and Instruction Manual



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Warnings, Cautions, and Important Information

DANGER

THE EQUIPMENT COVERED IN THIS MANUAL SHOULD BE HANDLED, INSTALLED, AND MAINTAINED BY TRAINED PERSONNEL ONLY. IMPROPER HANDLING, INSTALLATION, OPERATION OR MAINTENANCE OF THIS EQUIPMENT MAY CAUSE IMMEDIATE HAZARDS WHICH WILL LIKELY RESULT IN SERIOUS PERSONNEL INJURY OR DEATH.

WARNING

The equipment covered by this publication must be handled, installed, operated and maintained by qualified persons who understand any hazards involved and are thoroughly trained in the handling, installation, operation and maintenance of high voltage transmission and distribution equipment. These instructions are meant for only such **Qualified Persons**. They are not intended to be a substitute for adequate training and experience in safety procedures for this type of equipment.

A **Qualified Person** is one who is trained in and has skills necessary:

- to develop and implement a proper rigging, lifting, and installation plan along with all safety precautions required to insure safe and proper lifting and installation of the equipment.

The user accepts that this instruction book has general suggestions regarding lifting, handling, and installation of this equipment. The user takes full responsibility and warrants they have the expertise in handling this equipment and fully indemnifies Southern States LLC for any incidents related to the handling and installation of this equipment by the user, their employees, contractors or any other third parties.

- to distinguish between energized and non energized parts
- to determine proper approach distances to energized parts
- to determine proper approach to energized or de-energized equipment that may be pressurized with gas
- proper use of personal protective equipment, insulating and shielding materials, insulated tools for working near energized and /or pressurized electrical equipment
- Knowledge of special purpose equipment that may be unbalanced, pressurized or may have other special attributes that require precautions in handling, installation, operation and maintenance

The instructions in this manual are general guidelines for this type of equipment and not specific to the equipment supplied. Portions of it may not be applicable or may not have complete instructions for your specific equipment.

If you do not understand any part of these instructions or need assistance, contact Southern States Service Division at 770-946-4562 during normal business hours (EST) or 770-946-4565 after normal business hours.

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.

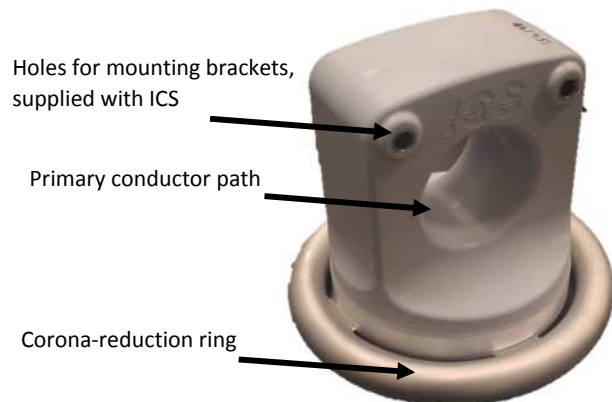
The Grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment.

System Overview

The purpose of the ICS receiver module is to receive high-voltage power system data (e.g. current and voltage), digitally transmitted via a local RF connection from a power line to the ground, where it is analyzed and acted upon. The ICS system is comprised of a **Sensor Module**, a **Receiver Module**, an **Interface Module**, and an optional **Analog Output Module**. Each Module plays an important role in the system and is described below.

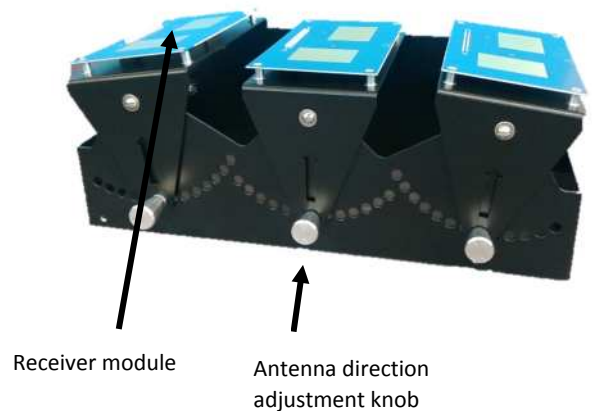
Sensor Module

The **Sensor Module** measures line current and voltage and transmits the data to the **Receiver Module**. Each **Sensor Module** has redundant power supply, measurement, and radio circuits to ensure maximum reliability.



Receiver Module

The **Receiver Module** receives data from a **Sensor Modules** and converts that data into a digital format that may be used by the **Interface Module**. The **Receiver Module** allows the user to adjust the 2 receiver antennae direction individually in order to maximize the received signal strength from each **Sensor Module**. More than one **Receiver Module** may be used to receive data from multiple sensors.



Interface Module

The **Interface Module** receives digital data from the **Receiver Module** and processes that data for two important functions: 1) user interface to ICS configuration, and 2) optional digital output to **Analog Module**,



USB port for
connecting laptop

Analog Output Module

The **Analog Output Module** receives digital data from the **Interface Module** and outputs that data to the user's other equipment, i.e. protective relays.



Lifting handles

Installation

Mounting and Wiring

1. Mount the Receiver Module in the antenna holder and aim towards the matching sensor.
2. Confirm the signal strength is as expected from matching sensor, if the power line is energized.
3. The antenna on the receiver module are permanently attached. **DO NOT ATTEMPT TO MODIFY ANY ANTENNA OR CIRCUIT WITHIN THE RECEIVER MODULE.** Any modifications will void the device warranty and may be in violation of local law.
4. Select the channels assigned to the matching sensors recommended by the factory or search for available sensors in the ICS configuration tool.
5. The ICS receiver module may only be used with other ICS hardware has the proprietary software to communicate properly.

Configuration

1. Use the provided network cable to connect a laptop to the Interface module. Or download the Southern States ICS App to connect to the Interface module via the RJ45 or ST fiber Ethernet jack. Be sure that the Interface module is powered on properly.
2. Follow the User Interface instructions to configure the ICS.
3. Energize the Bus

Maintenance

The ICS receiver module is designed to operate with zero maintenance until end of useful life.

Receiver module specifications

Specification	Rating
Transmit Power	-4dBm
Maximum Continuous Supply Current	500mA
Link Budget	-104dB
Ambient Temperature	-40 C to 85 C
Latency	16.66 milliseconds
Max Data Rate	250kbps
Radio Frequency Band	2.4035-2.4785 GHz

Troubleshooting

For support, please call the Automation and Sensors Division of Southern States, LLC at 770-946-4562.

Notices

NOTE: 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 or an experienced radio/TV technician for help.*

*This equipment complies with radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance **20 cm*** between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.*

*Cet équipement est conforme aux limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement doit être installé et utilisé à distance minimum de **20 cm*** entre le radiateur et votre corps. Cet émetteur ne doit pas être co-localisées ou opérant en conjonction avec tout autre antenne ou transmetteur.*

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.