

Standard Operating Procedure: Local & Remote BMS Firmware Flashing via Service Tool v4.1

Purpose

This standard operating procedure instructs field service technicians and remote support engineers on flashing and validating embedded firmware for Master Controllers (**BMS-MST-GEN2**), Slave Balancing Boards (**BMS-CAS-LFP**), and Inverter DSP Gate Drivers (**PCB-DRV-3500**).

Pre-Flashing Prerequisites

- Field service laptop must be equipped with Gigavolt Service Tool v4.1, Peak PCAN-USB Pro interface adapter, and valid Level 3 Engineering Cryptographic Token.
- Laptop battery must maintain > 75% charge, and power saving modes must be disabled to prevent USB dropouts during flashing.
- Enclosure system must be placed in **STANDBY** mode. Active charging or discharging during firmware update will result in permanent hardware lockup ("bricking") of microcontroller flash memory.

Execution Steps: Firmware Upgrade Sequence

1. **Download and Checksum Validation:** Obtain the official production firmware container (**.gvfw**) from the Gigavolt Engineering Repository. Calculate SHA-256 hash. Compare against published release notes:
 - Target DSP Version: **v2.4.11-b**
 - Target Slave BMS Version: **v3.1.04-rel**
2. **Master Controller Flashing:** Connect USB-CAN adapter to Service Port **CAN-SERV-01**. Select "Master Controller Flash". The flashing utility will erase Flash Sector 2 through Sector 7 and write the new binary image (Estimated duration: 180 seconds).
3. **Sequential Slave Broadcast:** Select "Multi-Drop Slave Broadcast". The Master Controller will forward the slave image to nodes 1 through 24 sequentially over the

internal isolated CAN link. Verify that each node completes cyclic redundancy check (CRC-32) verification.

4. **Post-Flash Reboot & Calibration Verification:** Execute soft system reset. Verify that all 24 nodes report their firmware versions accurately in the system inventory table. Check that no persistent communication faults ([ERR_BMS_301](#)) or invalid sensor calibration codes remain active.