JA5015-51

(http://www.atseries.net/PDFs/JA5015-51.pdf)

Installation & Operating Instructions

ATevo Series

REMOTE BATTERY TEMPERATURE PROBE

(p/n EJ5304-##)

INSPECTION

Upon opening this package, please inspect and check that you have received the following items:

- ☐ (1) temperature probe (A10)
- ☐ (1) cable assembly of desired length
- ☐ (6) plastic cable ties

BACKGROUND

Battery manufacturers specify recommended float and equalize voltages at 25 °C (77 °F) for their product. Temperatures above or below the ***nominal*** 25 °C require a slightly lower or higher voltages (respectively), in order to prolong battery life and ensure reliable operation. The ATevo Battery Temperature Compensation (or TempCo) option automatically ***adjusts*** the charger's dc output voltage, based upon battery temperature. In addition to the voltage compensation feature, the battery probe also allows ATevo to provide battery temperature ***monitoring***, and a battery over-temp ***alarm***.

The ATevo TempCo option (ordering p/n EJ5304-##) consists of a bagged kit, including a Battery Temperature Probe (**A10**), and a signal cable to connect the probe to the ATevo. The A10 probe contains a temperature-dependent resistor in an epoxy module, that is installed on (or near) the battery. The TempCo option can be purchased with ATevo, or field installed later.

SETUP

⚠ WARNING *DISCONNECT AND LOCK OUT ALL AC AND DC POWER SOURCES TO THE BATTERY CHARGER BEFORE PROCEEDING. ONLY QUALIFIED SERVICE TECHNICIANS SHOULD PERFORM THE FOLLOWING PROCEEDURES. FOLLOW ALL NEC, LOCAL, AND SITE SAFETY STANDARDS AND PROCEDURES.*

There are four (4) stages to installation. The full detailed procedure is found in pages 2-7:

1) mount probe assembly on (or near) battery
2) install interconnection cable from probe assembly to ATevo
3) wire charger-end of cable to ATevo terminal block (TB8)
4) configure ATevo to recognize TempCo

PROBE

The "**A10**" battery temperature probe (or puck) is the same (p/n EJ5032-00) for all battery types, and all ATevo models, regardless of dc output voltage. TempCo bagged accessory kits (p/n EJ5304-##) differ, depending on cable length (25ft, 50ft, 100ft, etc).

INSTALLATION (for external probe only)

1) Turn off (open) both ATevo front panel circuit breakers (CB1/CB2).
2) De-energize and lock out all external ac and dc voltages. Allow internal voltages to dissipate.
3) Remove the ATevo safety shield, and verify no hazardous voltages are present (with a voltmeter).

NOTICE ***Consult battery manufacturer for probe mounting restrictions, and adhesive compatibilities.***

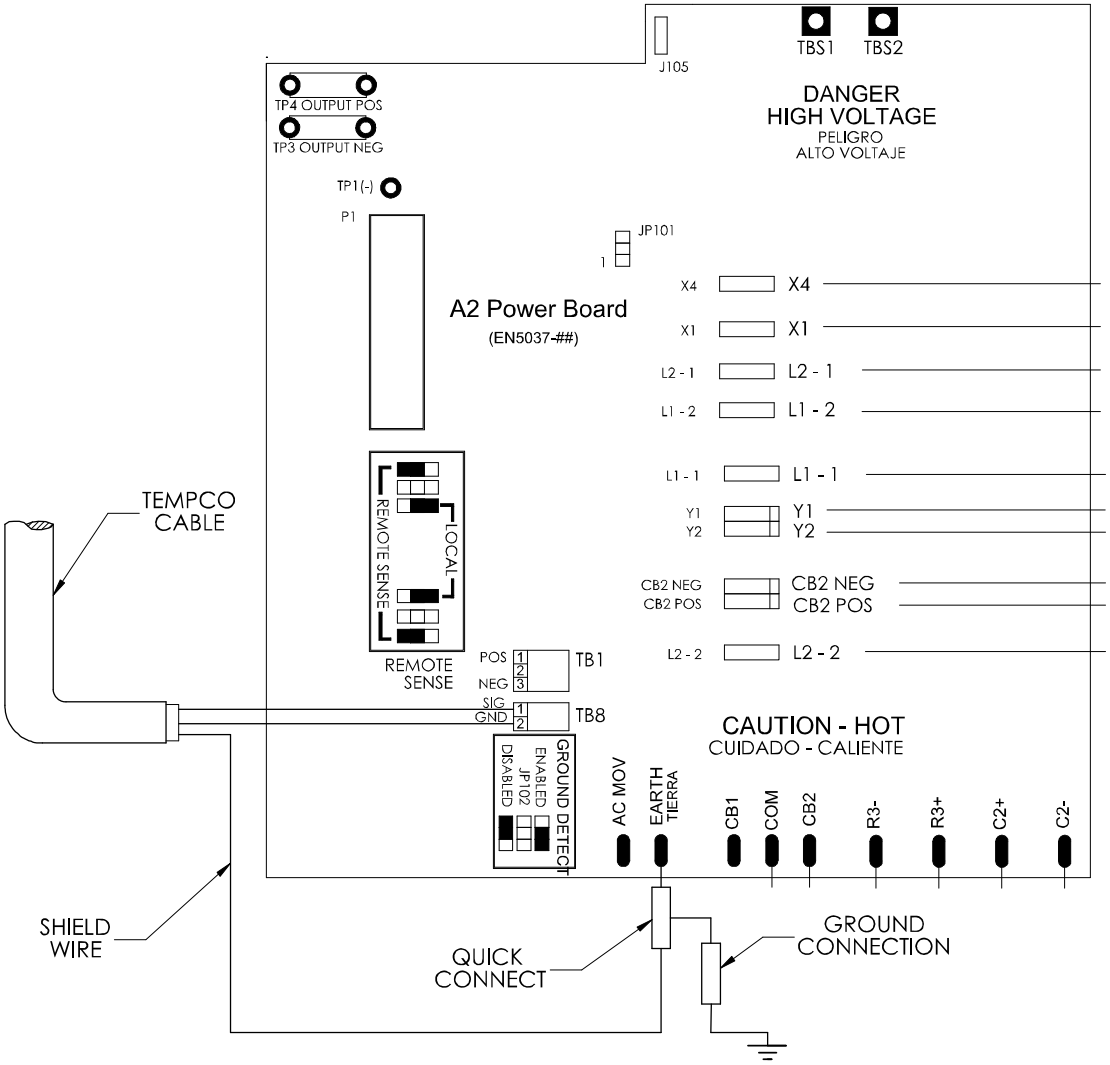
4) At the ***battery*** location, mount the probe (**A10**) on a clean, dry surface as close to battery as possible.
   DO NOT mount probe on:
   - unpainted wood
   - bare galvanized metal
   - ***plastic*** surfaces
5) To apply probe, clean mounting surface with isopropyl alcohol and dry thoroughly.
6) Remove protective backing from double-faced adhesive tape on probe.
7) Press adhesive onto surface.
8) Route (but do not ***install***) supplied cable:
   - Identify end of cable with two (2) stripped wires and a quick-connect terminal.
   - Insert ***this*** end to inside of ATevo enclosure.
   - Leave 30in / 762mm of cable inside ATevo.
   - Run cable through conduit that does not contain power wiring.
   - Route other end of cable to probe at the battery.
   - Coil up excess cable.
   - Make sure all wiring conforms to NEC, local, and site requirements.
9) Attach interconnection cable to the ATevo signal terminal block marked "**BATT TEMP**".
   - See Page 3 for mounting in **Style-5054** enclosure on Power Board (A2).
   - See Page 4 for mounting in **Style-5070** enclosure on I/O / MOV Board (A9).
   - See Page 5 for various mountings in **Style-5030**, **Style-163**, or **Style-198** enclosures on Power Board (A2).

INTERNAL PROBE (optional)

1) If the unit features an ***internal*** TempCo probe (option p/n EJ5304-00), no installation is required.
2) The ATevo is set up for charger dc voltage compensation, based on the ambient temperature ***inside*** the charger enclosure, not the temperature ***at*** the battery.
3) The temperature probe is securely mounted inside the enclosure assembly.
4) The TempCo probe signal cable is factory pre-wired to the Power Board (A2).
5) Jump to the **CONFIGURATION** Section, on page 7 of 12.

STYLE-5054

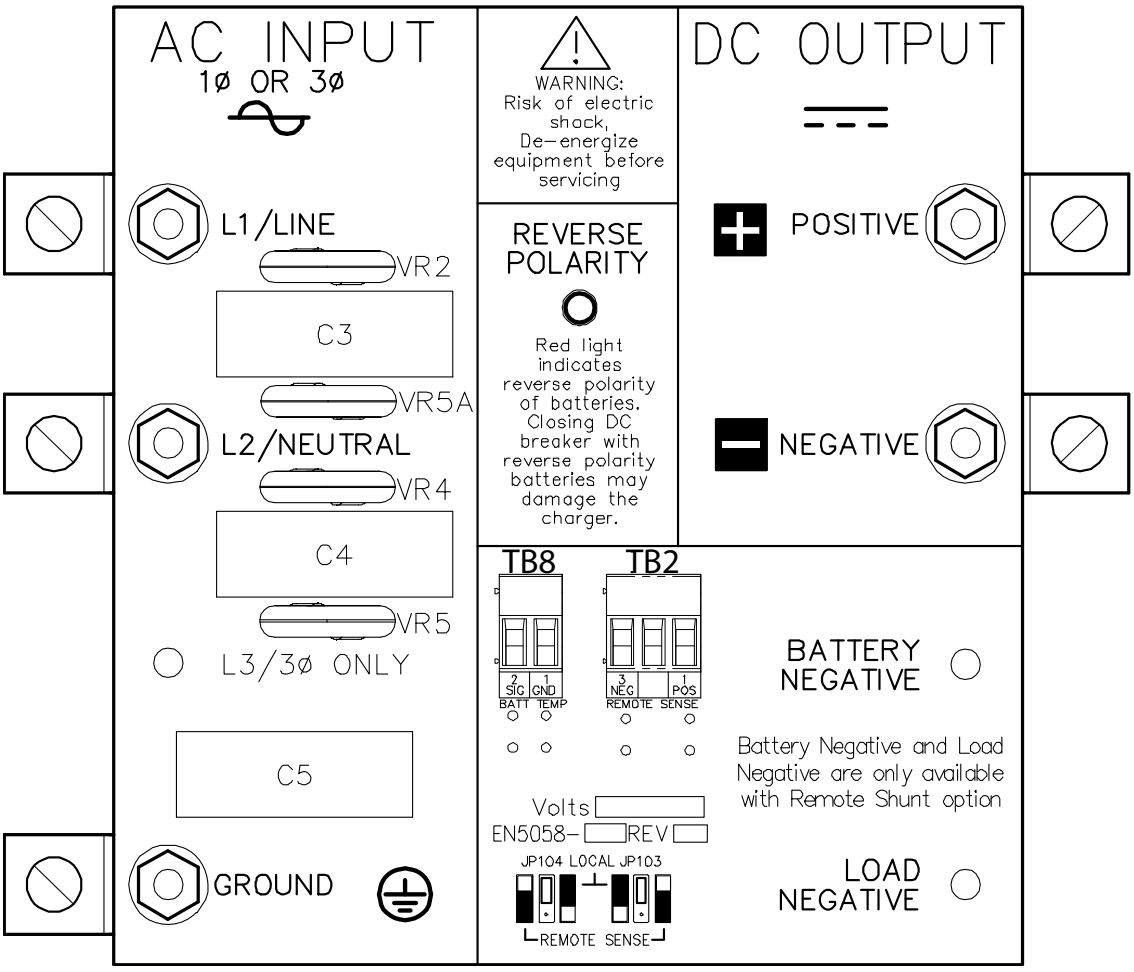
9A) Refer to the image below, then attach the TempCo signal cable to BATT TEMP terminal block (**TB8**) in the ATevo Style-5054 enclosure, per the bulleted steps:



- Route the TempCo cable to the lower end of the Power Board (A2) assembly.
- Locate the BATT TEMP terminal block (TB8) on the Power Board (A2).
- Insert one of each of the stripped wires from the twisted pair into each location on the TB8 terminal block. Connection points are ***not*** polarity sensitive.
- Locate the EARTH quick-connect terminal at the bottom of Power Board (A2).
- Carefully pull off the quick-connect terminal and wire from the EARTH terminal.
- Plug the quick-connect terminal attached to the end of the TempCo cable's shield wire onto the Power Board's EARTH terminal.
- Connect the quick-connect terminal removed from the EARTH terminal to the 'piggy-back" terminal on the end of the TempCo cable's shield wire.
- Fasten the TempCo cable to existing wire harness with plastic wire ties.

STYLE-5070

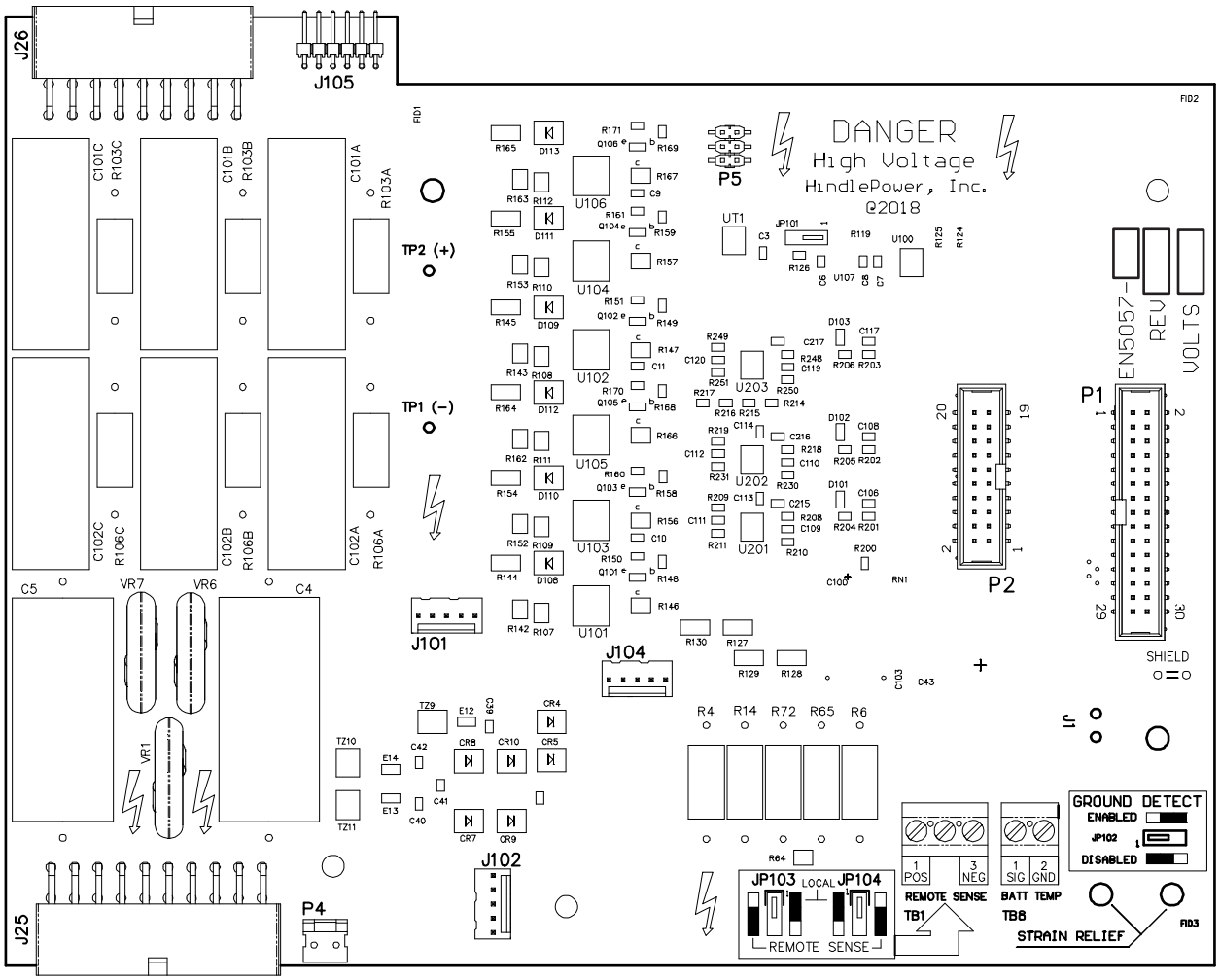
9B) Refer to the image below, then attach the TempCo signal cable to BATT TEMP terminal block (**TB8**) in the ATevo Style-5070 enclosure, per the bulleted steps:



- Route the TempCo cable to the lower end of I/O MOV Board (A9) assembly.
- Locate the 2-position BATT TEMP terminal block (TB8) on the I/O MOV Board (A9).
  [the BATT TEMP terminal block ***may*** be labeled "TB1" on earlier models]
- Insert one of each of the stripped wires from the twisted pair into each location on the TB8 (or TB1) terminal block. Connection points are not polarity sensitive.
- Locate the user GROUND connection to the left.
- Carefully remove the CU-AL compression lug.
- Mount the ring lug onto the GROUND stud.
- Re-install the CU-AL compression lug.
- Fasten the TempCo cable to existing wire harness with plastic wire ties.

STYLE-5030, -163, -198

9C) In larger three-phase ATevo Style-5030, Style-163, and Style-198 enclosures, the BATT TEMP terminal block (**TB8**) is featured on the smaller Power Board (A2). This board is bracket-mounted in the upper-right section of the enclosure sidewall. Refer to the ***sample*** image below (board layouts vary slightly), then follow the bulleted steps.

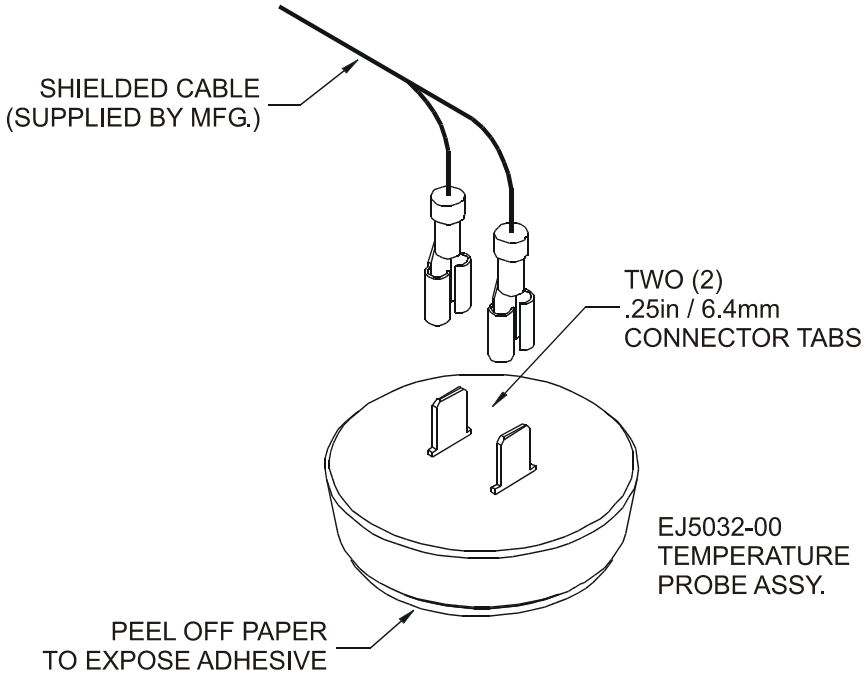


TB8

- Route the TempCo cable to the Power Board (A2) assembly.
- Locate the BATT TEMP terminal block (TB8) on the Power Board (A2).
- Insert one of each of the stripped wires from the twisted pair into each location on the TB8 terminal block. Connection points are not polarity sensitive.
- Locate the SHIELD quick-connect terminal, above and to the right of TB8.
- Plug the quick-connect terminal attached to the end of the TempCo cable's shield wire.
- Fasten the TempCo cable to the sidewall with plastic wire ties.

INSTALLATION (*continued*)

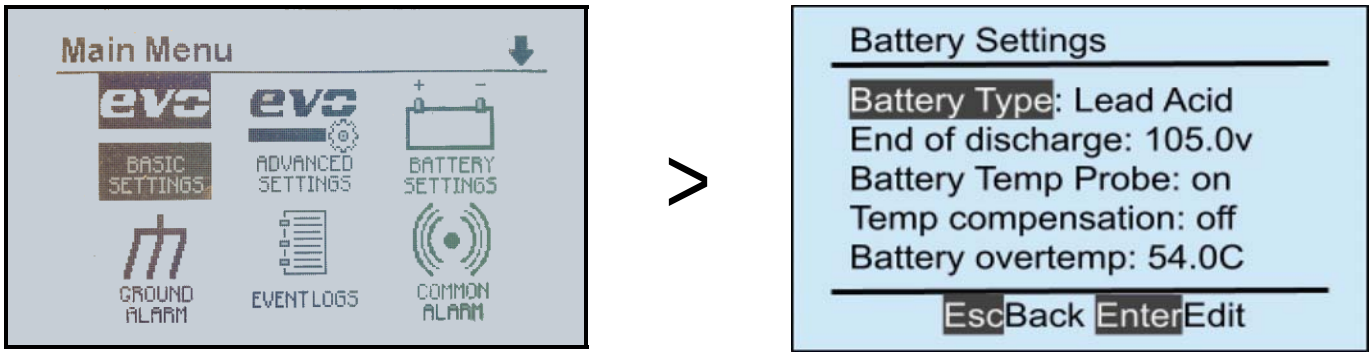
6) At the ***battery***, attach the quick-connect lugs to the Temp Probe (**A10**). Polarity is not sensitive.



7) Coil up and wire-tie any excess wire to prevent damage.
8) Check your work, and confirm that:
   - Twisted-pair wires of TempCo cable are connected to 2-pos terminal block (**TB8**).
   - The TempCo shield is connected to EARTH/GROUND.
   - All connections are secure.
9) Replace the acrylic safety shield, and restart ATevo.

CONFIGURATION

Access the front panel display to enable and configure ATevo for battery temperature monitoring.



1) Select the **MENU** button, and use the directional arrow buttons to navigate.
2) From the **Main Menu** screen, select **BATTERY SETTINGS** with the **EDIT/ENTER** button.
3) Use the arrows to scroll ***down*** to "Battery Temp Probe", and select **EDIT/ENTER**.
4) Use the arrows to select "**on**" (versus "off").
5) "Temp compensation" (and "Battery overtemp") will appear.
6) Scroll to "**Temp compensation**", and select **EDIT/ENTER**.
7) Use the arrows to select "**on**" (versus "off").

NOTICE Turning on Temperature Compensation ***without*** a battery probe (A10) connected to ATevo, will generate a temperature probe ***failure alarm***.

8) Set the battery ***type*** for temperature compensation.
9) Go ***back*** to **BATTERY SETTINGS**, and select **Battery Type**.
10) Select between **NiCd** or **Lead Acid**.
11) This setting is irrelevant unless a TempCo probe is connected to ATevo, and the probe is enabled.

USING TempCo

When equipped (and enabled) with the TempCo option, the ATevo control logic auto-adjusts dc output voltage applied to the battery. This keeps float current constant, and avoids overcharging and undercharging. The probe senses battery temperature variation, and ***adjusts*** output float & equalize voltages to compensate. If battery temperature increases, ATevo's dc output voltage ***decreases***.

NOTICE If the ATevo experiences any inconsistencies when the probe is installed, temporarily disable TempCo per **CONFIGURATION**, starting on page 6. Refer to the following bullets:

- Set Float and Equalize to values recommended by the ***battery manufacturer*** for 77 °F / 25 °C.
- When Float or Equalize voltages are entered or adjusted, the front panel meter displays the 77 °F / 25 °C value, even if the battery is warmer or cooler than 77 °F / 25 °C.
- The actual dc output voltage may be different from the set point, if the battery is warmer or cooler than 77 °F / 25 °C.
- Use a digital meter to measure ***actual*** output voltage. Determine temperature at the probe and use the graph on Page 8 to verify output voltage is correct.
- If battery temperature falls below 32 °F / 0 °C, there will be no further increase in ATevo output voltage. Likewise, if battery temperature rises above 122 °F / 50 °C, there will be no further decrease in output voltage.

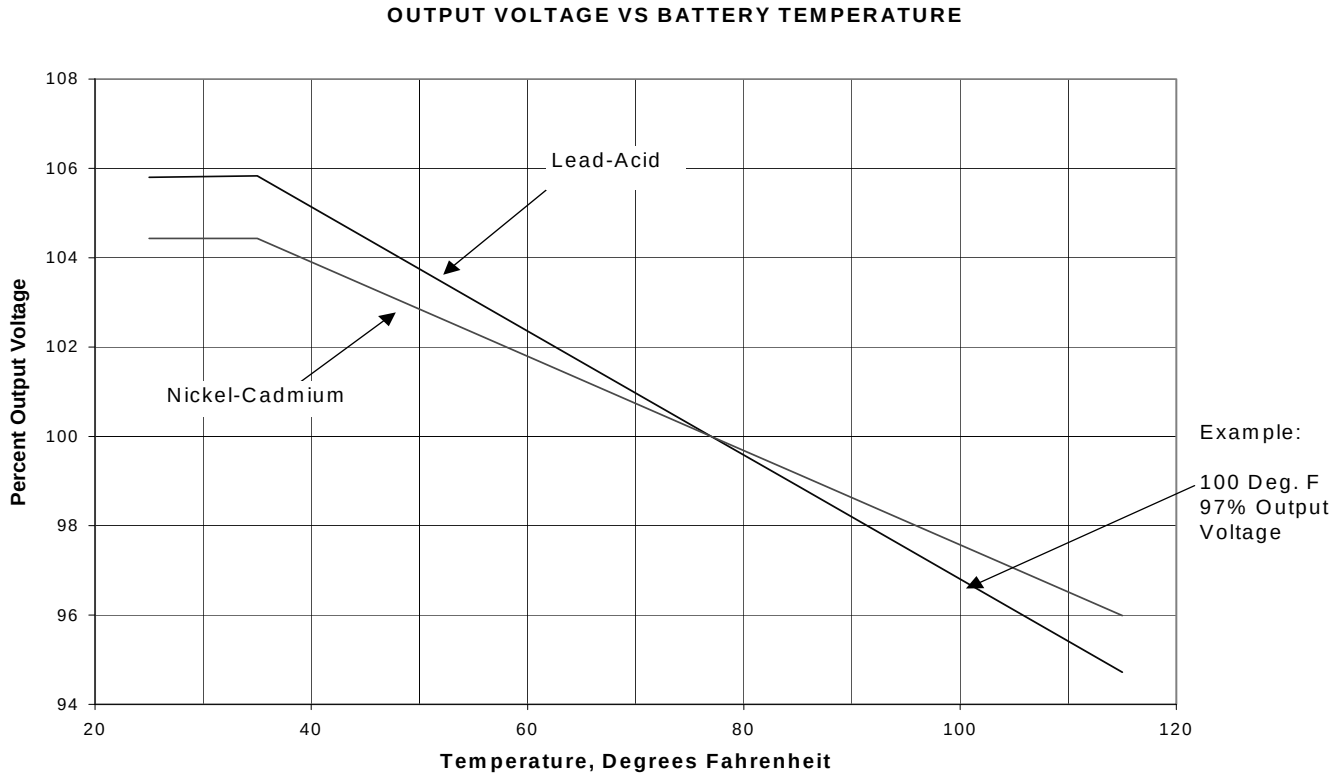
HOME SCREEN WITH TempCo OPTION

If the probe is properly installed, after "Battery Temp Probe" is set to "**on**", additional parameters appear on the ATevo front panel display **HOME SCREEN**. Refer to the example below.

- The **LARGE FONT** voltage value is the ***actual*** battery charger dc output voltage, ***compensated*** for the present battery temperature.
- Present battery temperature (in °C) appears in small font to the ***right*** of the actual battery charger voltage.
- The charger set point voltage (at 25 °C) appears in small font directly ***below*** the present battery temperature.
- The ***difference*** between the two (2) listed voltages is due to compensation, based on battery temperature.

TEMPERATURE COMPENSATION CURVES

The following graph depicts the ***voltage correction*** applied to the ATevo dc output, based on battery temperature sensed by the probe (A10).



EXAMPLE: *Suppose you have a lead-acid battery whose temperature is 100 °F / 37.8 °C. As shown on the graph, the output voltage should be approximately 97% of the 77 °F voltage. If the float voltage is set on the front panel to 132 Vdc, the actual output voltage will be:*

132 x 0.97 = 128 Vdc

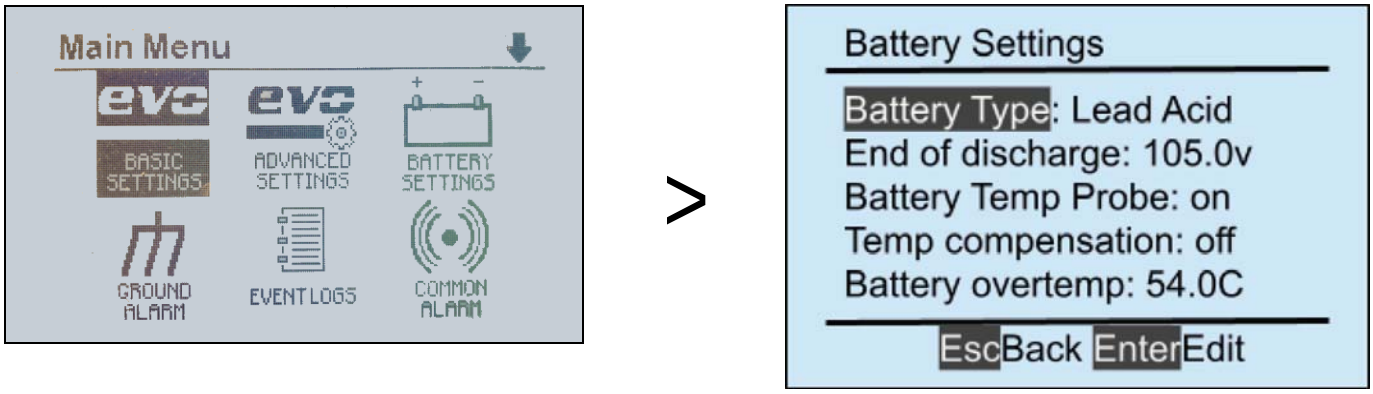
BATTERY TEMPERATURE MONITOR

The Battery Temperature Probe (**A10**), or 'puck', can also be installed for ***monitoring*** temperature, or providing and overtemp alarm. When "Battery Temp Probe" is set to "**on**", ATevo will ***always*** monitor remote battery temperature. This value is visible on the **HOME SCREEN**, see Page 8 of 12, and available via remote communications (if supplied).

The "Battery overtemp" alarm feature was introduced in ATevo firmware V2.4.4. Alarm temperature setpoint was added in V2.6.0, as well as separate setting to enable/disable the battery temperature probe. The battery temperature ***alarm*** feature can be utilized as a stand-alone feature, or in conjunction with the aforementioned temperature ***compensation*** (TempCo).

SETUP

To enable and configure ATevo for remote battery temperature monitoring, refer to following images, and follow Steps 1 through 11 listed below.



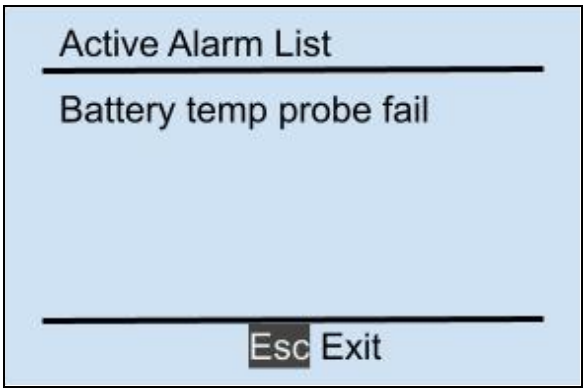
1) Access the front panel display, and select the **MENU** button.
2) From the **Main Menu** screen, use the directional arrow buttons to navigate.
3) Select **BATTERY SETTINGS** with the **EDIT/ENTER** button.
4) Use the arrows to scroll ***down*** to "Battery Temp Probe", and select **EDIT/ENTER**.
5) Use the arrows to select "**on**" (versus "off").
6) Battery overtemp (and Temp compensation) settings will become visible.

   NOTICE Unlike compensation, the "Battery overtemp" alarm is enabled by default, after "Battery Temp Probe" is set to "**on**". Disabling the overtemp alarm is ***not*** recommended.

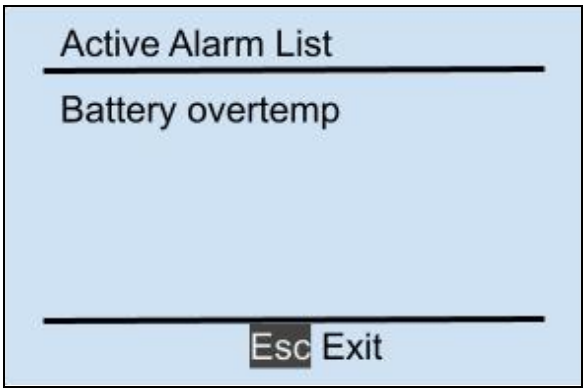
7) The battery overtemp alarm setpoint defaults to 54 °C / 129.2 °F from the factory.
8) To ***adjust*** the alarm, select "Battery overtemp".
9) Use the up or down arrows to increase or decrease the setpoint temperature.
   The range is 30 °C (86 °F) to 60 °C (140 °F).
10) Select **EDIT/ENTER** to accept setpoint changes, or **ESC** to cancel.
11) Setup of battery temperature monitoring is complete.

OPERATION

When Battery Temp Probe setting is on, two (2) different alarms that may be reported. The "Battery temp probe fail" alarm indicates a problem with the temperature ***probe*** (A10) itself. The "Battery overtemp" alarm indicates that the battery temperature has exceeded the setpoint. Both alarms are logged, and can be mapped to the common alarm relay by default. Both alarms are also reported over Modbus and DPN via serial and Ethernet communications (if either feature is installed). Alarms are shown below.



"**Battery temp probe fail**" alarm indicates a faulty temperature probe (A10).



"**Battery overtemp**" alarm indicates a battery temperature reading exceeded the setpoint.

COMBINATIONS

The remote battery probe allows ATevo to monitor battery temperature, perform temperature compensation, and provide a battery overtemp alarm. When "Battery Temp Probe" is set to "**on**", ATevo will ***always*** monitor battery temperature, visible on the **HOME SCREEN**, and available via remote communications (if supplied). Refer to the following bullets, for combinations of the features.

- Compensation enabled and alarm enabled
  Install probe, set compensation to "**on**", alarm enabled by default at listed setpoint.
- Compensation enabled, alarm ***disabled*** *(not recommended)*
  Install probe, set compensation to "**on**", adjust ***alarm*** setpoint to maximum.
- Compensation ***disabled***, alarm enabled
  Install probe, set compensation to "**off**", alarm enabled by default at listed setpoint".
- Compensation *disabled* and alarm *disabled*
  n/a - Do not install battery temperature probe (confirm no probe alarm).

ORDERING PARTS

Spare probes (pucks), longer signal cables, full field installation kits, and/or replacement circuit boards may be ordered through sales representatives. Please use the part numbers listed in the table below.

ORDERING PART No.	DESCRIPTION
EJ5032-00	one (1) spare battery temperature probe (A10)
EJ5304-01	battery temperature probe (A10) with one (1) 25ft (7.6m) signal cable assembly
EJ5304-02	battery temperature probe (A10) with one (1) 50ft (15.2m) signal cable assembly
EJ5304-03	battery temperature probe (A10) with one (1) 100ft (30.4m) signal cable assembly
EJ5304-04	battery temperature probe (A10) with one (1) 200ft (60.8m) signal cable assembly
replacement cable	***contact factory*** (or use industry standard ***Belden*** p/n **8760**)
EN5031-00.	spare ATevo Main Control PC Board (A1)

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ON-LINE AVAILABILITY

An electronic copy of these instructions is available at **http://www.ATSeries.net/PDFs/JA5015-51.pdf**, along with standard drawings for the ATevo Series battery chargers. Saved online in Adobe Acrobat Portable Document Format (PDF), they are readily available for downloading and printing.