Generac Battery Back-up System Basic Installation/Commissioning Procedure

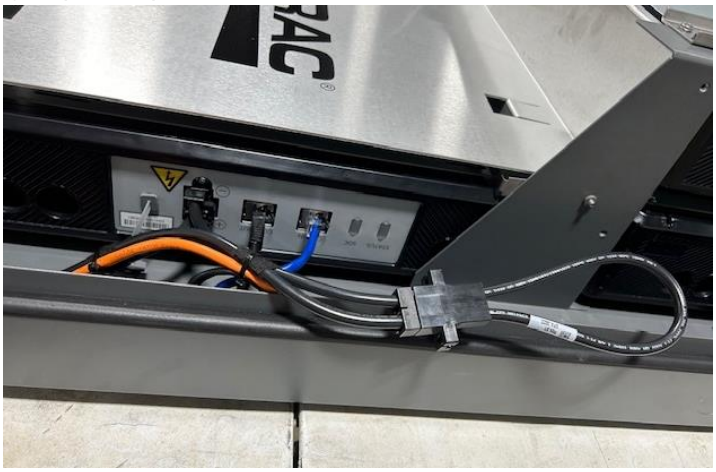
4492 Hunt Street, Pryor Oklahoma 74361 918.825.7222 www.RAECorp.com

1. Mount Generac battery cabinet and inverter according to manufacturer's specifications/videos.
    I. Install (3) batteries and spacer inside battery cabinet utilizing Generac installation material/videos.

a)

b)

II. Install the jumper loop.

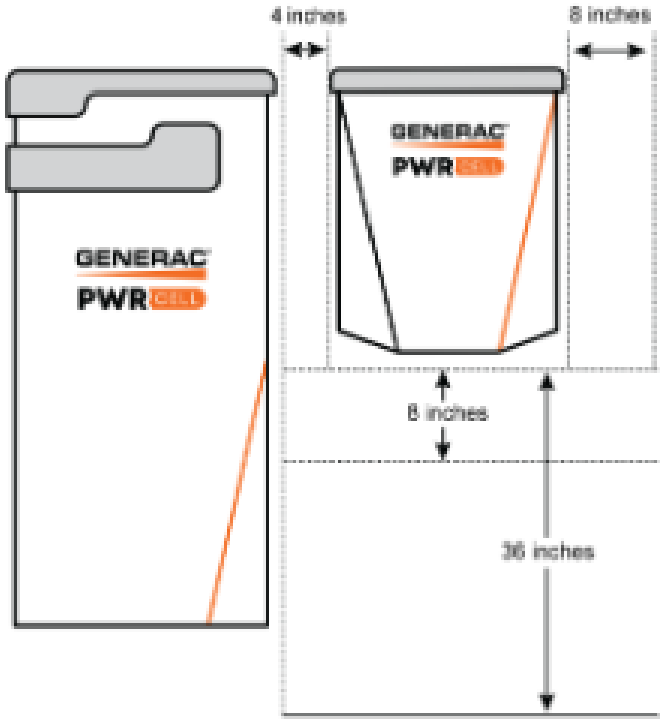
a) 

III. Important Note: No output wire on the last battery COM Out port.

2. Inverter and Battery Cabinet Minimum Clearances:

I. Inverter

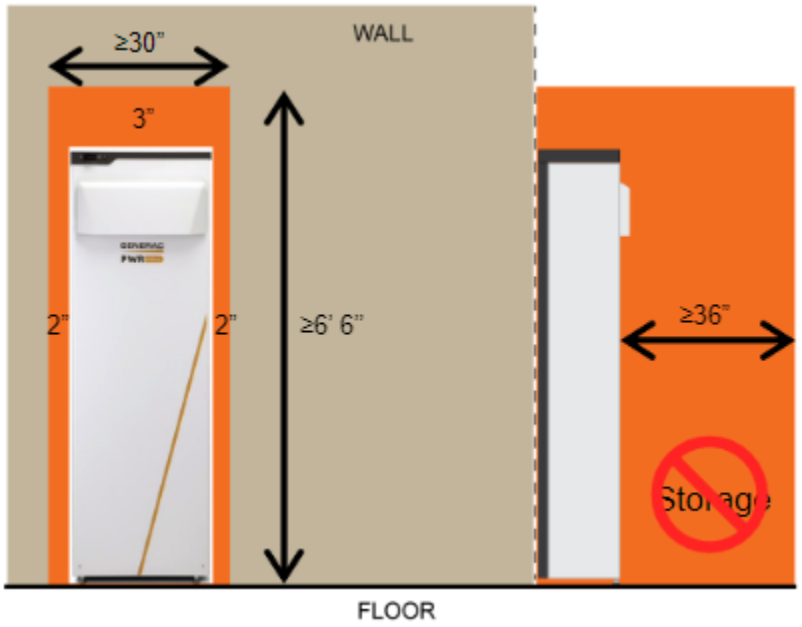
Diagram A



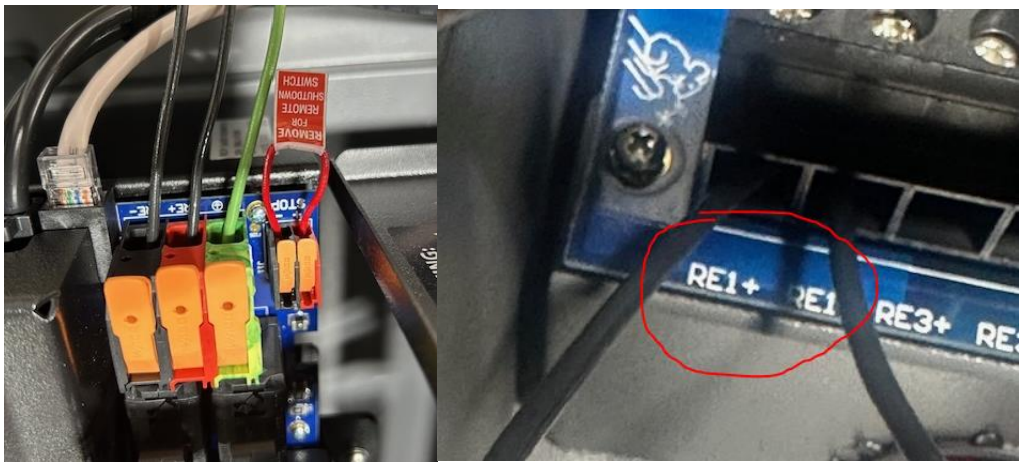
a)

II. Battery Cabinet

a)



3. Wire the following for REBUS:
   I. Rebus DC Terminals: 360-420VDC.
   II. Inverter RE1BUS (-) terminal to the Battery Cabinet RE (-) terminal using #10 AWG wire.
   III. Inverter RE1BUS (+) terminal to the Battery Cabinet RE (+) terminal using #10 AWG wire.
   IV. Inverter Ground Bar to the Battery Ground using #14 AWG wire.
   V.



4. Remote Shutdown Switch Wiring:
    I. Remove Inverter E-Stop Jumper.
    II. Remove Battery STOP Terminals Jumper.
        a) Inverter Stop (+) terminal to Battery Stop (-) terminal using #20AWG wire.
        b) Battery Stop (-) terminal to Remote Shutdown Switch (243) terminal using #20AWG wire.
        c) Inverter Stop (-) terminal to Remote Shutdown Switch (243A) terminal using #20AWG wire.
    III. ***<u>Important Note: Remote Shutdown Switch is located on the RAE Secondary C02 Controls Enclosure.</u>***
        a) 

5. Line Voltage Wiring:
    I. AC Grid Connection Terminals: 120/240VAC.
        a) L1 – N1 = 120v
        b) L2 – N1 = 120v
        c) L1 – L2 = 240v
    II. ***Important Note – you must have 240/1/60. 208-230V is not acceptable.***
    III. Ensure that the Inverter is protected by a 40A MOCP Device.
        a) L1 = Leg-1
        b) L2 = Leg-2
        c) N1 = Neutral
        d) GND = Inverter must be grounded.
        e) **PWRcell Inverter Wiring Compartment**

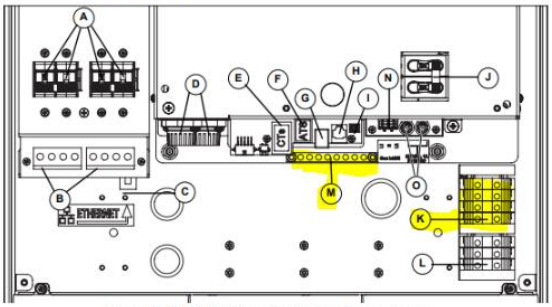


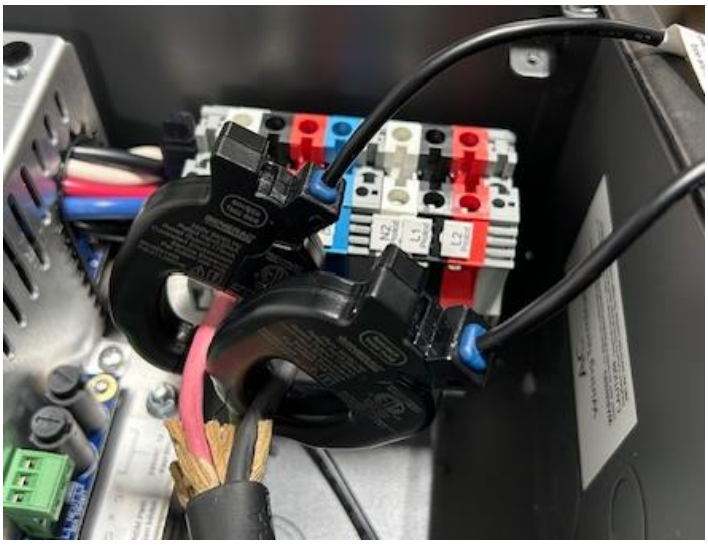
Figure 5-2. PWRcell Inverter Wiring Compartment

A PWRcell DC Disconnects	**I** STOP Terminals
B REbus Bi-directional DC Terminals	**J** Protected Loads Disconnect
C Internet Connection	**K** AC Grid Connection Terminals
D DC Main Fuses	**L** Protected Loads Terminals
E Current Transformers (CTs) Accessory Ports	**M** Grounding Bar
F Automatic Transfer Switch (ATS) Accessory Port	**N** RGM PWR / Gen Inhibit
G REbus Beacon Port	**O** Fast Blow Mini Fuses 1 A 250 V
H Authorized Generac Personnel Only	

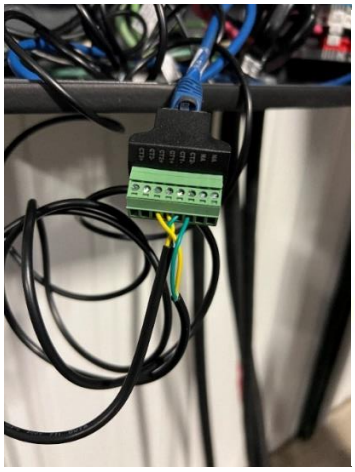
        f)

6. Load Voltage Wiring:
    I. Protected Load Terminals: 120/240VAC.
    II. Inverter L1 terminal to ECU Fuse (Pole-1) terminal.
    III. Inverter L2 terminal to ECU Fuse (Pole-2 terminal.
    IV. ***<u>Important Note: The ECU fuses are located on the RAE Secondary C02 Power Enclosure.</u>***
    V. 

7. Current Transducer Wiring:
    I. Install the ship loose Current Transducers on the two-Line Voltage feeds on the Inverter.
        a) CT1+ (Yel) wired to the CT adapter terminals.
        b) CT1- (GRN) wired to the CT adapter terminals.
        c) CT2+ (Yel) wired to the CT adapter terminals.
        d) CT2- (GRN) wired the CT adapter terminals.
    II. CT-1 should be wrapped on L1.
    III. CT-2 should be wrapped on L2.
        a) Note: The CTs are directionally specific. They need to be facing like the snippet below.
        b)



    IV. Use a CAT5/6 cable from the CT adapter to Inverter CTs accessories port.



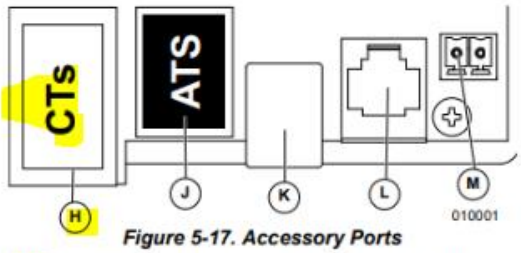
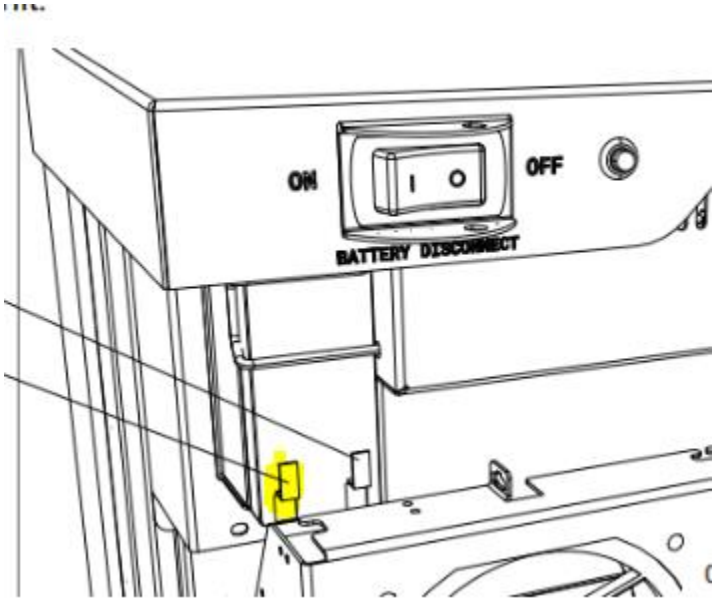


Figure 5-17. Accessory Ports

H Current Transformers (CTs) Accessory Port (RJ-45)
J Automatic Transfer Switch (ATS) Accessory Port (RJ-45)
K REbus Beacon Port (USB-B)
L Authorized Generac Personnel Only
M STOP Terminals

8. Connect backstop battery (+) to terminals. The (-) terminal will be connected.
    I. The voltage will be 12VDC.
    II. 

9. Commissioning the Generac:
    I. All AC/DC Disconnects should be off.
    II. Check all wiring per the RAE electrical drawings and Generac drawings.
    III. Measure resistance on (RES1).
        a) RE1+ to RE1- is >10kOHMS.
        b) RE1+ to Ground Resistance is >10kOHMS.
        c) RE1- to Ground Resistance is >10kOHMS.
    IV. Turn on AC/DC Disconnects and check line voltage.
        a) Neutral to Ground is <5VAC.
        b) L1 to Neutral is 110-128VAC.
        c) L2 to Neutral is 110-128VAC.
        d) L1 to L2 is 220-256VAC.
    V. Turn on Disconnect on Battery Cabinet.
    VI. If the internet is needed. Plug in an ethernet connector to the inverter. A blue light will illuminate “On” (*if necessary*).

VII. Once powered on, use the center button to access the main menu and set the system mode to “Priority Back-up”.

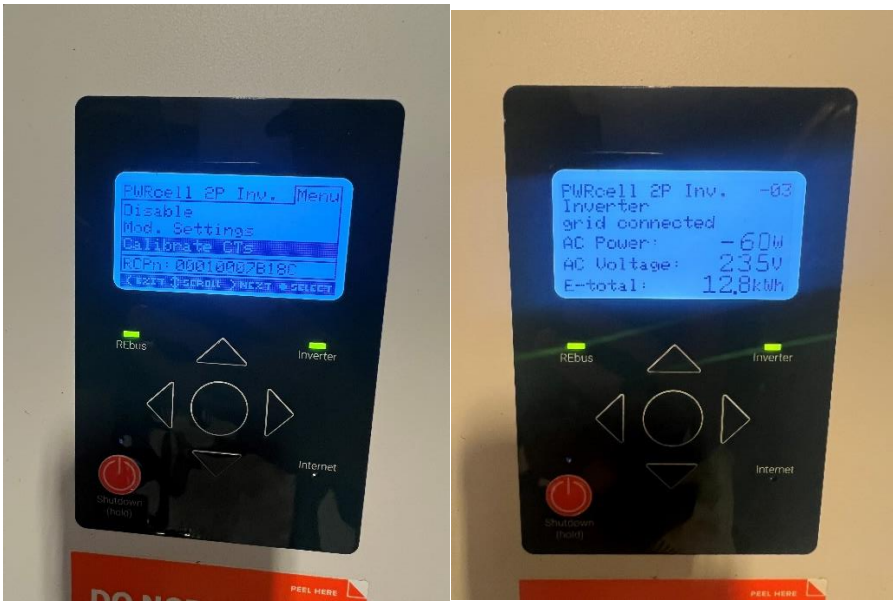
a) 

VIII. Enable the Inverter:

a) From the main screen, use the right arrow key to get to the inverter page.
b) Click the center button.
c) Click “Enable”.
d) Click “Confirm”.

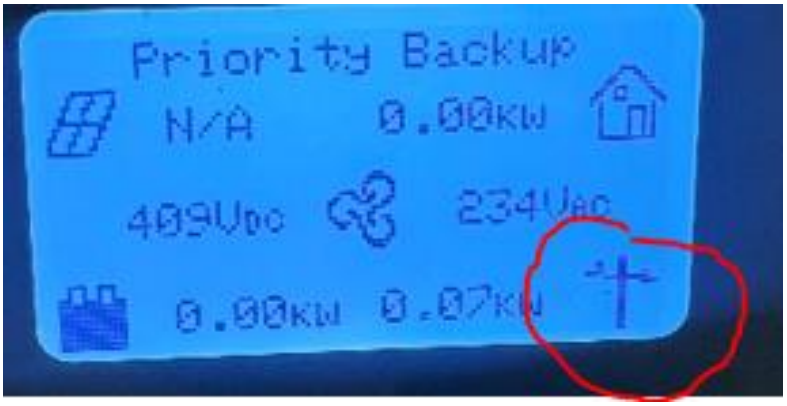
IX. Calibrate CT's:

a) On the inverter screen, press the center button.
b) Press "Calibrate CTs".
c) Press "Confirm".
d) Wait for "CT calibration success" and "grid connected".
e)



X. Check for the Grid Tie symbol in the bottom right of the Inverter main screen:

a) If the Grid Tie Icon is not shown, CT's may have been installed backward, once reversed, the CT calibration will need to be restarted.
b)



XI. Enable Battery:

a) From the main screen, use the right arrow key to get to the battery page.
b) Click “Enable”.
c) Click “Confirm”.

XII. <u>Generac should now be commissioned. Rebus, Inverter, and Battery Cabinet lights should be GREEN.</u>

XIII. Testing the Remote Battery Shutdown switch:

a) Disable the switch at the RAE Secondary CO2 skid and the inverter should enter “Shutdown” mode and disable the batteries.
b) If the inverter is still connected to the grid, power will still flow through to the Secondary CO2 unit ECU and Control Circuit
c) Once tested, you need to disable shutdown mode.
    1. Hold center button.
    2. Press “Enable”
    3. Press “Confirm”.
d) Important note: after you disable shutdown, the inverter and batteries will need to be re-enabled by repeating steps <u>VIII and XI</u>.

XIV. Testing the Batteries:

a) Shut off the main power supply (Line Voltage).
b) Go back to main screen, and the top of the screen should read “Islanding”.
    1. 

c) Test by putting your meter on the Load Terminals – L1 and L2. You should get roughly 240V. ***The Load Side circuit breaker should be ON.***
d) Turn on the main power supply (Line Voltage) - wait until the main screen says, “Priority Backup Power”.
e) **Important note: the inverter reverts to normal operation after 5-minutes.**