LATCHING ALARMS

BACKGROUND

All AT10.1 and AT30 Series battery chargers with control firmware version **6.35** and greater can be configured to ***latch*** all alarm LED indicators, and the Summary Alarm relay monitored remotely via terminal block (TB3) on the Main Control PC Board (A1). AT10.1 and AT30 Series battery chargers with the optional Auxiliary Alarm Relay PC Board (A5) option, revision **EN0027-00 Rev. 4** or greater, feature individual latching alarm relays with two (2) form-C contacts, monitored remotely via terminal block (TB4). AT Series battery chargers normally ship with the latching alarm relay functions on the Main Control PC Board (A1) and the Auxiliary Alarm Relay PC Board (A5) ***disabled***.

LATCHING SUMMARY ALARM FEATURE
Main Control PC Board (A1)

ENABLING/DISABLING

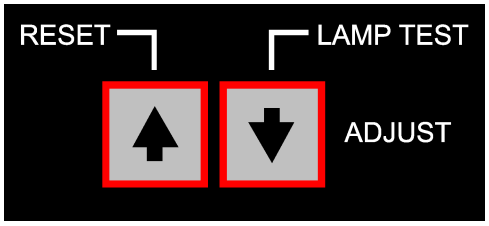
The standard latching alarm feature is configured via jumper (J29) on the Main Control PC Board (A1). Before enabling or disabling the latching alarm feature, shut down the AT Series battery charger per instructions listed in the *Operating and Service Instruction* manual. Lock out all external power sources (upstream ac input feed, alarm signal voltages, downstream dc loads, and battery) to the charger. Open the front instrument panel door and locate the square Main Control PC Board (A1), mounted to the back of the panel. Identify jumper (J29), located along the right side of the pc board when viewed from the back.

- Move the shorting block onto J29 pins 1+2 to ***enable*** the latching alarms feature.
- Move the shorting block onto J29 pins 2+3 to ***disable*** latching alarms.

Restart the AT Series charger per the *Operating and Service Instruction* manual, by turning on the dc circuit breaker (CB2) first, follower by the ac input circuit breaker (CB1) second.

FUNCTION

To prevent nuisance latched alarms, an alarm condition must exist for 30 seconds in order to latch. When an alarm condition occurs, the associated LED indicator will light immediately. If after 30 seconds the alarm condition still exists, the Summary Alarm relay will switch to the alarm state and the associated LED indicator will latch on...and ***remain*** on. If the alarm condition is temporary, and lasts for less than 30 seconds, the associated LED indicator will go out and the Summary Alarm relay will not switch to the alarm state.



Once the alarm is latched, the associated LED indicator on the front panel and Summary Alarm relay contacts (TB3) will remain active until it is cleared (or reset) manually at the charger. To clear the latched alarm(s), press ***and hold*** the latch **RESET** button (UP arrow) on the front panel. The AT Series charger will acknowledge the alarm reset by flashing **RStL** on the main meter display.

The reset function will clear all latched alarms and de-activate the Summary Alarm relay contacts (TB3). If any alarm is ***still active*** while performing the latch reset, that alarm's associated LED indicator will ***remain*** lit after the latch **RESET** button is pressed. The alarm will latch again after 30 seconds, and the Summary Alarm relay contacts will switch to the active state.

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LIMITATIONS (standard latching)

With this standard latching alarm feature, only the front panel alarm indicator LEDs and the Summary Alarm relay contacts (TB3) on the Main Control PC Board (A1) will latch. The alarm status reported by the optional Auxiliary Alarm Relay PC Board (A5) and monitored on remote terminal block (TB4) will ***not*** latch. Likewise, the alarm signals (via Modbus or DNP3) from an optional Communications Module PC Board (A12) will ***not*** latch. The alarm status reported by Auxiliary Relay Board and the Communication Module will reflect the true dynamic status of all alarms, even when the standard latching alarm feature is enabled on the Main Control PC Board (A1) via jumper (J29). The relays on the optional Auxiliary Alarm Relay PC Board (A5) can be configured to latch as well. This feature is detailed in two (2) sections below.

RECTIFIER OVER-TEMPERATURE ALARM

The AT Series rectifier over-temperature condition is ***not*** classified as a latching alarm. If the Main Control PC Board (A1) detects an over-temperature condition (212 °F /100 °C) for any one (1) of the thermal switch(es) (S2x) located on the rectifier heat sink(s), error code (**E13**) will appear on the front panel meter display. Also, the Summary Alarm relay (TB3) will switch to the alarm state. On standard AT Series battery chargers there are no discreet form-C alarm relay contacts for a rectifier over-temp condition.

The latch **RESET** button will ***not*** clear the rectifier over-temp alarm error code (**E13**), nor will it reset the Summary Alarm relay (TB3) triggered by the over-temp condition. The only way to clear a rectifier over-temp alarm is to ***cycle power***. Turn off both the ac input circuit breaker (CB1) and dc output circuit breaker (CB2). Restart the AT Series charger per the *Operating and Service Instruction* manual, by turning on the dc circuit breaker (CB2) first, follower by the ac input circuit breaker (CB1) second.

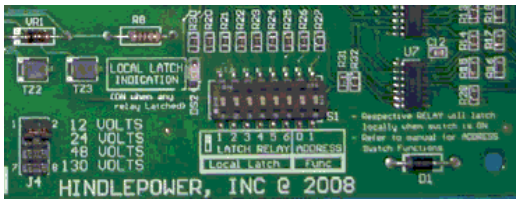
INDIVIDUAL LATCHING ALARMS
Auxiliary Alarm Relay PC Board (A5)

ENABLING/DISABLING

The individual latching alarms are only available when the optional Auxiliary Alarm Relay PC Board (A5) is installed in an AT Series charger. Each of the six (6) standard AT Series alarm relays can be independently configured to be either latching or unlatching, by means of DIP switches. The latching alarm DIP switches are normally set from the factory in the **OFF** (non-latched) position.

Before configuring the individual latching alarms, shut down the AT Series battery charger per instructions listed in the *Operating and Service Instruction* manual. Lock out all external power sources (upstream ac input feed, alarm signal voltages, downstream dc loads, and battery) to the charger. Refer to the standard Internal Component Layout drawings first, in Appendix C of the manual. Identify the location of the Auxiliary Alarm Relay PC Board (A5) on the layout drawings of the charger.

LATCHING ALARMS



Open the front panel door (or the top penthouse enclosure) and locate the rectangular Auxiliary Alarm Relay PC Board (A5). Identify the eight (8) position DIP switch assembly (S1) located at the center-bottom of the board, and shown in the image to the right.

The first six (6) switches (1-6), labeled **Local Latch**, correspond to the individual auxiliary alarm relays physically installed on the pc board (A5). These relays are labeled along terminal block (TB4), with individual alarm relay contacts marked in the non-alarm condition. They are as follows:

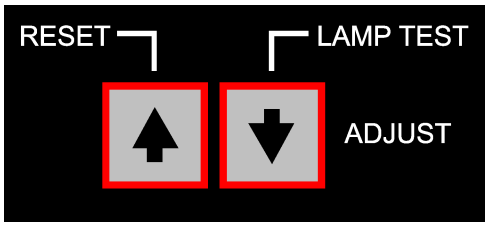
(RELAY '1')		(RELAY '2')		(RELAY '3')		(RELAY '4')		(RELAY '5')		(RELAY '6')	
HVDC	HVDC	LVDC	LVDC	DC OUT FAILURE	DC OUT FAILURE	AC FAIL	AC FAIL	GROUND DETECT	GROUND DETECT	SUMMARY	SUMMARY
C, NC, NO	C, NC, NO	C, NC, NO	C, NC, NO	C, NC, NO	C, NC, NO	C, NC, NO	C, NC, NO	C, NC, NO	C, NC, NO	C, NC, NO	C, NC, NO
1 2 3	4 5 6	7 8 9	10 11 12	13 14 15	16 17 18	19 20 21	22 23 24	25 26 27	28 29 30	31 32 33	34 35 36

Sliding any one (1) of the switches ***up*** to the **ON** position will configure that relay as a latching alarm. Any combination of the six (6) relays can be configured to be either latching or non-latching, based on the DIP switch (S1) settings. A **LOCAL LATCH INDICATION** LED (DS2), featured directly to the left of the DIP switch (S1), will illuminate when any of the configured alarm relays are being held in the latched state.

Slide the individual DIP switches (S1-1 thru S1-6) to the desired latching or non-latching positions. Close the front panel door, or replace the front panel of the top penthouse enclosure. Restart the AT Series charger per the *Operating and Service Instruction* manual, by turning on the dc circuit breaker (CB2) first, follower by the ac input circuit breaker (CB1) second.

FUNCTION

To prevent nuisance alarms, an alarm condition must exist for thirty (30) seconds in order for the associated relay to change state. When an alarm condition occurs, the associated front panel LED indicator will light immediately. After 30 seconds, if the alarm condition still exists, the associated alarm relay will switch to the alarm state and will ***latch*** (when so configured via DIP switch). If the alarm condition is temporary, and lasts for ***less*** than 30 seconds, the associated LED indicator will go out and the associated alarm relay will ***not*** switch to the alarm state.



Once any of the alarm relays are latched, the **LOCAL LATCH INDICATION** LED (DS2) on the Auxiliary Alarm Relay PC Board (A5) will illuminate. It will remain lit until all alarm relays are reset manually at the charger. To clear the latched alarm, press ***and hold*** the latch **RESET** button (UP arrow) on the front panel.

The AT Series charger will acknowledge the alarm reset by flashing **RStL** on the main meter display. The reset function will clear all latched alarms relays and turn off the **LOCAL LATCH INDICATION** (DS2) on the Auxiliary Alarm Relay PC Board (A5). If any alarm is ***still active*** while performing the latching alarm reset, that alarm's associated LED indicator will ***remain*** lit after the latch **RESET** button is pressed. The alarm relay will latch again after 30 seconds of remaining active.

The AT Series rectifier over-temperature condition is ***not*** classified as a latching alarm. It is not configurable via the Auxiliary Alarm Relay PC Board (A5). Please see the special section back on Page 2 of 3 for cycling power to reset an over-temp alarm.