

Power Panel Operation Overview

There are two power panels in use at Quad D. There is one in each power room in the small garage and the big garage. Each power panel consists of two each Trace SW4048 inverters, one or two each Outback FlexMax80 (MPPT) charge controllers, AC input & bypass breakers, DC input breakers, and PV array breakers. There is a display panel and operating buttons on the face of each inverter.

The inverters and charge controllers are to be setup per the Setup Instructions. Most problems can be resolved using the Trouble-Shooting Guide.

During trouble-shooting or after a repair, verify all breakers are in the correct positions:

The AC breakers should have the “OUTPUT” ON and the “BYPASS” OFF. The DC breakers should all be ON, the 175-amp input breakers to the inverters are ON and the 40 amp isolation breakers from the PV arrays are ON.

During normal operation, the following should be observed for each inverter:

“LINE TIE” (yellow), “AC IN GOOD” (green), and “FLOAT” (green) LEDs are lit (if within 2 hours after a power outage the “BULK” LED will be lit instead of “FLOAT”).

Each SW4048 display should be on Menu #4 showing “INVERTER/CHARGER AMPS”. One inverter will normally be reading much higher than the other inverter. The total amps displayed on the inverter will be ~ 40% of the total of the charge controller amps. For example, if each of the 4 charge controllers is showing ~ 25 amps, then one inverter will show ~ 30 amps and the other inverter will show ~ 10 amps.

The FlexMax80 LCD display shows “INPUT VOLTAGE”, “OUTPUT VOLTAGE”, “INPUT AMPS”, “OUTPUT AMPS”, “KILOWATTS”, “KILOWATT HOURS”, “AUX OFF”, and “MPPT BULK. The 1st (furthest to the left) soft key will access the main menu; accessing and changing parameters use the four soft keys, with the instructions on the LCD screen. Pushing the 2nd soft key from the left will display the daily totals, including “ACCUMULATED AMP HOURS”, “ACCUMULATED kWh”, “PEAK INPUT VOLTAGE”, “PEAK OUTPUT CURRENT”, “PEAK KILOWATTS”, “MAX BATTERY VOLTAGE”, “MINIMUM BATTERY VOLTAGE”, “ACCUMULATED ABSORB TIME”, and “ACCUMULATED ABSORB TIME”. The most critical to observe is “INPUT AMPS”, which will vary with time of day, time of year, and cloud cover, the typical peak reading is ~ 65-75 amps; low readings may indicate a failed module or open fuse in the combiner box. The “KILOWATT HOURS” will vary for the same reasons; the typical peak reading is ~ 3200-3800 watts. The “OUTPUT VOLTAGE” will vary slightly around ~ 53 volts, unless a bulk charge (initiated by the inverter) is in operation when the reading is ~ 57 volts.

Setup Instructions

Inverter Setup (SW4048)

To access the applicable menu, follow these guidelines:

Press the “On/Off Menu” (red) button on the far right, screen shows menu #1.

Press the “Menu Headings” arrow (↑ or ↓) to move to different menu #.

On the menu # of choice, press the “Menu Item” arrow (↑ or ↓) to select a group of menu items.

To choose the correct menu item, e.g., “On”, “Sell”, press the “Set Points” arrow (↑ or ↓) until the black underscore is under the desired option.

Menu #:

1. Inverter mode: Set inverter “on”
2. Generator mode: Set generator “off”.
3. Trace Engineering: N/A
4. Meters: Set to “Inverter/Charger Amps AC” (when finished other settings).
5. Error causes use to find error problems (scroll headings).
6. Time of Day: Set hours/minutes.
7. Generator timer: N/A
8. End User Menu: N/A

Access remaining menu items by depressing red & green buttons simultaneously.

9. Inverter setup: Grid Usage: Sell (remaining items to default)

10. Battery charging:

Bulk DC: 57.6

Absorption time: 2:00

Float DC: 53.2

Equalize DC: 57.6

Equalize time: 0:00

Max charge amps: 5

Temp. comp: Lead acid

All other menu items are set to factory defaults.

Outback FlexMax80 Setup

Program float volts to 53.2 VDC; verify battery & PV voltage detected at 48 VDC. Push the 1st (left) soft key to access the menu and then push the keys as indicated on the LCD screen to access and change settings. The password is “141”.

Wind Controller Setup

Set voltage regulator switch to 2.2 VDC (corresponds to 52.8 VDC).

Trouble Shooting Guide – Inverter (SW4048)

How to Operate: To access the applicable menu (e.g., #5 error causes, #1 inverter operation), follow these guidelines:

1. Press the “On/Off Menu” (red) button on the far right to access menu #1. Press the red and green buttons simultaneously to access menu #9.
2. Press the “Menu Headings” arrow (↑ or ↓) to scroll to different menu #.
3. On the menu # of choice, press the “Menu Item” arrow (↑ or ↓) to select a group of menu items.
4. To choose the correct menu item to change (primarily on menu #1), e.g., “On” (menu 1), “Sell” (menu 9), press the “Set Points” arrow (↑ or ↓) until the black underscore is under the desired option.

Primary Trouble-shooting Steps:

1. Go to Menu #5 (Error Causes) by pressing the “On/Off Menu” (red) button on the far right, screen shows menu #1 (Inverter Mode); then press the “Menu Headings” arrow (↑ or ↓) to scroll to menu #5. Usually the “Error” (red LED) will be blinking, even if not, check for the error reason in menu #5 by pressing the Menu Item arrow (↑ or ↓) to view each error cause. You will see a “No” or “Yes” by each item when scrolling. Record the error cause, then go to step 2.
2. Go to Menu # 1 (Inverter Mode) by pressing the “On/Off Menu” (red) button on the far right. Reset by turning off the inverter by pressing the Set Points arrow (↑ or ↓) until the black underscore is under the “Off”. Wait for ~ 1 minute, then turn inverter back on by pressing the Set Points arrow (↑ or ↓) until the black underscore is under the “On”. The “Line Tie”, “AC1 In Good”, and “Bulk” or “Float” LEDs should now be lit (may have to wait a few minutes for operation to stabilize, i.e., all LEDs lit). Go to Menu # 9 (Inverter Settings) to put in “Sell” mode, if “Line Tie” does not operate.
3. Go to Menu #4 (Meters) by pressing the “On/Off Menu” (red) button on the far right, screen shows menu #1; then press the “Menu Headings” arrow (↑ or ↓) to scroll to menu #4. Press the “Menu Item” arrow (↑ or ↓) to select “Inverter/Charger Amps AC”, which is the normal display.

Secondary Trouble-shooting Steps:

1. If the inverter will not synchronize with the grid, e.g., oscillates between “invert” and “float” check the push-button AC input breaker (bottom on the end with the external stacker cables and AC lines, left side when facing the inverter). If out, turn the inverter off (menu #1), push in to reset, then turn inverter on (menu #1).
2. If the inverter will not stay on because of “high battery voltage”, turn off the breakers that isolate the PV arrays, the breakers are on the side of the battery disconnect box (with no load the open circuit voltage from the PV modules exceeds the high battery voltage limit). Turn inverter on (menu #1), allow to sync, and then turn the PV breakers on.
3. If the inverter will not stay on because of “over current”, turn off the load breakers in the back up breaker box. Turn back on once the inverter stays on.
4. If the inverter continues to show error messages, e.g., “external stacking” (Trace term for anything not identified elsewhere), then turn off the battery breakers and the PV breakers, wait at least 5 minutes, then turn the breakers back on. The programming will have to be re-entered (menu #'s 9 & 10 in Setup Instructions) before turning the inverter on.