

# R3 Communication Module Retrofit and Configuration

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# Introduction

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## Qualified Persons

### **WARNING**

Only qualified persons knowledgeable in the installation, operation, and maintenance of overhead and underground electric distribution equipment, along with all associated hazards, may install, operate, and maintain the equipment covered by this publication. A qualified person is someone trained and competent in:

- The skills and techniques necessary to distinguish exposed live parts from nonlive parts of electrical equipment
- The skills and techniques necessary to determine the proper approach distances corresponding to the voltages to which the qualified person will be exposed
- The proper use of special precautionary techniques, personal protective equipment, insulated and shielding materials, and insulated tools for working on or near exposed energized parts of electrical equipment

These instructions are intended only for such qualified persons. They are not intended to be a substitute for adequate training and experience in safety procedures for this type of equipment.

## Retain this Instruction Sheet

### **NOTICE**

Thoroughly and carefully read this instruction sheet before installing or operating an IntelliRupter PulseCloser Fault Interrupter. Become Familiar with the Safety Information on page 4 and Safety Precautions on page 5. The latest version of this publication is available online in PDF format at [sandc.com/en/support/product-literature/](http://sandc.com/en/support/product-literature/).

## Retain this Instruction Sheet

This instruction sheet is a permanent part of the IntelliRupter® fault interrupter Designate a location where users can easily retrieve and refer to this publication.

## Proper Application

### **WARNING**

The equipment in this publication is only intended for a specific application. The application must be within the ratings furnished for the equipment. Ratings for the IntelliRupter fault interrupter are listed in the ratings table in S&C Specification Bulletin 766-31.

## Special Warranty Provisions

The standard warranty contained in S&C's standard conditions of sale, as set forth in Price Sheets 150 and 181, applies to the IntelliRupter fault interrupter, except the first paragraph of the said warranty is replaced by the following:

- (1) General:** The seller warrants to the immediate purchaser or end user for a period of 10 years from the date of shipment that the equipment delivered will be of the kind and quality specified in the contract description and will be free of defects of workmanship and material. Should any failure to conform to this warranty appear under proper and normal use within 10 years after the date of shipment, the seller agrees, upon prompt notification thereof and confirmation the equipment has been stored, installed, operated, inspected, and maintained in accordance with the recommendations of the seller and standard industry practice, to correct the nonconformity either by repairing any damaged or defective parts of the equipment or (at the seller's option) by shipment of necessary replacement parts. The seller's warranty does not apply to any equipment that has been disassembled, repaired, or altered by anyone other than the seller. This limited warranty is granted only to the immediate purchaser or, if the equipment is purchased by a third party for installation in third-party equipment, the end user of the equipment. The seller's duty to perform under any warranty may be delayed, at the seller's sole option, until the seller has been paid in full for all goods purchased by the immediate purchaser. No such delay shall extend the warranty period.

Replacement parts provided by the seller or repairs performed by the seller under the warranty for the original equipment will be covered by the above special warranty provision for its duration. Replacement parts purchased separately will be covered by the above special warranty provision.

For equipment/services packages, the seller warrants for a period of one year after commissioning that the IntelliRupter fault interrupter will provide automatic fault isolation and system reconfiguration per agreed-upon service levels. The remedy shall be additional system analysis and reconfiguration of the IntelliTeam® SG Automatic Restoration System until the desired result is achieved.

Warranty of the IntelliRupter fault interrupter is contingent upon the installation, configuration, and use of the control or software in accordance with S&C's applicable instruction sheets.

This warranty does not apply to major components not of S&C manufacture, such as batteries and communication devices. However, S&C will assign to immediate purchaser or end user all manufacturer's warranties that apply to such major components.

Warranty of equipment/services packages is contingent upon receipt of adequate information on the user's distribution system, sufficiently detailed to prepare a technical analysis. The seller is not liable if an act of nature or parties beyond S&C's control negatively impact performance of equipment/services packages; for example, new construction that impedes radio communication, or changes to the distribution system that impact protection systems, available fault currents, or system-loading characteristics.

## Safety Information

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### Understanding Safety-Alert Messages

Several types of safety-alert messages may appear throughout this instruction sheet and on labels and tags attached to the product. Become familiar with these types of messages and the importance of these various signal words:

#### **DANGER**

“DANGER” identifies the most serious and immediate hazards that will likely result in serious personal injury or death if instructions, including recommended precautions, are not followed.

#### **WARNING**

“WARNING” identifies hazards or unsafe practices that can result in serious personal injury or death if instructions, including recommended precautions, are not followed.

#### **CAUTION**

“CAUTION” identifies hazards or unsafe practices that can result in minor personal injury if instructions, including recommended precautions, are not followed.

#### **NOTICE**

“NOTICE” identifies important procedures or requirements that can result in product or property damage if instructions are not followed.

### Following Safety Instructions

If any portion of this instruction sheet is unclear and assistance is needed, contact the nearest S&C Sales Office or S&C Authorized Distributor. Their telephone numbers are listed on S&C’s website [sandc.com](http://sandc.com), or call the S&C Global Support and Monitoring Center at 1-888-762-1100.

#### **NOTICE**

Read this instruction sheet thoroughly and carefully before installing the IntelliRupter fault interrupter.



### Replacement Instructions and Labels

If additional copies of this instruction sheet are required, contact the nearest S&C Sales Office, S&C Authorized Distributor, S&C Headquarters, or S&C Electric Canada Ltd.

It is important that any missing, damaged, or faded labels on the equipment be replaced immediately. Replacement labels are available by contacting the nearest S&C Sales Office, S&C Authorized Distributor, S&C Headquarters, or S&C Electric Canada Ltd.

**⚠ DANGER**



**IntelliRupter PulseCloser Fault Interrupters operate at high voltage. Failure to observe the precautions below will result in serious personal injury or death.**

Some of these precautions may differ from your company's operating procedures and rules. Where a discrepancy exists, follow your company's operating procedures and rules.

1. **QUALIFIED PERSONS.** Access to an IntelliRupter fault interrupter must be restricted only to qualified persons. See the "Qualified Persons" section on page 2.
2. **SAFETY PROCEDURES.** Always follow safe operating procedures and rules.
3. **PERSONAL PROTECTIVE EQUIPMENT.** Always use suitable protective equipment, such as rubber gloves, rubber mats, hard hats, safety glasses, and flash clothing, in accordance with safe operating procedures and rules.
4. **SAFETY LABELS.** Do not remove or obscure any of the "DANGER," "WARNING," "CAUTION," or "NOTICE" labels.
5. **OPERATING MECHANISM AND BASE.** IntelliRupter fault interrupters contain fast-moving parts that can severely injure fingers. Do not remove or disassemble operating mechanisms or remove access panels on the IntelliRupter fault interrupter base unless directed to do so by S&C Electric Company.
6. **ENERGIZED COMPONENTS.** Always consider all parts live until de-energized, tested, and grounded. The integrated power module contains components that can retain a voltage charge for many days after the IntelliRupter fault interrupter has been de-energized and can derive a static charge when in close proximity to a high-voltage source. Voltage levels can be as high as the peak line-to-ground voltage last applied to the unit. Units energized or installed near energized lines should be considered live until tested and grounded.
7. **GROUNDING.** The IntelliRupter fault interrupter base must be connected to a suitable earth ground at the base of the utility pole, or to a suitable building ground for testing, before energizing an IntelliRupter fault interrupter, and at all times when energized.
  - The ground wire(s) must be bonded to the system neutral, if present. If the system neutral is not present, proper precautions must be taken to ensure the local earth ground, or building ground, cannot be severed or removed.
8. **VACUUM INTERRUPTER POSITION.** Always confirm the **Open/Close** position of each interrupter by visually observing its indicator.
  - Interrupters, terminal pads, and disconnect blades on disconnect-style models may be energized from either side of the IntelliRupter fault interrupter.
  - Interrupters, terminal pads, and disconnect blades on disconnect-style models may be energized with the interrupters in any position.
9. **MAINTAINING PROPER CLEARANCE.** Always maintain proper clearance from energized components.

## Overview

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S&C products may be revised to add new features to an existing assembly. The revision information is listed after the catalog number with “R” and the revision number. Parts required for a specific revision are also referred to with the same Rx designation.

An existing R0 Communication Module can be upgraded to R3 functionality by installing the R3 Wi-Fi/ GPS transceiver and harnesses.

- S&C Power Systems Solutions can train utility personnel to do the R3 retrofit.
- The retrofit must be done indoors at an electrostatic-discharge protected workbench.
- The SCADA radio can be configured in the service center for a installation at a specific site.
- The R3 Communication Module can be easily installed at the site by a line crew.

**Note:** The IntelliRupter fault interrupter remains fully operational during the communication module swap. There will be no service interruption.

**Note:** When establishing a rotation procedure to swap communication modules at the site, each SCADA radio must be configured in the service center for the specific site at which it will be installed.

### NOTICE

These instructions are intended for use only by personnel trained by S&C Electric Company Service Personnel

Electrostatic-discharge procedures must be followed because components are sensitive to electrostatic-discharge damage.

Use of an SCS 8501 Static Dissipative Mat and Wrist Groundstrap or a static protected workbench is required.

### NOTICE

The R3 retrofit must be done indoors in a laboratory or service center environment on a static-controlled workbench.

### NOTICE

Installation of the R3 retrofit kit without proper training will void the warranty. Contact S&C to arrange for training provided by S&C Electric Company Service Personnel.

The communication module can be easily removed and replaced from a bucket truck using a hookstick.

## NOTICE

To prevent contamination of the connectors, never place the connector on the ground without some form of protection from dirt and mud.

Removing the communication module can be done from a bucket truck with the module handling fitting attached to a suitable hookstick.

## CAUTION

The communication module is heavy, weighing more than 26 pounds (12 kg). S&C does not recommend removal and replacement from the ground using an extendostick. **This may cause minor injury or equipment damage.**

Remove and replace the communication module from a bucket truck using the module handling fitting attached to a suitable hookstick.

Follow these steps to remove the communication module:

- STEP 1.** Insert the handling fitting into the module latch and push up on the hookstick. Rotate the fitting 90 degrees counterclockwise (as viewed from the underside of the base) to open the latch. See Figure 1.
- STEP 2.** Remove the communication module from the base. See Figure 2. Pull very hard to disengage the wiring connectors.
- STEP 3.** Remove the handling fitting from the module latch by pushing in on the hookstick while rotating it 90 degrees clockwise. Place the communication module on a clean, dry surface. See Figure 3.



Figure 1. Inserting the handling fitting into the module latch.



Figure 2. Removing the communication module from the base.



Figure 3. The rear of a communication module removed from the IntelliRupter fault interrupter base.



# Communication Module Retrofit

## Tools Required

- Nut driver, 1/4-inch
- Nut driver, 3/8-inch
- Phillips screwdriver, medium
- Flat-head screwdriver, medium
- Diagonal wire cutter (to cut or trim cable ties)
- SCS 8501 Static Dissipative Mat

## Removing the Radio Tray

Follow these steps to remove the radio tray assembly from the communication module:

- STEP 1.** Loosen the battery compartment cover locking screw and open the battery compartment cover. See Figure 4.
- STEP 2.** Remove the five 1/4–20 bolts that attach the radio tray assembly using a 3/8-inch nut driver. Retain the bolts. See Figure 4.
- STEP 3.** Slide the radio tray out of the communication module. See Figure 5.
- STEP 4.** Place the radio tray on a static dissipative mat or static grounded workbench. See Figure 6.

### NOTICE

Handling the R3 Wi-Fi/GPS module without effective electrostatic protection will void the product warranty. To effectively protect the R3 Wi-Fi/GPS module, use the SCS 8501 Static Control Field Service Kit. The kit can be purchased independently or through S&C Electric Company using part number 904-002511-01.

**Note:** When performing only the Ethernet configuration change, go to the “Setting the R3 Communication Module for Ethernet IP Configuration” section on page 13.

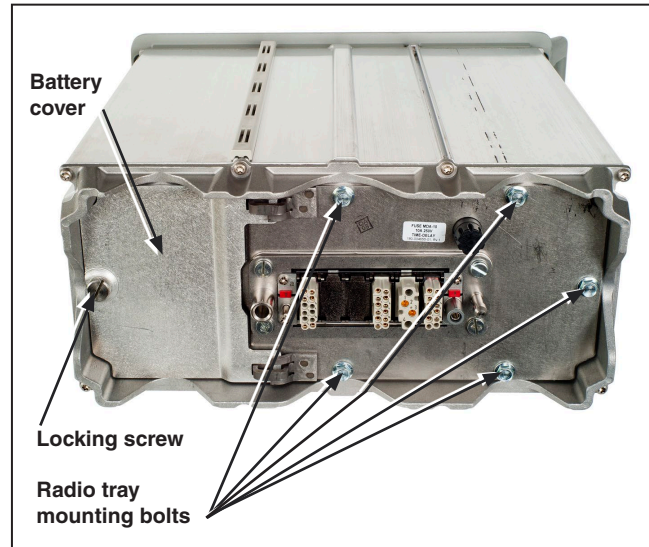


Figure 4. Removing the radio tray bolts.

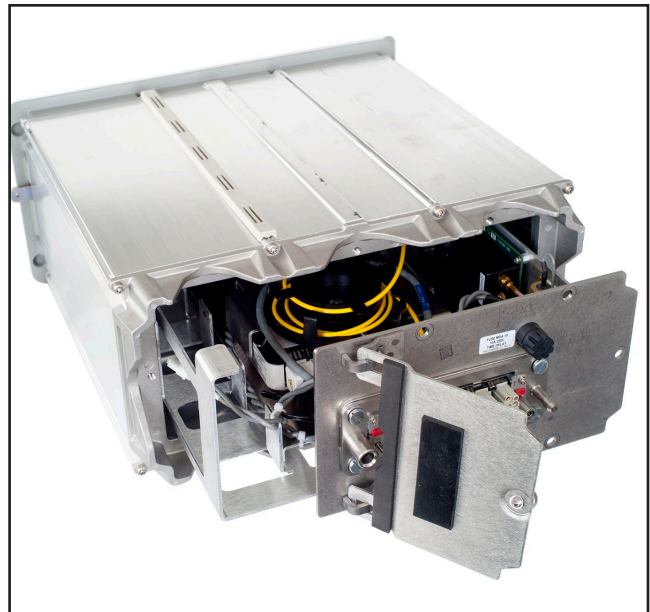


Figure 5. Removing the radio tray assembly.

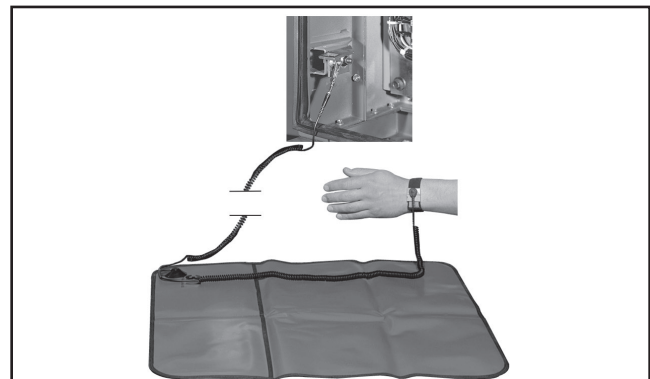


Figure 6. The SCS 8501 Field Service Kit.



### Removing the R0 Wi-Fi/GPS Module

The R0 Wi-Fi/GPS module, with connections for power, data, and antenna, is mounted on the side of the radio tray. See Figure 7.

Follow these steps to remove the R0 Wi-Fi/GPS module circuit board. See Figure 7.

- STEP 1.** When a SCADA radio is installed:
- (a) Disconnect all cables from the radio.
  - (b) Use a Phillips screwdriver to remove the screws attaching the radio mounting plate to the radio tray.
  - (c) Save the screws and remove the radio and radio mounting plate.
- STEP 2.** Disconnect the two antenna cables. They are labeled GPS and Wi-Fi for correct re-installation.
- STEP 3.** Disconnect the connector at the left side.
- STEP 4.** Cut the two indicated cable ties. See Figure 7.
- STEP 5.** Cut the cable tie indicated in Figure 8.
- STEP 6.** Remove the six standoff mounting nuts (will not be reused), and remove the circuit board. See Figure 9.

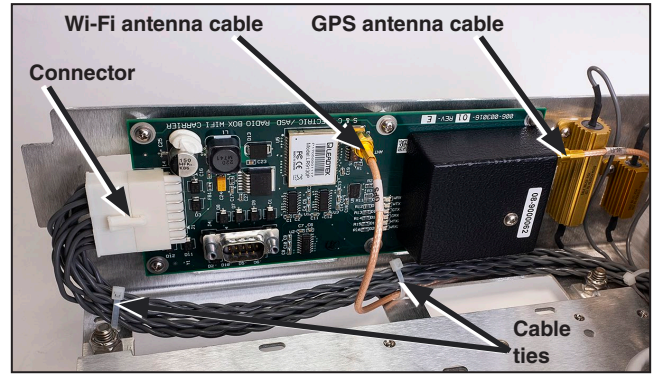


Figure 7. The R0 Wi-Fi/GPS module connections with no SCADA radio installed.

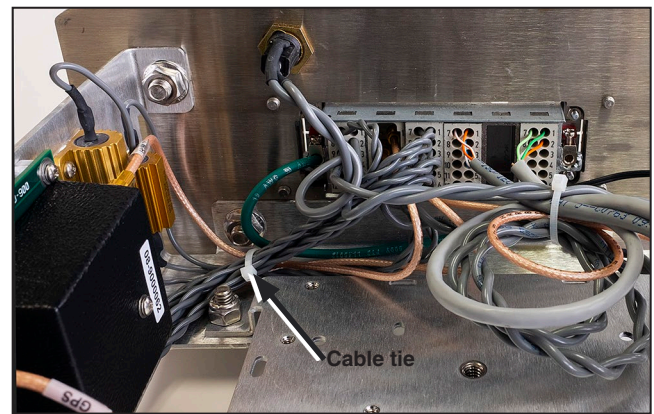


Figure 8. The indicated cable tie must be cut.

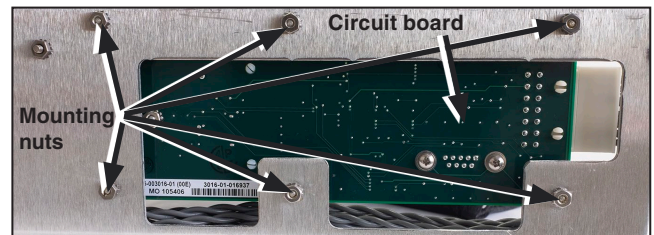


Figure 9. The R0 mounting nuts.

### Installing the R3 Wi-Fi/GPS Module

The R3 Communication Module Retrofit Kit is catalog number 903-002475-01. Follow these steps to install the R3 Wi-Fi/GPS module.

- STEP 1.** Fold the harness that was connected to the R0 circuit board as shown in Figure 10 and secure it with the indicated cable ties.
- STEP 2.** Plug the new harness into the existing harness connector. See Figures 10 and 11.
- STEP 3.** Install the R3 Wi-Fi/GPS module mounting plate to the side of the radio tray with the six screws provided. See Figures 12 and 13.
- STEP 4.** Install the ferrite choke around the gray cables and install the three cable ties at the ferrite. See Figure 13.
- STEP 5.** Install two cable ties near the connector and two cable ties near the gray cable plugs. See Figure 13.

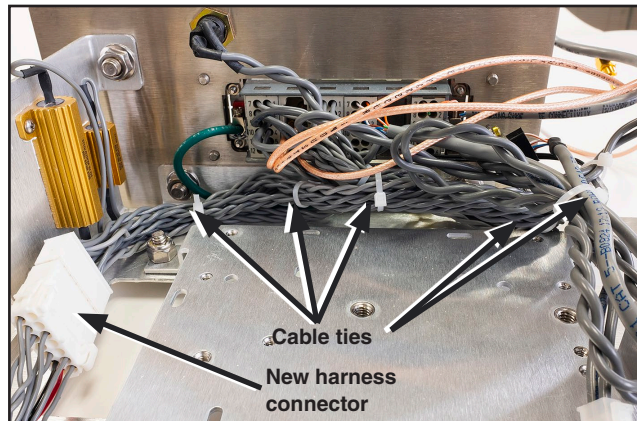


Figure 10. The re-bundled cable harness and cable ties.

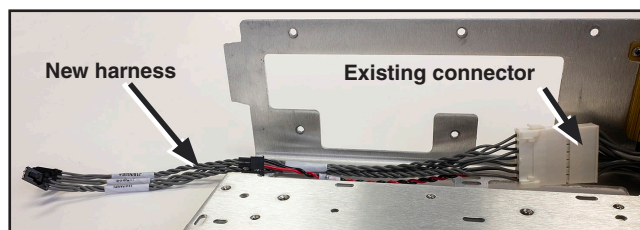


Figure 11. The new harness connected to the existing connector.



Figure 12. The six new screws that secure the R3 Wi-Fi/GPS module mounting plate.

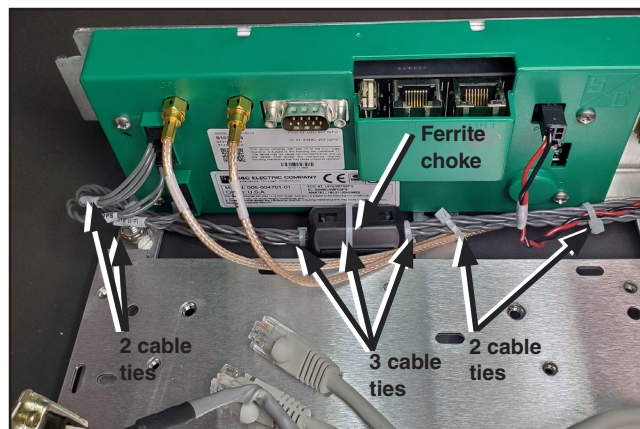


Figure 13. The ferrite choke and cable ties installed on the new harness.



- STEP 6.** Attach cables to the Wi-Fi/GPS module. See Figure 14.
- (a) The two antenna connectors are marked for “GPS” and “Wi-Fi.” Connect them as indicated.
  - (b) The three gray cables are marked for the appropriate connector. Connect them from top to bottom in this order: J18, J17, and J16. Connector J15 is not used.

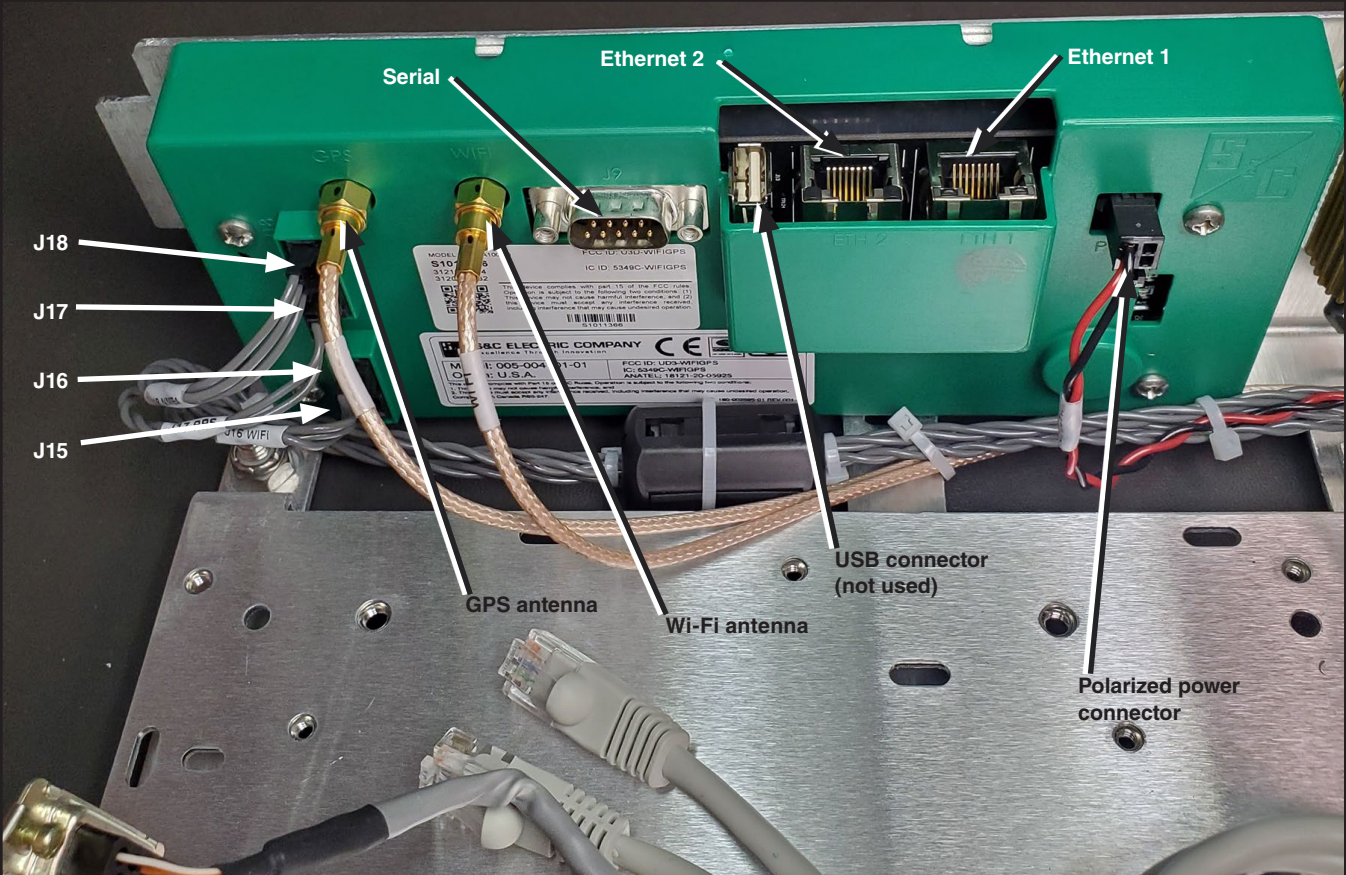


Figure 14. The R3 Wi-Fi/GPS module connections, with no communication device installed.

## Communication Module Retrofit

Connecting the cables as instructed in this step emulates operation of the R0 Communication Module, which is a serial communication configuration. For Ethernet IP configuration, go to the “Setting the R3 Communication Module for Ethernet IP Configuration” section on page 13.

- STEP 7.** Reinstall the SCADA radio and mounting plate with the existing Phillips screws.
- STEP 8.** Reconnect the radio power cable, the antenna cable, and the serial and/or Ethernet cables.

### Reinstalling the Radio Tray

- STEP 1.** Reinstall the radio tray in the communication module enclosure.
- Insert the radio tray into the communication module. See Figure 15.
  - Install the five existing  $\frac{1}{4}$ -20 bolts that attach the radio tray assembly using a  $\frac{3}{8}$ -inch nut driver. See Figure 16.
  - Close the battery compartment cover and tighten the cover locking screw.
- STEP 2.** Install the new “R3” label on the front plate in the recess at the right as indicated in Figure 17.
- STEP 3.** If the Ethernet IP configuration has been set, install the “-E” label on the front panel recess.

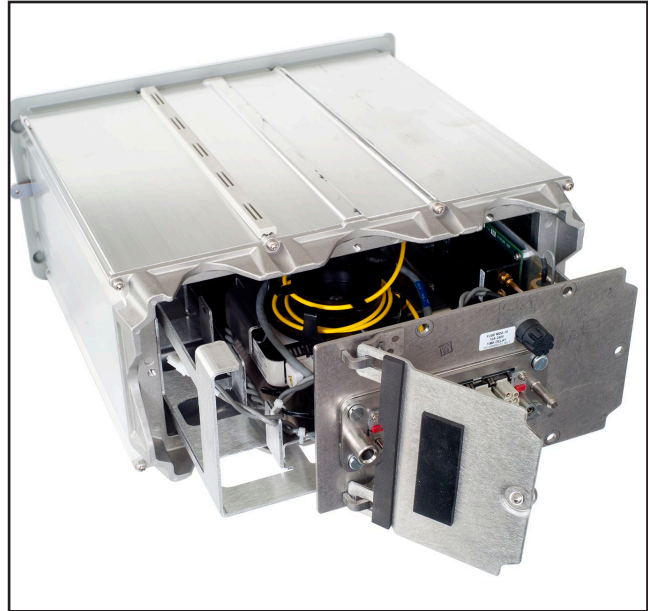


Figure 15. Reinstalling the radio tray assembly.

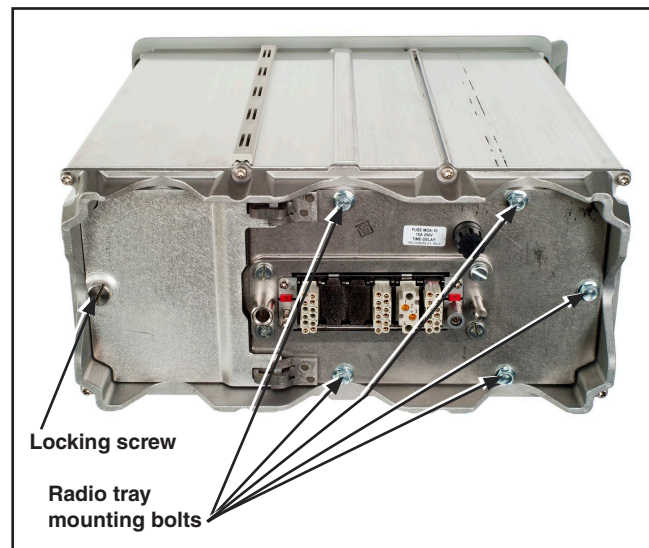


Figure 16. The radio tray mounting bolts.



Figure 17. The new “R3” label on the front panel.



## NOTICE

Proper grounding with a wrist strap connected to ground is required when touching any components within the communication module or contacts on the R3 Communication Module connector.

The R3 Communication Module is shipped from the factory with a serial communication configuration. See the wiring diagram in Figure 41 on page 23.

This section instructs configuring the module to use the Ethernet IP configuration, which allows remote access to the Wi-Fi/GPS user interface, enables remote firmware updates, and allows use of advanced security features available in the R3 Communication Module firmware version 3.0.00512. See the wiring diagram in Figure 42 on page 24.

To configure the R3 Communication Module for Ethernet IP wiring, WAN traffic must be routed through the Wi-Fi/GPS module. Follow these steps to convert the R3 Communication Module from the serial communication configuration wiring to the IP configuration module wiring:

- STEP 1.** At the communication device, unplug the RJ45 cable that runs between the communication device and the control module. See Figure 14 on page 11.
- STEP 2.** At the Wi-Fi/GPS module, plug the RJ45 cable from the control into Ethernet 1 on the Wi-Fi/GPS module. See Figure 18.
- STEP 3.** Locate the Ethernet patch cord provided with the R3 Communication Module and plug one end into Ethernet 2 on the Wi-Fi/GPS module and the other into the Ethernet port on the communication device. See Figure 19.
- STEP 4.** Install the DB-9 cable to the field communication device so Wi-Fi can communicate with that device. See S&C Instruction Sheet 766-528 with module firmware version 3.0.00512 or Instruction Sheet 766-524 for other firmware versions. See Figure 19.

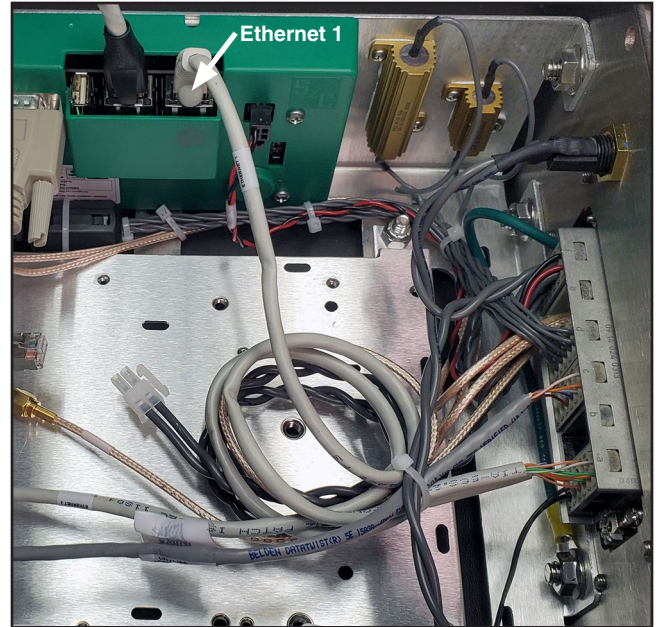


Figure 18. The RJ45 cable from the control plugged into Ethernet 1.

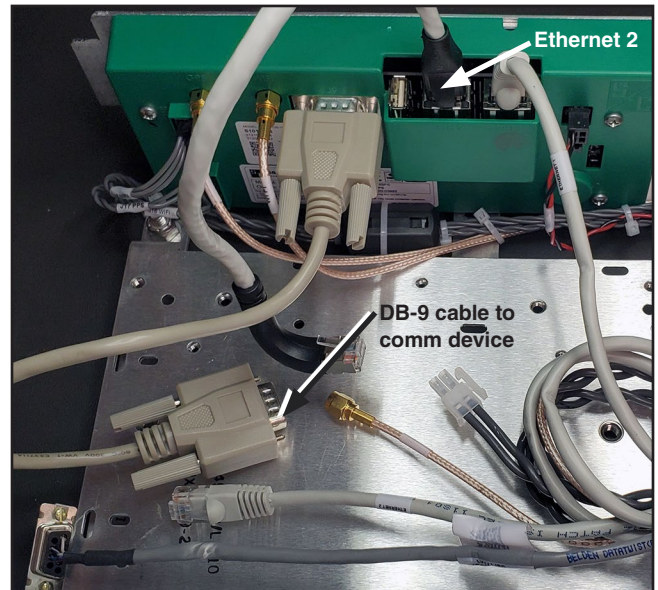


Figure 19. The Ethernet patch cord plugged into Ethernet 2.

# Setting the R3 Communication Module to Ethernet IP Configuration

- STEP 5.** Follow instructions in the “Reinstalling the Radio Tray” section on page 12.
- STEP 6.** Determine what IP address, subnet mask, and default gateway address the IntelliRupter fault interrupter control is using by going to the IntelliLink® Setup Software *Setup> Communications>Ethernet* screen. See Figure 20.

Copy this information down because it will be needed to configure the R3 Communication Module’s WAN interface. If there is no Ethernet IP information configured in the IntelliRupter fault interrupter control, then skip to the next step.

- STEP 7.** Configure the IntelliRupter fault interrupter control module’s **Ethernet 1** tab: **Ethernet 1 IP Address** setpoint to 192.168.1.2, the **Network Address** setpoint to 192.168.1.0, the **Subnet Mask** setpoint to 255.255.255.0, the **Broadcast Address** setpoint to 192.168.1.255, and the **Default Gateway Address** setpoint to 192.168.1.1. See Figure 21.

**Note:** This configuration assumes the R3 Communication Module’s Ethernet 1 IP address is set to the default of 192.168.1.1 with a Netmask of 255.255.255.0. If that has been changed, then the Ethernet 1 IP Address, Network Address, Subnet Mask, and Default Gateway on the IntelliRupter fault interrupter control must be configured to be on the same network as the R3 Communication Module Ethernet 1 network.

Follow these steps to open the *Wi-Fi Configuration* screens in the R3 Communication Module (catalog number SDA-4554R3):

- STEP 1.** In the Windows® 10 **Start** menu, select *Start>Programs>S&C Electric> LinkStart> LinkStart V4*. The *Wi-Fi Connection Management* screen will open. See Figure 22.
- STEP 2.** Enter the serial number of the IntelliRupter fault interrupter and click on the **Connect** button. See Figure 22.

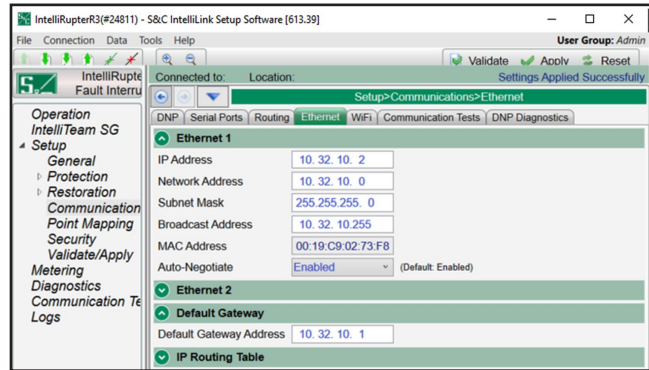


Figure 20. The *Setup>Communications>Ethernet* screen.

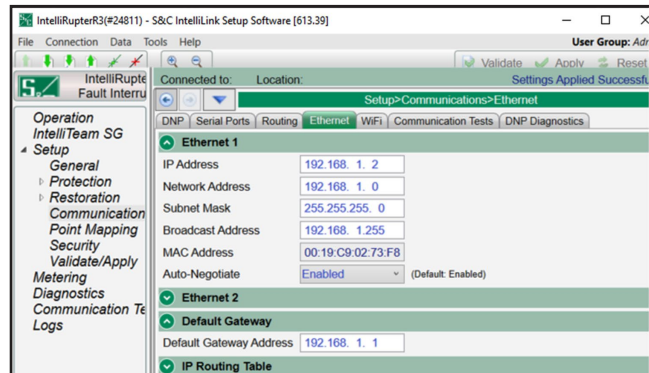


Figure 21. The reconfigured Ethernet interface information.

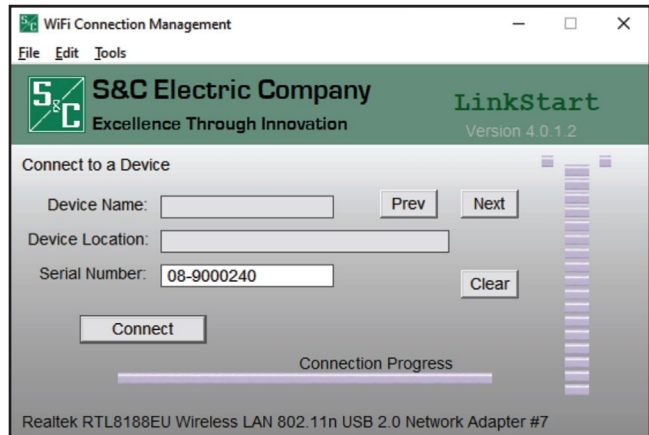


Figure 22. The *Wi-Fi Connection Management* screen.



# Setting the R3 Communication Module to Ethernet IP Configuration

The **Connect** button changes to the **Cancel** button, and connection progress is shown on the connection status bar. See Figure 23.

When connection is established, the status bar indicates “Connection Successful” and displays a solid green bar. The vertical bar graph indicates signal strength of the Wi-Fi connection. See Figure 24.

**STEP 3.** Open the **Tools** menu and click on the **Wi-Fi Administration** option. See Figure 25.

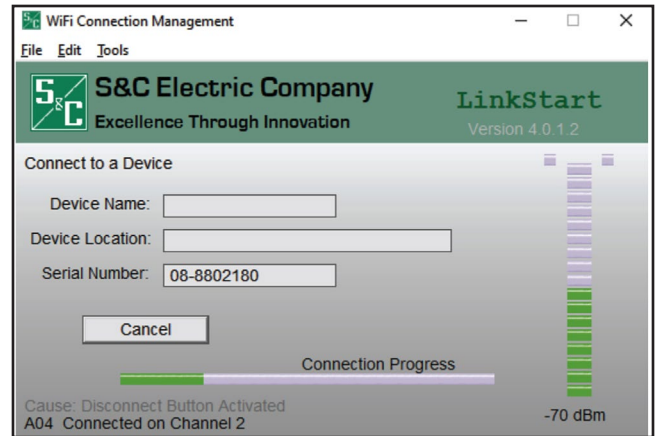


Figure 23. The connection progress status bar.

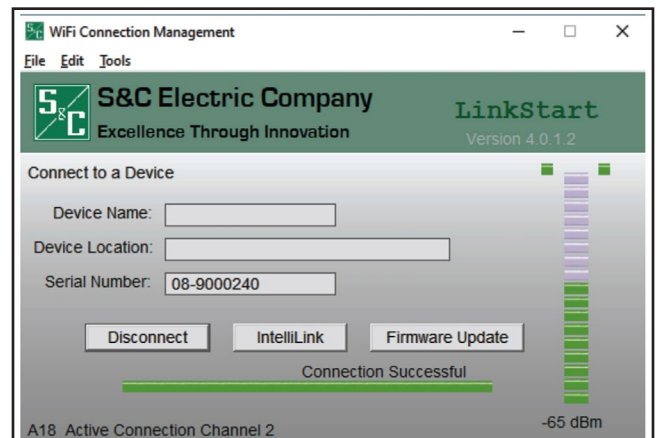


Figure 24. Successful connection to the IntelliRupter fault interrupter.

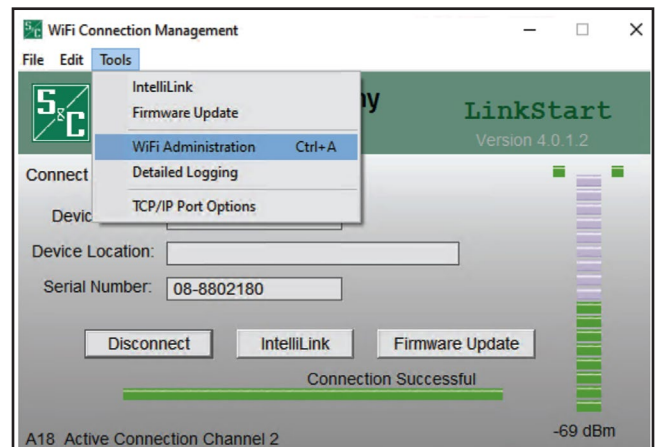


Figure 25. The Wi-Fi Administration entry on the Tools menu.

## Setting the R3 Communication Module to Ethernet IP Configuration

The *Login* screen opens with a username and password challenge. See Figure 26. These screens are displayed in the Internet browser on the computer.

The supported browser versions include Google Chrome and Microsoft Edge. The IP address is displayed at the top of the screen and is supplied by the R3 Communication Module.

- STEP 4.** Enter the username and password and click on the **Login** button. Authentication status is displayed. See Figures 26 and 27.

The default username and password can be requested from S&C by calling the Global Support and Monitoring Center at 888-762-1100 or by contacting S&C through the S&C Customer Portal at [sandc.com/en/support](http://sandc.com/en/support).

Follow these steps to reconfigure the WAN interface of the R3 Communications Module if using software versions earlier than 3.0.x. Otherwise, skip to Step 1 on page 18 if running software version 3.0.x or later:

- STEP 1.** When the default username and password are entered, the *Profile* screen opens and prompts assignment of a new password entry and confirmation. Change the default password to a unique password for security purposes. When entries are complete, click on the **Apply** button to save the new password. See Figure 28.

After changing the password, the *General Status* screen appears. See Figure 29 on pages 17.

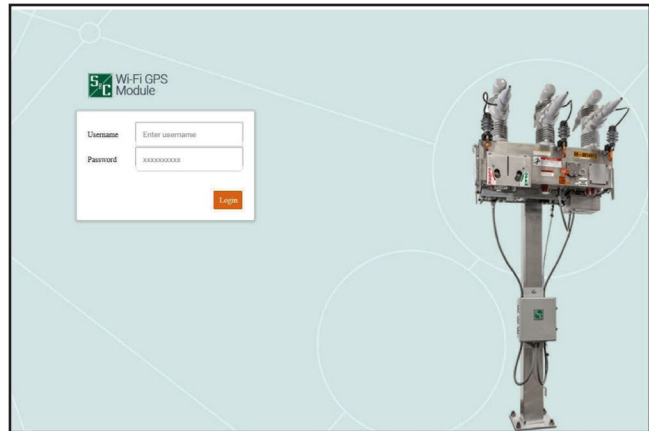


Figure 26. The *Login* screen - R3 Communication Module running 2.1.x software or earlier.

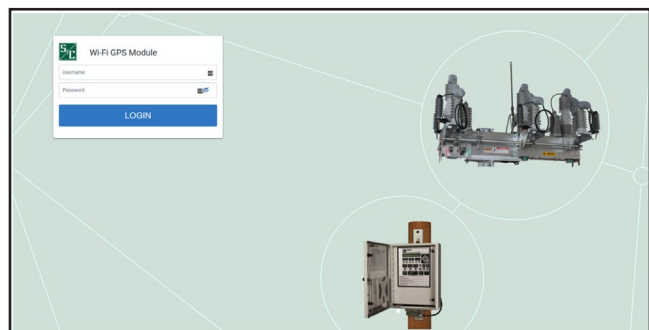


Figure 27. The *Login* screen - R3 Communication Module running 3.0.x software or later

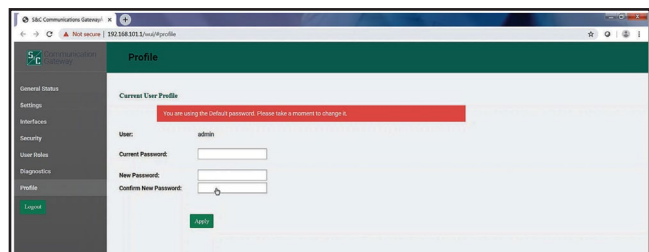


Figure 28. The *Change Password* screen.

# Setting the R3 Communication Module to Ethernet IP Configuration

**STEP 2.** Click on the **Interfaces** option in the left menu to open the *Interfaces* screen. See Figure 30.

**STEP 3.** Go to the Ethernet 2 (WAN) panel and toggle the **Enable** setpoint to the **On** position to enable the Ethernet 2 interface, if not already enabled, and make sure the **DHCP Client** setpoint is disabled and in the **Off** position. Now, configure the **Static IP Address** setpoint with the IP address copied from the IntelliRupter fault interrupter's Ethernet IP address in Step 6 on page 14.

Do the same for the **Netmask** setpoint (which will be the subnet mask copied from the IntelliRupter fault interrupter) and the **Default Gateway IP Address** setpoint (which will be the default gateway address from the IntelliRupter fault interrupter). Then, click on the **Save** button in the top right of the screen to save the configuration. See Figure 31.

Follow these steps when using an R3 Communication Module running software versions 3.0.x or later to configure the Ethernet 2 (WAN) Interface:

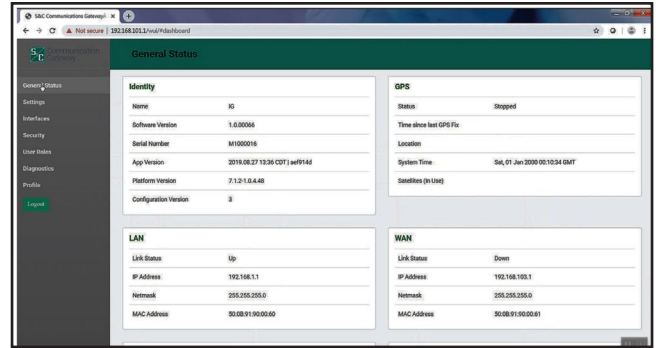


Figure 29. The top of the *General Status* screen.

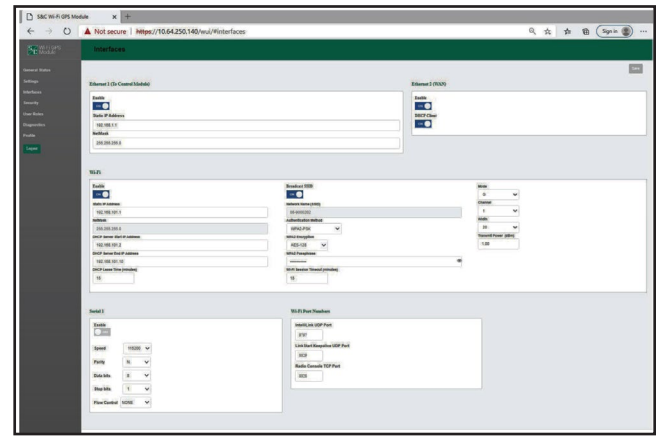


Figure 30. The *Interfaces* screen.

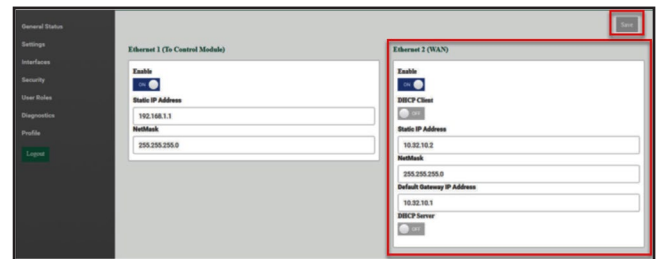


Figure 31. The Ethernet 2 (WAN) panel of the *Interfaces* screen.

# Setting the R3 Communication Module to Ethernet IP Configuration

**STEP 1.** When the default username and password are entered, the *My User Account* screen opens and prompts assignment of a new password entry and confirmation. The default password must be changed to a unique password for security purposes. The password entry must be at least eight characters in length and contain at least one uppercase letter, one lowercase letter, one number, and one special character.

The Admin or any user with a security Admin role can modify password complexity. When entries are complete, click on the **Save** button to save the new password. See Figure 32.

After changing the password, the *General Status* screen will be displayed. See Figure 33.

**STEP 2.** Click on the **Interfaces** option in the left menu to open the *Interfaces* screen. See Figure 34.

**STEP 3.** Go to the Ethernet 2 (WAN) section and enable the interface by toggling the **Enable Ethernet 2** setpoint to the **On** position,

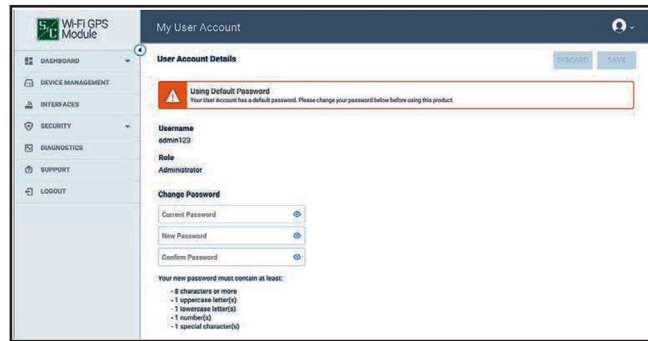


Figure 32. The *Change Password* screen.

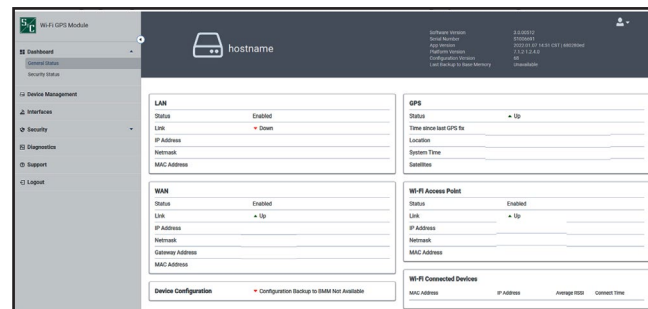


Figure 33. The *General Status* screen.

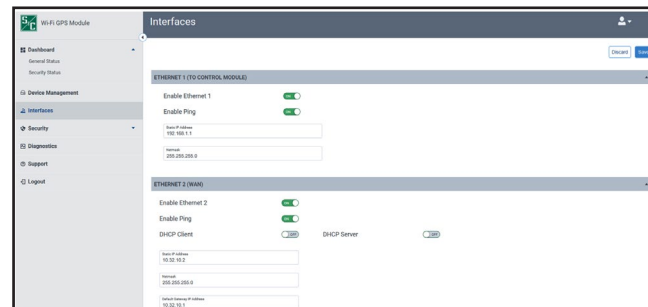
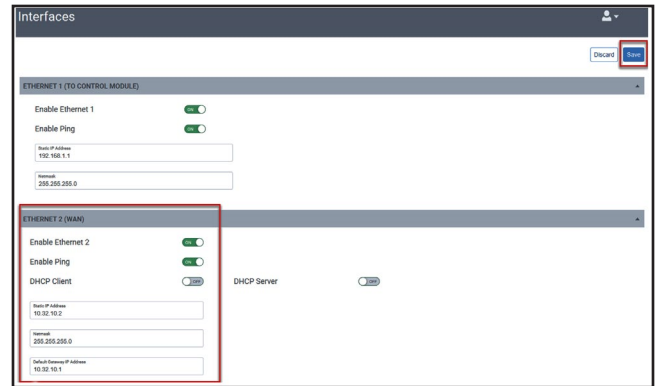


Figure 34. The *Interfaces* screen.

if not already enabled, and make sure the **DHCP Client** setpoint is disabled and in the **Off** position. Now, configure the **Static IP Address** setpoint with the IP address copied from the IntelliRupter fault interrupter's Ethernet IP address in Step 6 on page 14.

Do the same for the **Netmask** setpoint (which will be the subnet mask copied from the IntelliRupter fault interrupter) and the **Default Gateway IP Address** setpoint (which will be the default gateway address from the IntelliRupter fault interrupter). Then, click on the **Save** button in the top right of the screen to save the configuration. See Figure 35.



**Figure 35.** The Ethernet 2 (WAN) section of the *Interfaces* screen.

## Setting the R3 Communication Module to Ethernet IP Configuration

The communication module can be installed from a bucket truck with the module handling fitting attached to a suitable hookstick.

### CAUTION

The communication module is heavy, weighing more than 26 pounds (12 kg). S&C does not recommend removal and replacement from the ground using an extendostick. **This may cause minor injury or equipment damage.**

Remove and replace the communication module from a bucket truck using the module handling fitting attached to a suitable hookstick.

Follow these steps to install the communication module:

- STEP 1.** Inspect the wiring connectors and insertion guides of the communication module and communication module bay for damage. See Figure 36.
- STEP 2.** Push the handling fitting into the module latch and simultaneously turn the fitting 90 degrees counterclockwise.
- STEP 3.** Position the communication module so the alignment arrows line up, and insert the module into the left bay of the base as shown in Figure 37. Push very hard to engage the connectors.
- STEP 4.** While pushing up on the hookstick, rotate the handling tool 90 degrees clockwise (as viewed from the underside of the base) to close the latch. Then, remove the fitting.

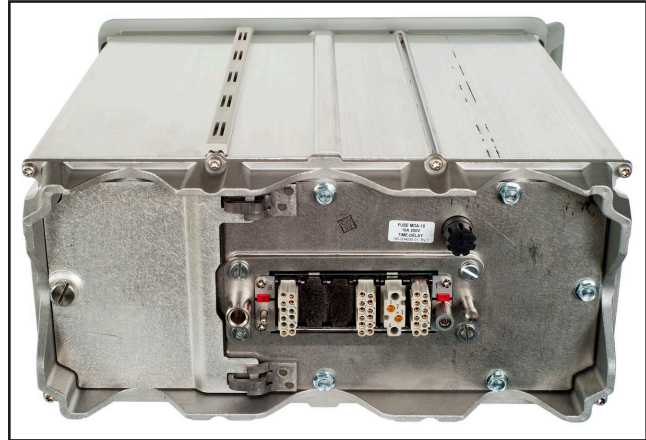


Figure 36. A communication module removed from the IntelliRupter fault interrupter base.



Figure 37. Inserting the communication module into the base.



## Setting the R3 Communication Module to Ethernet IP Configuration

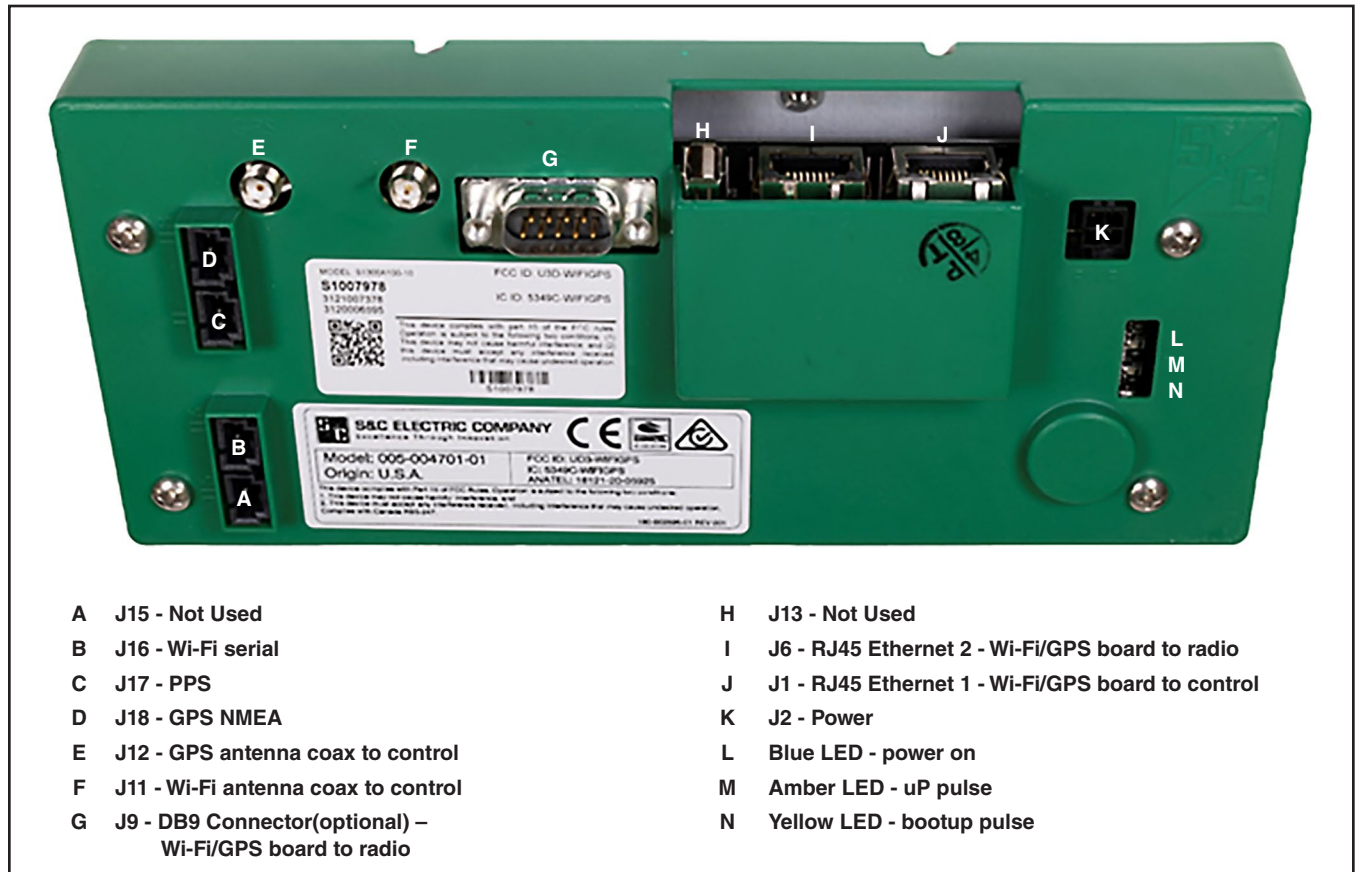


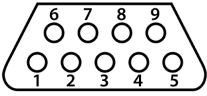
Figure 38. Wi-Fi/GPS Module input locations.

# Setting the R3 Communication Module to Ethernet IP Configuration

## Interface Pinouts

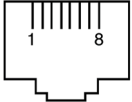
The RS-232 Radio Maintenance Port of the R3 Communication Module is configured as data-terminal equipment. See Figure 38 on pages 21 and Figure 39.

The R3 Communication Module Ethernet ports use RJ-45 connectors with the pinout shown in Figure 40. They are auto-sensing for assignment of transmit and receive lines (no crossover cables required) and auto-negotiate for 10-Mbps or 100-Mbps data rates, as required by the connected device.



Pin	Function	Description
1	NC	No connection
2	RX from radio	RS-232 receive
3	TX to radio	RS-232 transmit
4	NC	No connection
5	TX to Radio GND	Signal ground
6	NC	No connection
7	RTS to radio	Request to send
8	CTS to radio	Clear to send
9	NC	No connection

Figure 39. The R3 Communication Module RS-232 interface pinout.



Pin	Function	Description
1	TXD+	Transmit
2	TXD-	Transmit
3	RXD+	Receive
4	NC	No connection
5	NC	No connection
6	RXD-	Receive
7	NC	No connection
8	NC	No connection

Figure 40. The R3 Communication Module RJ-45 interface pinout.

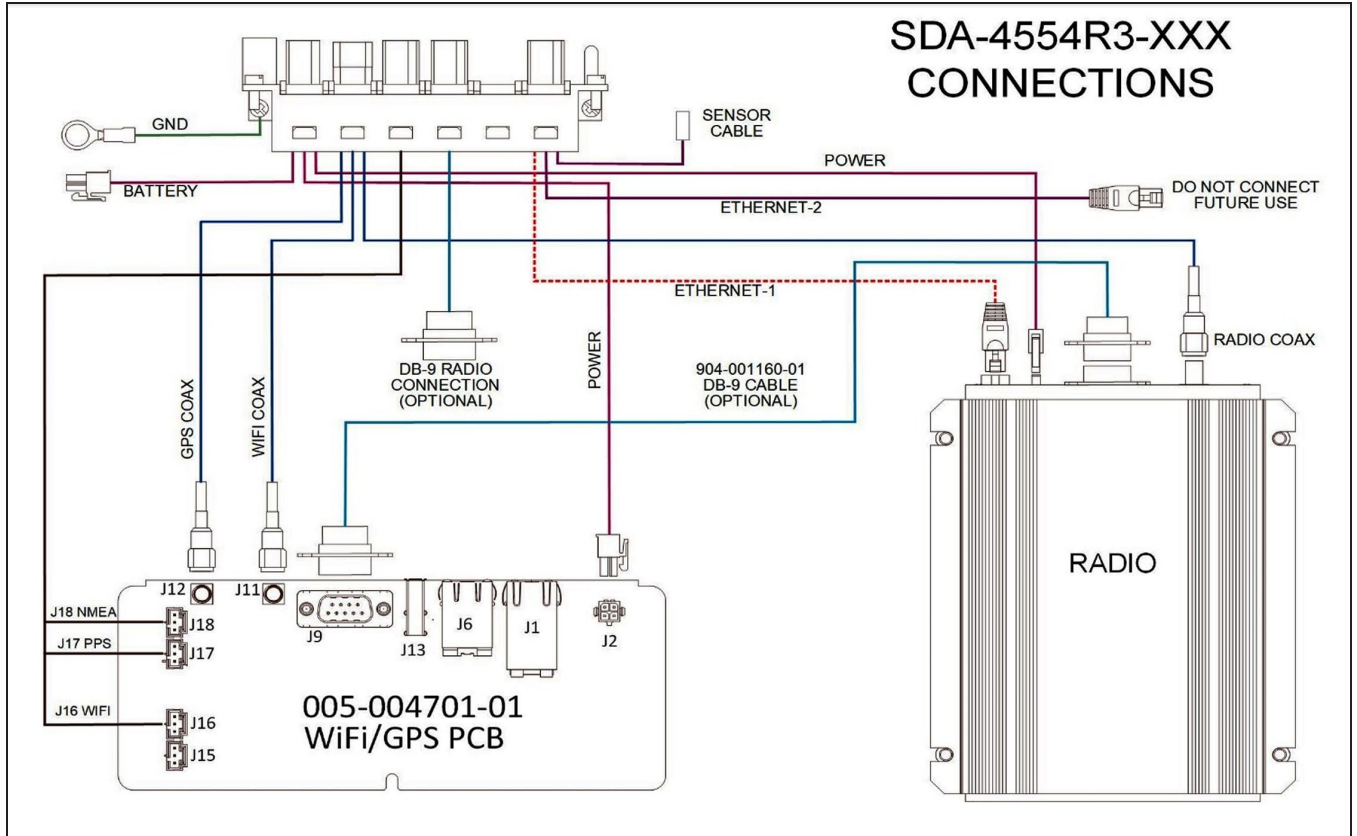


Figure 41. The wiring diagram before Ethernet IP configuration.

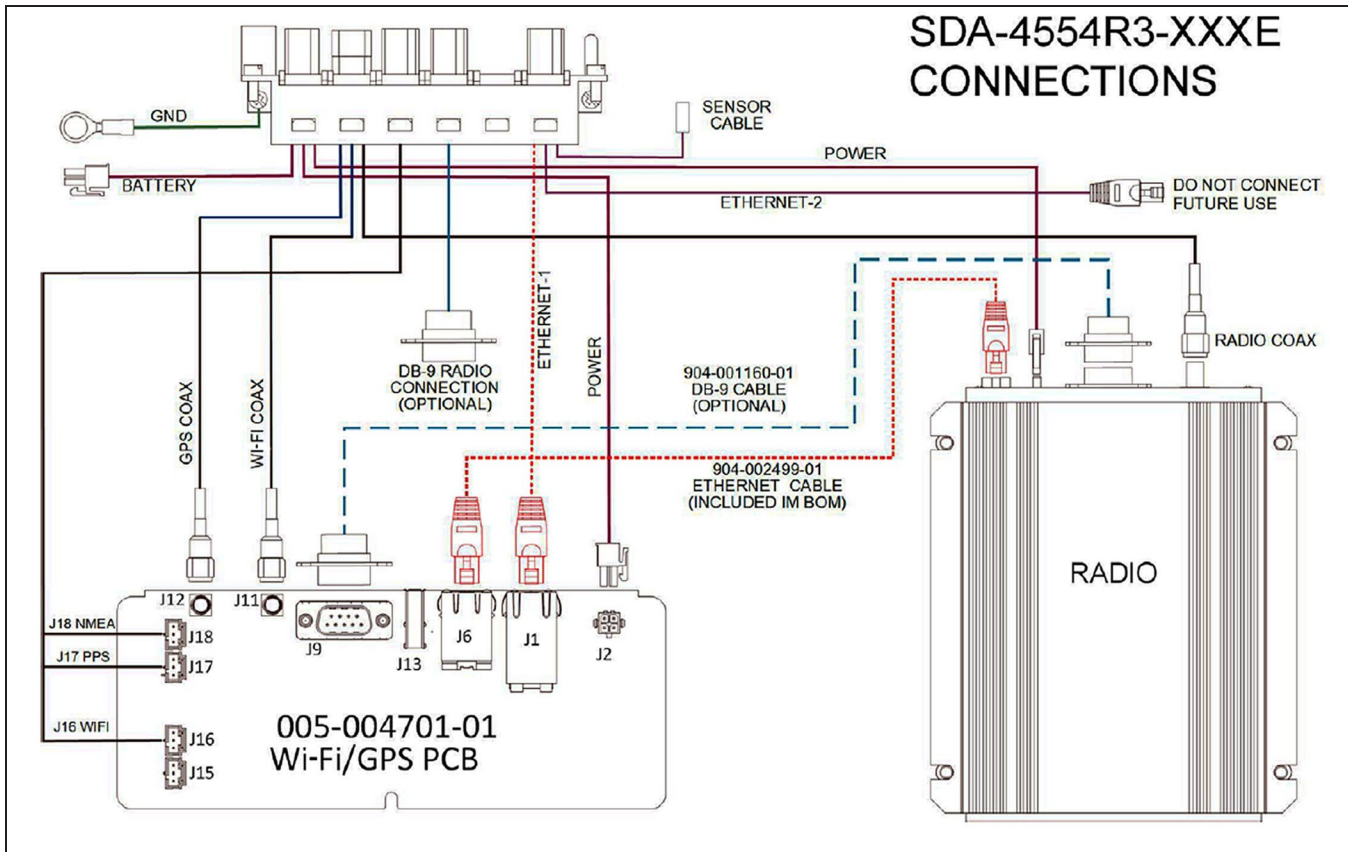


Figure 42. The wiring diagram after Ethernet IP configuration.