

GS-IOB-AC-120/240

Remote Operated Circuit Breaker

Installation Instructions

Purpose

This document details the use of the ROCB (Remote Operated Circuit Breaker) kit. These instructions describe the installation of this kit within the GSLC (GS Load Center) or one of its variants.

The ROCB enables the Radian GS8048A or GS4048A inverter, or equivalent products, to be used in AC Coupling or other applications.

Scope

This document covers how to install the ROCB, the 12-volt relay, and the 48-volt relay into the GSLC. It shows the wiring of these components to each other, to the GSLC, and to the Radian inverter.

These instructions are for use by qualified personnel who meet all local and governmental code requirements for licensing and training for the installation of electrical power systems with AC and DC voltage up to 600 volts.

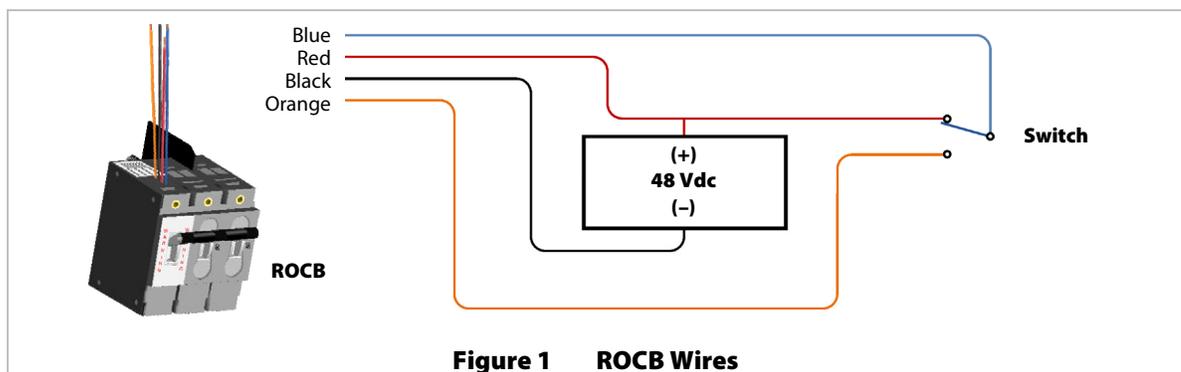
Parts Included

- Remote Operated Circuit Breaker (ROCB), 50 A, dual-pole ganged
- Relay, 12 Vdc coil, 8 A contacts
- Relay, 48 Vdc coil, 8 A contacts
- Hardware kit, including DIN rail and fasteners

Operation

The ROCB is a dual-pole circuit breaker with a third lever controlled by a motorized solenoid. The third lever switches the primary two levers between the open and closed positions. The ROCB is equipped with four wires in the following colors: red, black, blue, and orange. The blue and orange wires are control wires. The red and black wires power the solenoid. This solenoid requires a 48-volt power supply; the ROCB is normally used only in 48-volt inverter systems.

When the blue control wire is connected to 48 Vdc positive (+) wire (the red wire), the solenoid switches the ROCB to the “on” or “closed” position. This is shown in Figure 1. When the blue wire is connected to the orange control wire, the ROCB switches to the “off” or “open” position.



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Figure 1 shows a basic switch controlling the blue wire, but the switching function can be controlled by relays or other mechanisms. The relays provided in this kit are intended for this function. Note that the 12-volt relay can be powered by the 12 Vdc Auxiliary output from OutBack devices, but the 48-volt relay and the ROCB require a 48 Vdc source.

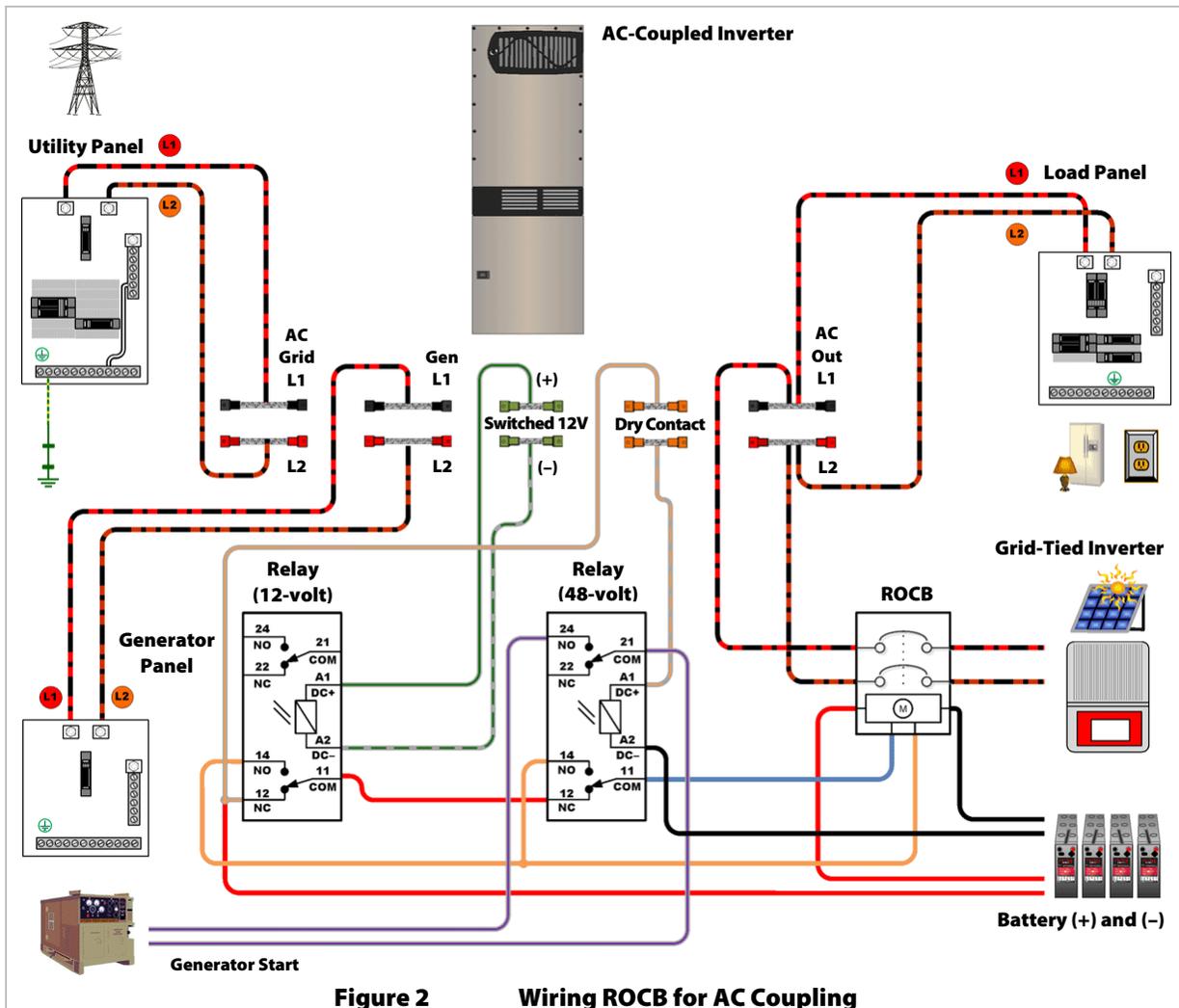
The ROCB kit can be used for AC coupling, load shedding, and other applications where remote-controlled or automatic disconnection of AC power is a requirement.

Figure 2 is an example of a single-inverter system connected for AC coupling with utility grid service and a grid-tied (batteryless) inverter. The system shown here has an automatically started generator for backup. The OutBack Radian-class (GS) inverter is used for AC coupling. Stacked, multiple-inverter systems are also possible with the same connections.

The Radian inverter sends excess AC-coupled power to the batteries. When too much excess is present, the relays will disconnect the grid-tied inverter to prevent battery overcharge. The 48-volt relay is also part of the generator starting circuit and will lock out the grid-tied inverter to prevent a connection or backfeed to the generator. If a generator is not used in this system, the 48-volt relay may be omitted.

NOTE: These relays are switched by external voltage-controlled hardware such as the **12V AUX** and **RELAY AUX** terminals in the Radian inverter. (For more information, see the applications note entitled “Adding the Battery Back-Up Power Option to Existing Grid-Tied PV/Solar Systems” at www.outbackpower.com.)

Other AC-coupled inverters can be used besides the Radian-class. Figure 2 does not show specific inverter or auxiliary terminal wiring for this reason. System-wide ground and neutral wires have also been omitted for simplicity. If other inverters are used, two auxiliary controls must be present to provide these functions.



Part Replacement Instructions

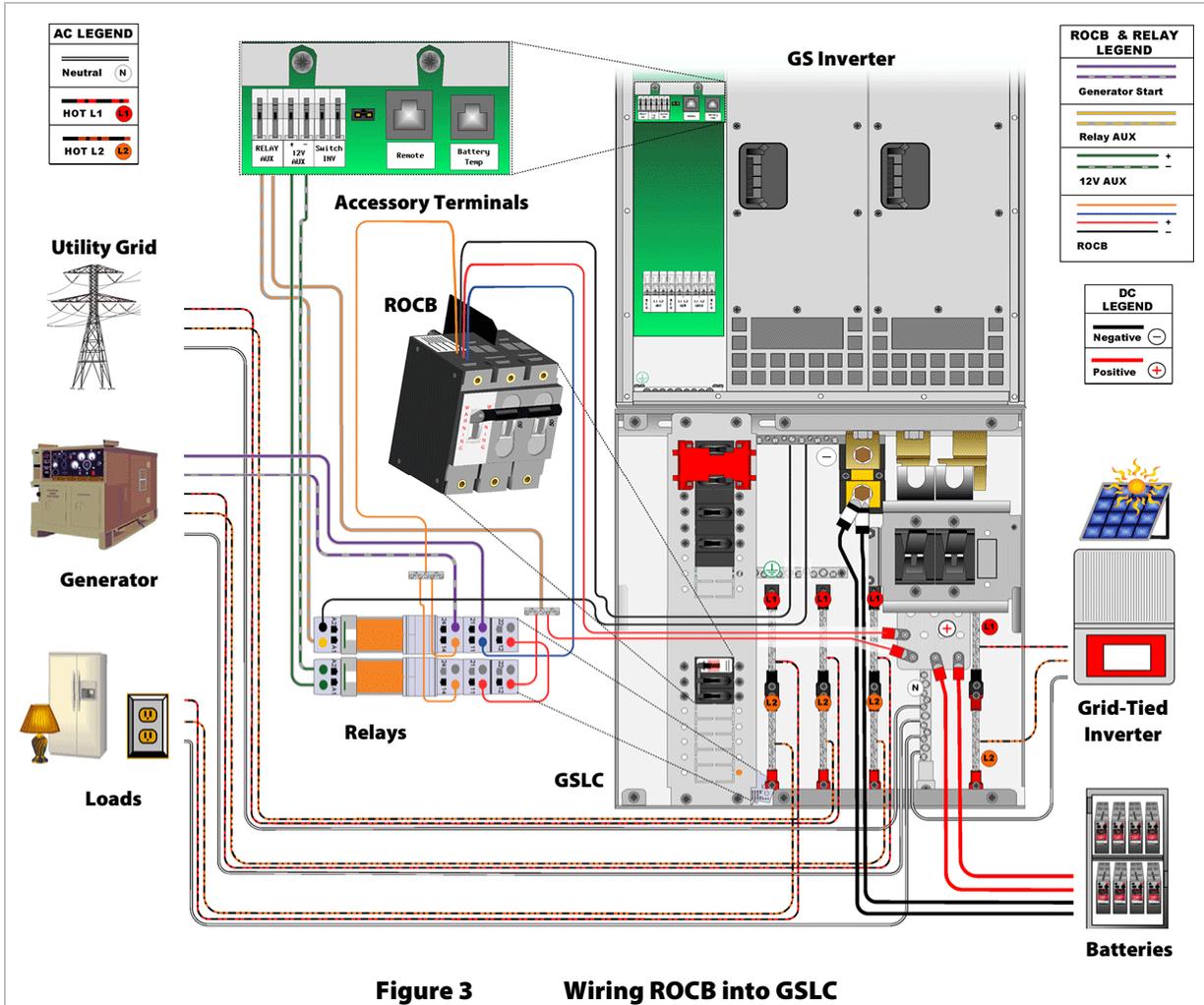


Figure 3 Wiring ROCB into GSLC

Figure 3 shows how the ROCB kit connects to an AC-coupled GSLC (GS Load Center).

NOTES:

- In Figure 3, AC circuit panels, all ground wires, and wiring between inverter and GSLC have been omitted for simplicity. (See inverter and GSLC manuals for more information.)
- Use a terminal bus bar (TBB) or another approved method whenever connecting multiple wires together.
- To install wires in the 12-volt and 48-volt relays: Insert the wire into the appropriate opening as shown in Figure 3. Insert a narrow screwdriver or similar tool into the corresponding hole next to it. Press straight down to unlock the latching mechanism.



CAUTION: Equipment Damage

Do not insert the screwdriver into the opening at anything other than a straight angle. Do not attempt to use it as a lever. Any motion other than straight down could damage the relay.

The connections may vary with the system. The steps should include the following as appropriate for the individual installation.

To install the ROCB kit in the GSLC:

1. Install all Radian AC and DC wiring (see manual).
2. Select the ROCB mounting location. See Figure 3 for the recommended GSLC location. Using the DIN rail as a template, mark all DIN rail mounting screw locations. Drill all holes for mounting screws.
3. Using the enclosed fasteners, mount the DIN rail and install the 12-volt and 48-volt relays.

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4. Mount the ROCB using three knockout positions on the GSLC circuit breaker rail. See Figure 3 for these positions.
5. Connect ROCB orange wire to terminal 14 on the 12-volt and 48-volt relays.
6. Connect ROCB red wire to the GSLC positive cable plate using a ring terminal.
7. Connect ROCB black wire to the negative TBB; also, connect 48-volt relay terminal A2 to the negative TBB.
8. Connect ROCB blue wire to 48-volt relay terminal 11.
9. Connect 48-volt relay terminal 12 to 12-volt relay terminal 11.
10. Connect 48-volt relay terminals 21 and 24 to a two-wire generator start circuit.
11. Connect 48-volt relay terminal A1 to one of the Radian AUX RELAY terminals.
12. Connect 12-volt relay terminal 12 to GSLC positive cable plate; also connect it to the other AUX RELAY terminal.
13. Connect 12-volt relay terminals A1 and A1 to Radian 12V+ AUX and 12V- AUX terminals respectively.
14. Connect the grid-tied (batteryless) inverter L1 and L2 to the ROCB circuit breaker terminals.
15. Connect the grid-tied (batteryless) inverter to the GSLC neutral TBB and ground TBB.

Contact Information

Address:	Corporate Headquarters 17825 – 59 th Avenue N.E. Suite B Arlington, WA 98223 USA	European Office Hansastrasse 8 D-91126 Schwabach, Germany
Telephone:	+1.360.435.6030 +1.360.618.4363 (Technical Support) +1.360.435.6019 (Fax)	+49.9122.79889.0 +49.9122.79889.21 (Fax)
Email:	Support@outbackpower.com	
Website:	http://www.outbackpower.com	

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Date and Revision

June 2014, Revision A

Part Number

900-0173-01-00 Rev A