

MULTI-TAP AC INPUT VOLTAGE CHANGE**BACKGROUND**

ATEvo Group II (single phase @ 16-100 Adc) battery chargers are normally factory-built to a *single*, specific ac input voltage. This is different from the smaller Group I (1PH @ 6-25Adc) models, which can feature a 120/208/240 Vac multi-tap. For a proper input voltage change, it is always *best* to return an ATEvo charger to the manufacturing facility for rework and retest.

On occasion, an installed unit has to be connected either to a temporary line, or to a different ac input voltage source than what was ordered. The conversion, done outside the factory, often requires changing certain components, and rewiring of other components, before it can be used with a different ac input voltage source.

NOTICE All ATEvo Power Isolation Transformers (T1) are designed to operate with an ac input voltage *tolerance* of +10% to -12%.

REFERENCE DOCUMENTATION

- 1) ATEvo Group II battery charger *Operating and Service Instructions* ([JA0102-52](#))
- 2) ATEvo Group II standard drawings, featured online (<http://www.ATSeries.net/>)

MATERIALS REQUIRED***Conversion Kit will contain:***

- 1) a new data nameplate decal (p/n FK5007-##) listing the new ac input voltage and current

Conversion Kit may contain:

- 1) ac input circuit breaker (CB1)
- 2) power isolation transformer (T1)
- 3) ac input MOV pc board (A9)
- 4) ac input power wire

Supplied by User:

- 1) crimp terminals (ring type preferred)
- 2) cable ties

TOOLS REQUIRED

- 1) standard hand tools
- 2) wire cutters, stripper and terminal crimping tool

ACCEPTABILITY

- A) ATEvo single phase 60Hz units (120, 208, or 240 Vac input) feature power isolation transformers (T1) that are typically designed with changeable taps.
- B) ATEvo single phase 50/60Hz units (220 or 240 Vac input) are supplied with a different transformer design, but features taps for those voltages as well.
- C) Other ac input voltages are supplied with ATEvo battery chargers, but may feature a transformer with *no* changeable taps (e.g. 480 Vac).
- D) To determine if a particular ATEvo Group II transformer (T1) features taps which can be rewired for a different ac input voltage than what was ordered, contact the manufacturing facility with a serial number and model number of the unit in question.

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REQUIRED CHANGES

Refer to the matrix below to determine the scope of work required for a field-installed ac input voltage change. Consult the ATevo manufacturing factory for changes not shown.

ac input voltage change		new ac input breaker (CB1) required?	new isolation transformer (T1) required?	ac input wire change required?	new ac input MOV pc board (A9) required?
60Hz	120 to (208 or 240)	YES	NO	NO	YES
60Hz	(208 or 240) to 120	YES	NO	YES	YES
60Hz	240 to 208 or 208 to 240	NO	NO	NO	NO
50/60Hz	240 to 220 or 220 to 240	NO	NO	NO	NO
50/60Hz	380 to 416 or 416 to 380	NO	NO	NO	NO
	any voltage to 480	YES	YES	NO	YES
	480 to any voltage	YES	YES	YES	YES
	any voltage 60Hz to 50Hz	YES	YES	NO	NO

PREPARATION

NOTICE Only qualified service technicians should perform this procedure. Follow all site and employer standard safety protocols.

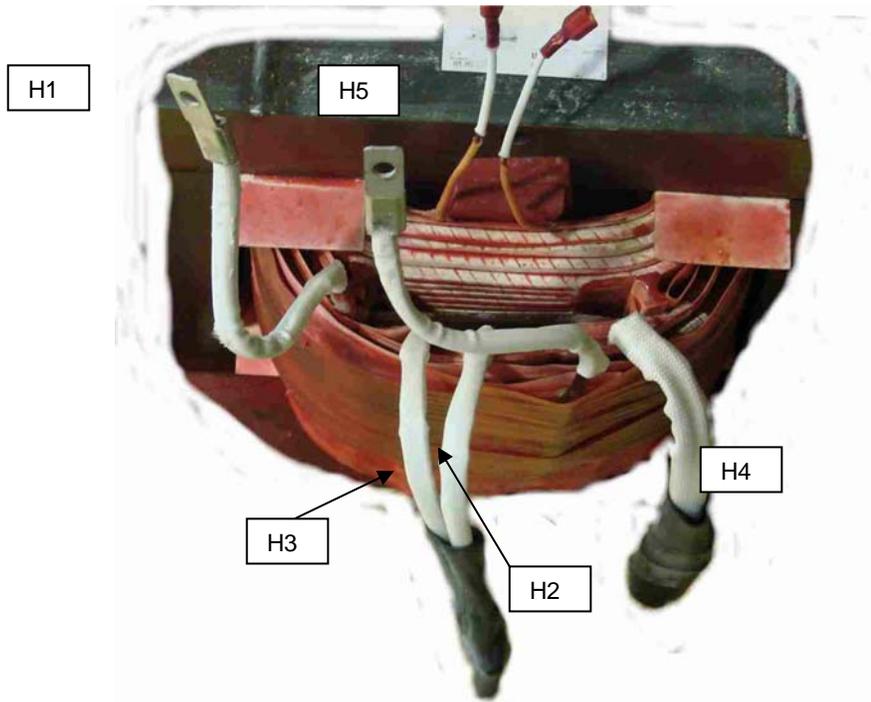
1. If you have successfully determined that the transformer (T1) can be rewired to the newly required ac input voltage, see the standard drawings located in Appendix C of the ATevo battery charger *Operating and Service Instructions* ([JA0102-52](#)).
2. Identify the ATevo Group II battery charger enclosure style, and refer to the corresponding internal component layout drawing.
3. Locate components of the ac input feature by their reference designators:
 - **CB1** ac input circuit breaker (also input terminals on Style-5054)
 - **T1** power isolation transformer
 - **A9** ac input MOV pc board
 - **TB1** input/output terminal block (TB1-L1/L2/GND to be accessed)
4. Shut down the ATevo per the unit's *Operating and Service Instructions*.

WARNING Remove ALL ac power to the ATevo, disconnect the batteries, and remove all signal contacts. Any optional filter capacitors (A7/C1/C2) inside the charger store powerful electrical potential. Wait several minutes, then test for zero voltage at I/O panel (CB1 or TB1) and capacitors (A7/C1/C2).

5. Open the front panel door of the ATevo, and remove the acrylic safety shield.
6. Identify the corresponding physical components (CB1/T1/A9/TB1) inside the actual unit.

MULTI-TAP AC INPUT VOLTAGE CHANGE**PROCEDURE** (re-tap)

1. The image below shows how the wires (taps) come out of the front face of the coil in a 120/208/240 60Hz power isolation transformer (T1).



It shows the transformer (T1) connection set up for 240Vac input. The wires from the ac input circuit breaker (CB1) will be going to H1 and H5.

2. To change to a 120V input, cut the heat shrink off of H3/H2 and separate the wires. Connect the H3 lead together with H1, and connect the H2 lead to H5. Input wires from the breaker stay at H1 and H5 also. The current (A_{ac}) flowing into the transformer (T1) is now **doubled**, so the wires that run to CB1-L1/L2 or TB1-L1/L2, may need to be increased in size, along with a larger circuit breaker (CB1).
3. For an input change from 120Vac to 240Vac, rearrange T1 so that is as shown in the picture above. The ac breaker (CB1) will need to be changed, but the ac wiring is large enough as supplied from the factory.
4. To rewire the transformer from 240 to either 208 or 220, break the H2 and H3 connection, and connect H2 to H4. H3 will have no connection.
5. Sleeve both remaining leads so they do not touch to any other connection or chassis.
6. Replace the ac breaker (CB1) if a new one is supplied and/or it is required per table on page 2.
7. Replace the ac input MOV board (A9) if a new one is supplied, and/or it is required per table on page 2.
8. Once all transformer re-tapping, component replacement, and rewiring is complete, check all wiring to ensure it is correct, and that all connections are tight.

MULTI-TAP AC INPUT VOLTAGE CHANGE**PROCEDURE** (*optional check*)

9. Before powering back up the ATevo, a check can be made to make *sure* the output of the transformer (T1) is correct.
10. Use static protection, and unplug the Main Control PC Board (A1) from the signal harness.
11. Apply the new ac voltage source to the ATevo, and close the ac input circuit breaker (CB1).
12. Carefully measure voltage at the small wires ("Y1" and "Y2") coming out of the transformer coil. **NOTICE** The wires have slip-on lugs that may need to be separated. Be careful not to break the wires.
13. If all new connections are correct, the voltage between Y1 to Y2 will be **8-11** Volts ac. If there is no voltage at T1-Y1/Y2, then H2 and H3 may be switched.
14. Once you have confirmed 8-11 Volts ac at Y1 to Y2, open the ac breaker (CB1) and re-attach the Main Control PC Board (A1) to end the check.

PROCEDURE (*restart*)

15. Remove the original ATevo data nameplate decal.
16. Replace it with the new silver decal supplied with the conversion kit. This identifies the unit properly as connected to, and equipped for, the new ac input voltage source.
17. Reconnect the battery, dc loads, and ac power to ATevo.
18. Re-energize ATevo by opening the ac input circuit breaker (CB1) *first*, followed by the dc output circuit breaker (CB2) *second*.
19. Your ATevo single phase Group II battery charger has now been field-modified for a new ac input voltage source.