DISCOVER ENERGY SYSTEMS

TECHNICAL SERVICE BULLETIN

New Closed-Loop Algorithm

CSB Number	855-0021 REV A
Date	December 12th, 2025

URGENCY

- ○ **HIGH:** Action immediately
- ○ **MEDIUM:** Action when possible
- ● **LOW:** Action if necessary
- ○ **INFORMATION ONLY**

This is not a failure condition. This update is recommended to improve system performance, enhance closed-loop communication accuracy, and ensure optimal integration with inverter platforms.

PRODUCTS AFFECTED

HELIOS Battery (52-48-16000) with BMS firmware v4.9.0 or lower, and LYNK II with firmware v2.4.1 or lower.

SYMPTOM OBSERVED

In Dynamic Voltage mode, some inverters may overshoot the battery's charge-voltage target. This can result in inverter-generated over-voltage alarms, DC-bus protection warnings, and inconsistent or unstable charging behavior.

POSSIBLE CAUSE

During Dynamic Voltage control, the battery continuously adjusts its charge-voltage (CV) target as it approaches full SOC. Some inverter models have narrow DC-bus tolerances and cannot accurately track these shifting CV values. When the inverter's CC/CV control loop reacts too slowly or aggressively to a changing voltage target, it can momentarily drive the DC bus above the requested CV value. This inverter-side overshoot produces over-voltage alarms and unstable charging behavior, even though the battery is operating normally.

FIELD CORRECTIVE ACTIONS

To eliminate inverter overshoot, the system now supports Dynamic Current control, which replaces voltage-based regulation during the upper SOC region. When you use dynamic current control, instead of tracking a shifting CV target, the inverter follows a stable, battery-defined current limit that it can regulate accurately. This removes reliance on the inverter's CC/CV voltage loop, prevents DC-bus overshoot, and stops over-voltage alarms. Dynamic Current is included in the current firmware and will become the default control method in the upcoming release.

ORDER OF OPERATION

1. Plug into the battery (or LYNK II Gateway if used in the system) and open LYNK Access.
    a. Update LYNK ACCESS to 2.5 or higher.
    b. Update LYNK II firmware to 2.5 or higher (if the site uses a Gateway device)

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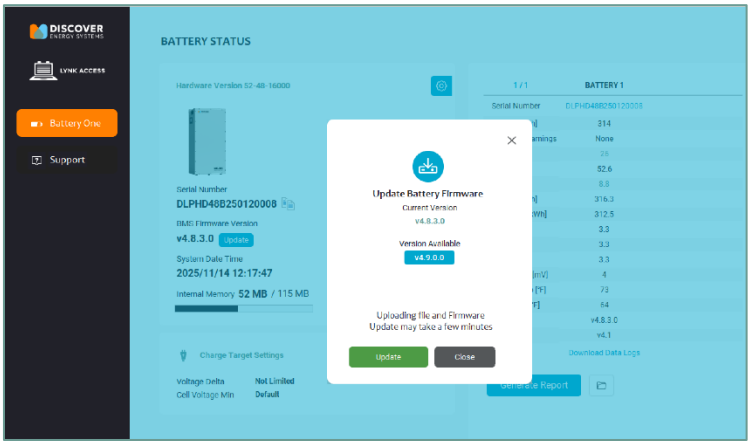
c. Update HELIOS firmware to v4.10.0 or higher.

d. NOTE: **Click here to download the resources**

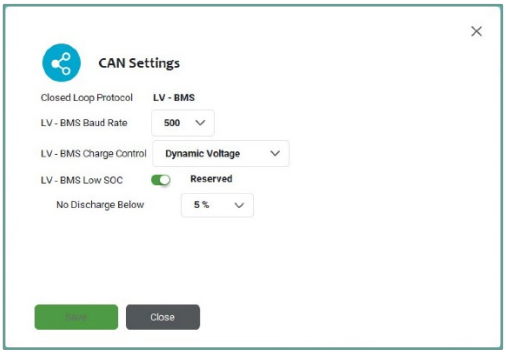


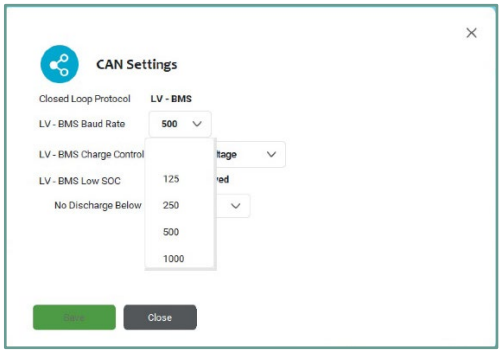
2. In CAN Settings:

a. Choose **LV-BMS** from the Closed-loop Protocol drop-down menu.

i. Most inverter platforms can operate using the LV-BMS protocol set. LV-BMS is a broadly adopted communication framework, and its message structure aligns with the control and telemetry requirements supported by the majority of lithium-focused hybrid inverters. This includes Deye, Sol-Ark, LuxPower, Victron, Selectronic, Megarevo, SunBeat, Schneider Electric, and other compatible systems. As a result, LV-BMS provides a consistent closed-loop interface for charge control, protection, and SOC communication across a wide range of products.

b. **The default 500 setting is compatible with most devices**. Only change the value if required by your equipment.





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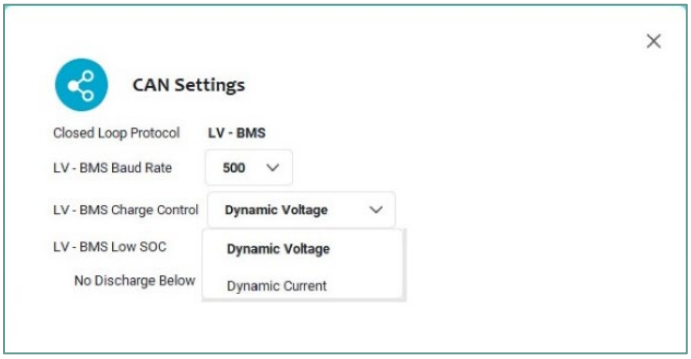
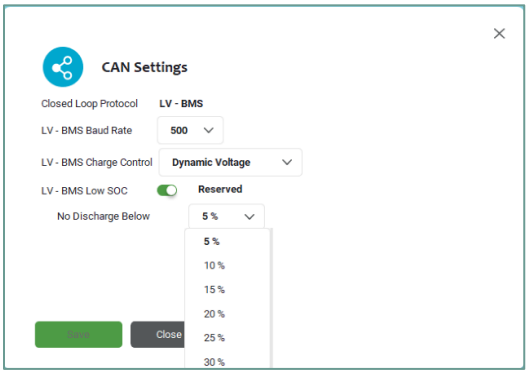
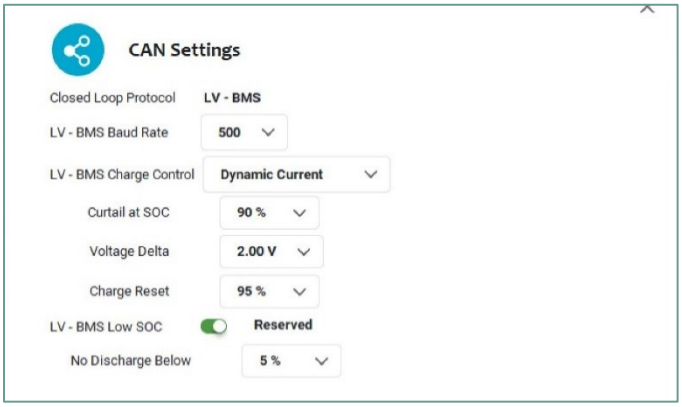
3. From the LV-BMS Charge Control menu, select Dynamic Voltage or Dynamic Current.



a. Selecting Dynamic Voltage. Select the bottom-end discharge level.
Note 1: *Older inverters designed for lead-acid batteries work best with Dynamic Voltage.*
Note 2: *At this setting, the battery will send a "no-discharge" request to the inverter, which should turn off the AC output and prevent the battery from reaching BMS shutdown.*



b. Selecting Dynamic Current. **When selecting this option, the default values work for most applications. You can simply click Save.** If you choose to customize the settings, read the following instructions first.



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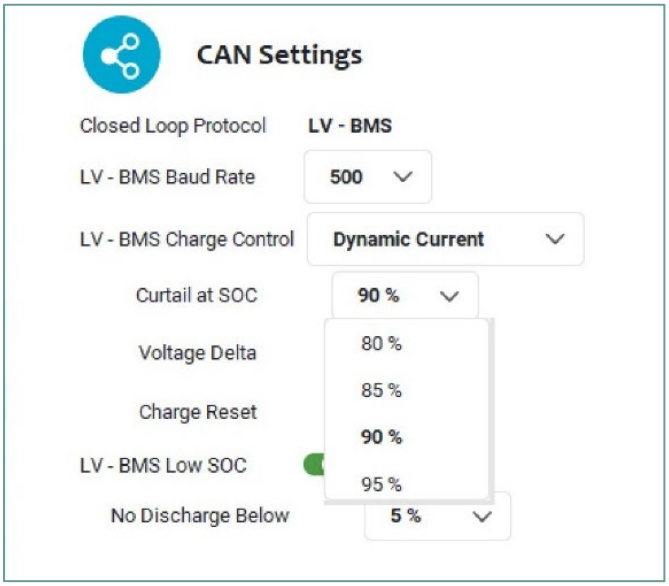
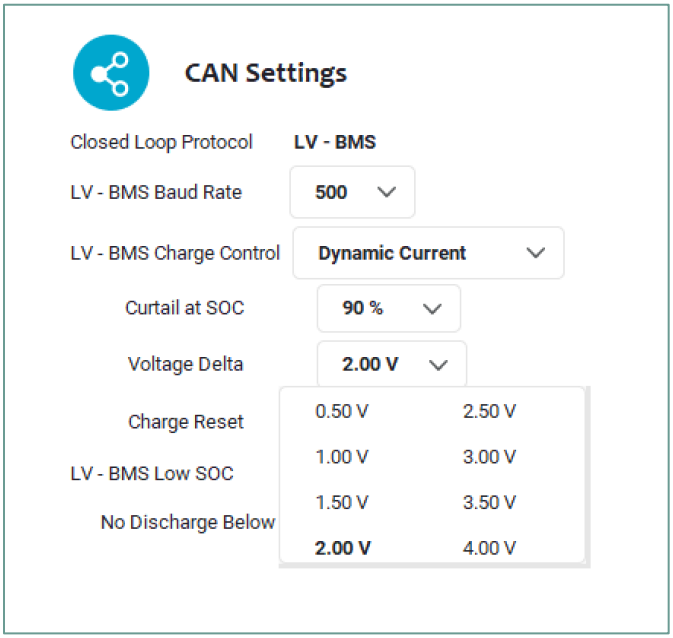
i. Choose the SOC when charging should slow down or stop. Use 80-85% for high charge currents, or up to 95% for lower charge currents. The default setting of 90% is suitable for most installations.



ii. Voltage Delta. This controls how quickly the charge current tapers based on the difference between the pack voltage and the algorithm's target voltage (56.0 V). The default value is 2.00 V and **should not be changed** unless you are certain about the adjustment. **NOTE: Higher values produce a slower current-taper response. Lower values produce a faster taper. Adjust only if you are certain the change is required for the application.**



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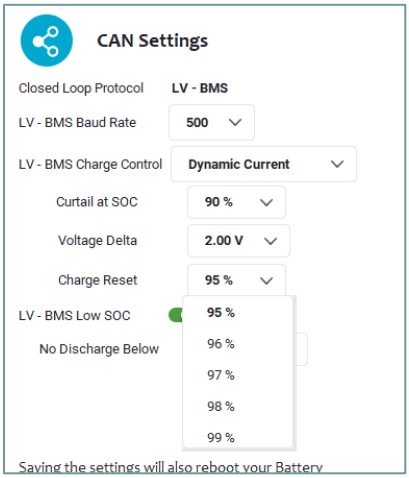
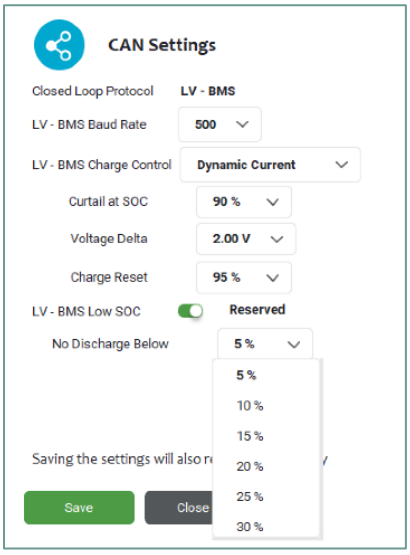
iii. The Charge Reset value defines the SOC hysteresis used to restart charging after a full charge cycle. When the battery falls below this SOC threshold, the system resumes charging. This ensures the battery does not repeatedly cycle at the top of charge.



iv. LV-BMS Low SOC is independent of the Dynamic Current setting and can be adjusted. The bottom-end discharge level defines the reserve capacity and instructs the inverter to stop discharging by setting the discharge current request to zero and issuing a “no-discharge” command. The function is intended to prevent deep discharge events that would otherwise require manual recovery.



4. Save the settings. This will restart the LYNK II and/or the battery.

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