



BATTERY OPEN ALARM

BACKGROUND

AT10.1 and AT30 Series microprocessor-controlled float battery chargers can be configured to periodically test for an "open battery". AT Series battery charger units with Main Control PC Board (A1) p/n **EN5002-00 - Rev. 10x** (or greater), with firmware version **6.55** (or greater), can utilize the **Battery Open Alarm** (BOA) feature.

Older AT Series chargers may need a Main Control PC Board (A1) **upgrade** to utilize the BOA feature. Confirm the part number and revision marked on the board, which is mounted to the back surface of the front control panel. After any such upgrade, a new soft copy of the AT Series Battery Charger **Operating & Service Instructions** can be downloaded using the following hyperlinks:

AT10.1 Group I ([JA0102-01](#)), AT10.1 Group II ([JA0102-02](#)), or AT30 ([JA0102-03](#))

PURPOSE

This feature allows the AT Series charger to periodically check whether the battery is capable of delivering sufficient output current, to satisfy required dc loads for three (3) minutes. If the battery is extremely low on capacity, or there is an open string, the charger will indicate an alarm, alerting the user to capacity test the battery. The benefits of the Battery Open Alarm feature are as follows:

- The test is programmed to run automatically for three (3) minutes at 90-day intervals.
- The feature meets (or exceeds) compliance for **battery continuity confirmation**, as required by North American Electric Reliability Corporation standard **NERC PRC-005**.
- The feature may be easily enabled (or disabled), via jumper on the Main Control PC Board.

ENABLING/DISABLING

Before enabling or disabling the Battery Open Alarm feature, shut down the AT Series battery charger per instructions listed in the *Operating and Service Instruction* manual. Lock out all ac and dc power to the charger. The Battery Open Alarm feature is configured via jumper (J31) on the Main Control PC Board (A1). See Figure 1 to the right. Open the front control panel and locate the square Main Control PC Board (A1), mounted to the back of the panel. Identify jumper (J31), which is located along the right side of the board when viewed from the back. Move the shorting block onto J31 pins 1-2 to **enable** the Battery Open Alarm feature, or move the shorting block onto J31 pins 2-3 to **disable** the Battery Open Alarm. Restart the AT charger per Section 2.1 of the *Operating and Service Instruction* manual.

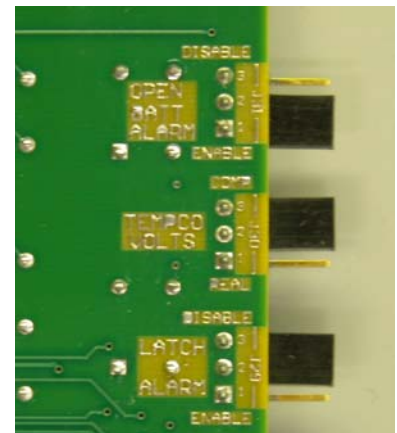


Figure 1 - J31 (top) **enabled**

FUNCTION

The AT Series Battery Open Alarm tests the battery at a fixed interval. The test runs automatically every 90 days. The 90-day timer will reset (restart) under the following conditions:

- The timer will reset on an ac failure.
- The timer will reset on Equalize (starts at the end of the Equalize period).
- The timer will be reset if the Battery Open test is deactivated by the J31 jumper.
- The timer will be reset when a previous failure (**E 15** code) is reset.
- The timer will be reset if a manual test is initiated.

FUNCTION (continued)

The Battery Open *test* runs for a fixed duration of three (3) minutes. During the test, the AT Series charger lowers its output to 2 Volts *below* the LV alarm point (set in the charger, refer to O&SI Section 2.3.4). During the Battery Open test, the text **tEst** is indicated on the front panel display. If the battery supports the standing load for the entire 3-minute test, the test will conclude. The charger will return to the normal float setting, and the Battery Open test will run again at the next interval.

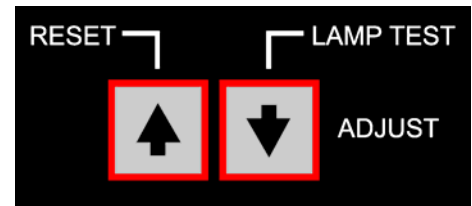
The Battery Open *alarm* will activate if the dc bus falls *below* LV alarm point anytime during the 3-minute test. The test is immediately terminated when there is an open battery failure. On a failure, error code **E 15** is indicated on the front panel display, and the Summary Alarm relay (TB3) transfers after the nominal 30-second delay. The Battery Open Alarm is latched, but is independent of the standard latching alarm setting (see [JA5098-00](#)). If the optional AT Series Communications Module is installed, the Battery Open Alarm (E15) is also available via SCADA system remote monitoring. Error code **E 15** will be displayed (latched), and testing is deactivated, until the Battery Open Alarm is reset.

If an optional Auxiliary Alarm Relay pc board (A5) is supplied with the AT Series charger, the redundant Summary Alarm Relay '6' (TB4, contacts 31/32/33 and 34/35/36) will be *repurposed*, from a second Summary Alarm to a dedicated Battery Open Alarm contact. This will only occur if the Battery Open Alarm is enabled (A1-J31). The Summary Alarm relay contacts (TB3-1/2/3) on the Main Control PC Board (A1) will *continue* to act as a common alarm. When the Battery Open Alarm is enabled, Relay '6' will transfer *only* on a Battery Open failure. The Battery Open Alarm form-C contacts (TB4, contacts 31/32/33 and 34/35/36) are latched, independent of the standard latching alarm setting of the Auxiliary Alarm Relay pc board (A5).

To clear the latched alarm(s), press and hold the **RESET** button (**UP** arrow) on the front control panel. The charger will acknowledge the alarm reset by indicating **RStL** on the display. The reset function will clear all latched alarms and de-activate the Summary Alarm relay contacts (TB3), as well as the dedicated Battery Open Alarm (relay '6') contact on the Auxiliary Relay Board (A5), if installed.

A *manual* Battery Open test can be initiated at any time by holding down the **LAMP TEST** button for longer than four (4) seconds, activating the alarm relay(s), see Section 2.2.5.

Twenty (20) seconds after the **LAMP TEST** key is *released*, the Battery Open Test will run. This manual test will only work when the Battery Open Alarm jumper (J31) is activated.



LIMITATIONS

- The Battery Open Alarm test will work on stand-alone chargers connected to a *single* battery, provided that there is sufficient standing load to drop the battery voltage from the float level during the 3-minute test interval.
- This feature work with a stand-alone charger connected to a single battery, and connected to a second similar system through a "**Best Battery Selector**" (steering diodes). There must be sufficient local load on the battery side of the Best Battery Selector to cause the battery voltage to collapse during the test. The charger standing load may be sufficient. If the charger standing load is insufficient, an additional resistive load may need to be permanently connected to each battery on the battery side.
- This feature will work on two (2) AT Series chargers in Forced Load Sharing. However, *only* the Primary (Master) should have the Battery Open Alarm test enabled. The test will automatically be deactivated if it is enabled on a Secondary (Slave) charger in a Forced Load Sharing pair.
- This feature will *not* work on two (2) AT Series chargers, paralleled in "random" load share, unless one (1) charger is turned off.