

## WHIZBANG JR. – INSTALLATION INSTRUCTIONS

The Whizbang Junior provides highly accurate current sensing when used with compatible Midnite Solar products. However, for our customers that already own similar products, the Whizbang Jr. has been designed for cooperative attachment. **If you already own another battery-monitoring product and wish to continue using it, skip down to step 1.2.**

**Step 1.1 (Whizbang Jr. only):** Attach Whizbang Jr. to 500A/50mV Deltec MKB Shunt or equivalent (see Figure 1).

**WARNING: The Whizbang Jr. is designed for low-side shunt measurement. Make certain shunt is attached to battery-negative, not battery-positive.**

- A. Remove sensing screws from shunt, including lock-washer and flat-washer. Put flat washers to the side, they will not be used.
- B. With lock-washers attached, guide both screws through the Whizbang terminals.
- C. Slide on provided 1/8" long spacers over screws on the back-side of the Whizbang Jr.
- D. Carefully guide the Whizbang Jr. to the shunt. The Whizbang Jr.'s violet wire should be pointing toward the battery cable side of the shunt. Hand-tighten screws to provide a solid connection. Loosen and retighten screws to ensure a snug fit. **Skip to 2.1.**

**Step 1.2 (Cooperative):** Attach Whizbang Jr. to 500A/50mV Deltec MKB Shunt or equivalent (see Figure 2).

**WARNING: The Whizbang Jr. is designed for low-side shunt measurement. Make certain shunt is attached to battery-negative, not battery-positive.**

- A. Remove sensing screws from shunt. Gather their attached lock-washers. The pre-mounted screws and flat-washers will not be used. Put them to the side.
- B. Place provided 1/4" long spacers into Whizbang terminal recesses.
- C. Attach lock-washers to included stainless-steel 3/4" screws, then slide on #8 ring terminals w/attached 3<sup>rd</sup> party wiring.
- D. Guide both screws through the spacers and Whizbang terminals.
- E. Slide on provided 1/8" long spacers over screws on the back-side of the Whizbang Jr.
- F. Carefully guide the Whizbang Jr. to the shunt. The Whizbang Jr.'s violet wire should be pointing toward the battery cable side of the shunt. Hand-tighten screws to provide a solid connection. Loosen and retighten screws to ensure a snug fit.

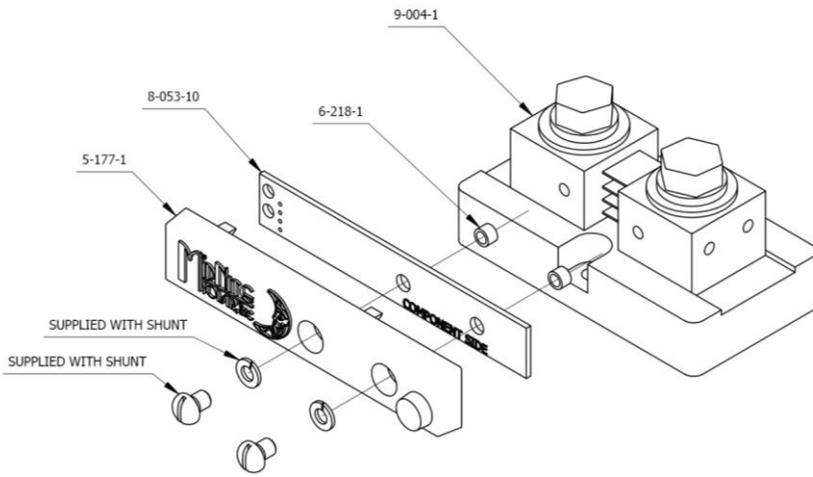


Figure 1 – Whizbang Jr. Only

**Included Hardware:**

- 2x 6-218-1 1/8" long, 1/4" O.D., .171" I.D. Alum. Spacer
- 2x 6-210-1 1/4" long, 1/4" O.D., .171" I.D. Alum. Spacer
- 2x 6-239-1 3/4" long #8-32 Phillips, Stainless.

**Not-Included Hardware:**

- 1x 9-004-1 Deltec MKB Series, 500A, 50mV Shunt.
- 2x None. #8 Ring Terminals.

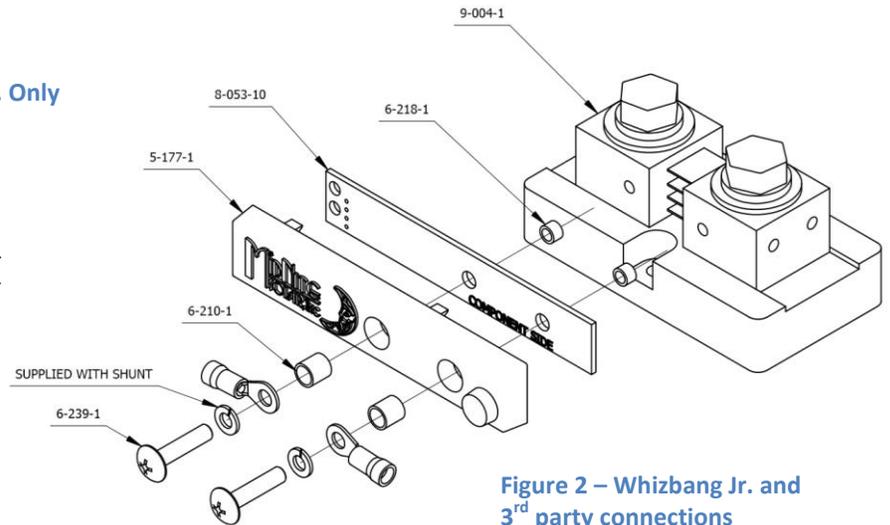


Figure 2 – Whizbang Jr. and 3<sup>rd</sup> party connections

**Step 2.1:** Attach Whizbang Jr. to Midnite Classic. n

- A. Strip approximately 3/16" from the end of the 22AWG violet Whizbang Jr. wire. Twist the strands together to reduce fraying.
- B. Feed wire through preferred conduit opening.
- C. Secure wire to **Classic AUX2+ input**, see Fig. 3 below.

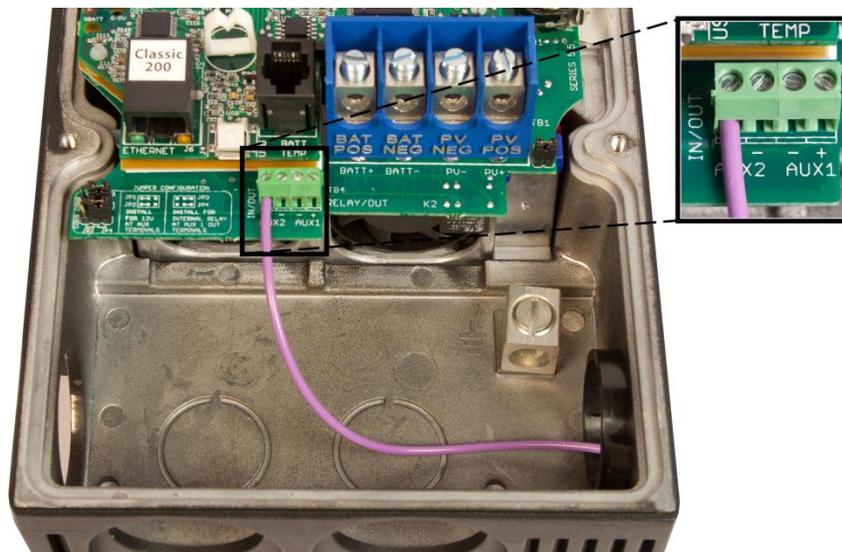


Figure 3 – Whizbang Jr., connection to Classic.

The Whizbang Junior will need newer firmware loaded into the Classic and MNGP (MidNite Graphics Panel). Visit the following link and follow directions to bring your Classic/MNGP up to date.

<http://tinyurl.com/mwqu54d>

#### SET UP:

From the Main Menu, highlight "AUX" and press Enter. Press the right arrow to highlight the current AUX-2 mode. Press the soft-right key to enter the AUX-2 setup submenu. Cycle using the up/down arrows until "WHIZBANG JR." is highlighted. Press Enter to select this mode. The MNGP will save this mode to the Classic.

The LED on the WB Jr. circuit board will begin flashing approximately every 5 seconds if properly connected to the Classic.

#### STATUS:

Pressing the STATUS button rapidly three times will bring you to the Whizbang Jr. status screen. There are 5 displayed items here, see Figure 4 below.

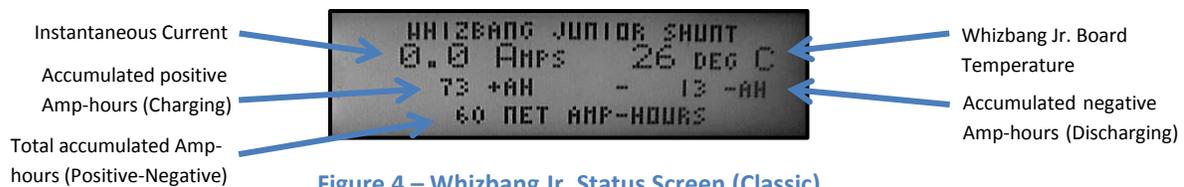


Figure 4 – Whizbang Jr. Status Screen (Classic)

This status screen updates live. It displays: Whizbang Jr. temperature, instantaneous battery current, accumulated positive Amp-hours (charging), accumulated negative Amp-hours (discharging), and total accumulated (Net) Amp-hours. When the battery is receiving a charge, the accumulated positive Amp-hours figure will increase, as will the total Net figure. When the battery is being discharged, the accumulated negative Amp-hours will increase, and the total (Net) Amp-hours will decrease. As battery charging is not 100% efficient, the total accumulated Amp-hours or "NET AMP-HOURS" should remain positive after a discharge-charge cycle. A typical Amp-hour efficiency is 95%.

The Net Amp-hours tally can be configured to reset every midnight. To set this option, go to the "TWEAKS" menu and press "MORE" four times. Select "WBRST" and press the UP or DOWN arrow keys to select "YES." Press Enter to save. "NO" (or no reset) is the default at present.

If set to "YES", only the Net-Amp-Hours will reset daily. The accumulated +AH and -AH will keep increasing. These values are stored into non-volatile memory every night at midnight. If the Classic were to lose power, it would recover accumulated Amp-hours from the previous day.

#### WHIZBANG JR. ASSISTED CHARGING:

One feature of the Whizbang Jr. is the ability to end an Absorb charge based on Ending Amps. In this mode, if the battery current falls below

a programmable threshold for one minute, the Classic will go to Float, meaning that the batteries have been fully charged.

To enable Whizbang Jr. assisted charging, select "CHARGE" from the main menu. Select "ADVANCED." Press the soft-left key until the annunciator above it reads "SHUNT" (selecting "CLASC" uses the Classic's internal shunt instead). Press Enter to save your choice.

Setting the Ending Amps value properly is important. Setting this value too high will lead to under-charged batteries. Setting it too low may make it impossible to reach. In which case, the Classic will transition to Float based on Absorb time. Similarly, an Ending Amps setting of "<0.0" will disable this feature, causing the Classic to transition to Float based on Absorb time only. Consult your battery manufacturer's literature to determine recommended Ending Amps.

Note: If you have two or more Classics connected using Follow-Me mode, the other Classics should follow the Classic connected to the Whizbang Jr.

#### **TROUBLESHOOTING:**

If the Classic's Whizbang Jr. status screen (see Fig. 4) shows the Whizbang Jr.'s board temperature sitting at -50°C after initial setup, then the Whizbang Junior is NOT communicating with the Classic's AUX-2 circuitry. Here are some tips in troubleshooting this scenario.

- Is the Classic firmware up to date? Check the Classic's status display for main firmware/MNGP firmware versions.
- Does the Whizbang Jr.'s violet wire make a solid connection with the Classic AUX2+ input? Is the Whizbang Jr. securely attached to the shunt? Is the shunt attached to battery-negative? Is the Classic tied to battery-negative?
- Is the Classic's AUX-2 setup mode set to "WHIZBANG JR."?
- Check the Whizbang Jr.'s LED

<b>Behavior</b>	<b>Meaning</b>	<b>Suggests</b>
Blinks ON every 5 seconds.	The Whizbang Jr. is receiving data-requests and responding.	The Whizbang Jr. is receiving data. Check Whizbang status screen.
Solid ON	The Whizbang Jr. has power, but there appears to be no communication.	AUX2 mode misconfigured. Revisit page 2.
Solid OFF	The Whizbang Jr. has no power.	Improper wiring and/or AUX2 mode misconfigured.
Blinks rapidly	Hardware Fault	Device may be damaged. Try cycling Whizbang Jr.'s power.

Note: To manually reset accumulated Whizbang Jr. Amp-hour tallies, go to "LOGS" menu and press Enter. There are three entries related to the Whizbang Jr.: "WB Jr. NET Amp-Hours", "WB Jr. (+AH)", and "WB Jr. (-AH)". To erase, select one and use the soft-left or soft-right keys to confirm "YES", or "NO". Once confirmed, the Classic will display "Clearing Data" for a few seconds and then return to the main log menu.