Technical Bulletin

LiFT Pack S8 Update Process

This bulletin is to notify the user that a firmware update is needed on their LiFT Pack S8 battery.

Batteries Affected
All S8 model year 2020 batteries with a serial number that begin with 200****. The serial number of the battery is located on the battery I.D. plate which is on the top face of the battery.

Identifying the Issue
We have identified that if a LiFT Pack S8 BMS2 battery, with the appropriate serial number listed above, is not equipped with the newest firmware 2.0.4.12, then there is a risk that the battery may over-discharge due to its heater equation. It may also cause the battery to malfunction resulting in the unexpected application of the emergency brake or momentary loss of regenerative braking on the jack. Therefore, the battery should be re-flashed to firmware 2.0.4.12 by a service technician. Follow the procedure below to identify the batteries firmware version and update if necessary.

Firmware Update Process
Perform the following steps in each phase to properly update the battery's firmware. The overall estimated time to complete this process is about 18 minutes.

Phase 1: Connecting to the Battery (estimated time: 2 minutes)
1. Make sure that the battery is fully charged (100% SOC) prior to conducting this process.
    a. If the battery has no lights on the SOC gauge, then it is severely over-discharged and will need to be trickle charged.
    b. Refer to the Flux Power's "Service Guide for Over Discharged LiFT Packs" document on the Flux Power website to properly jump the battery.
2. Obtain the proper GUI (Flux Connect – System Monitor GUI v2.0.1.13) onto a laptop or tablet to connect to the battery.
    a. If the device is not equipped with this version of the GUI then contact a Product Support representative.
3. Establish a proper connection by connecting the PCAN dongle's USB end to the device and the 12-pin diagnostic end into the battery's communications port.
    a. If a PCAN dongle is needed, then contact a Product Support representative to obtain one.

Phase 2: Update the Battery's Firmware (estimated time: 10 minutes)
1. Firmly close the circuit breaker by pushing the yellow tab all the way inside the breaker.
2. Create a folder on your device's desktop and title it the serial number of the battery.
3. Open the GUI and go to the Firmware Tab.
4. The current firmware is displayed alongside the statement "Current Firmware".
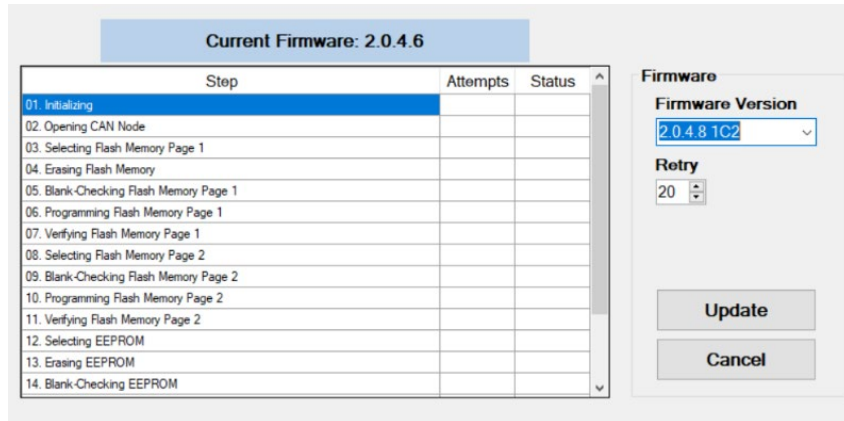
a. If the firmware displayed is 2.0.4.12 then is there no need for further action. You can then skip to Phase 3 step 1.
b. If the firmware displayed is not firmware 2.0.4.12 then continue onto the next step.

5. Click on the bottom arrow in the search box titled "Select Firmware".
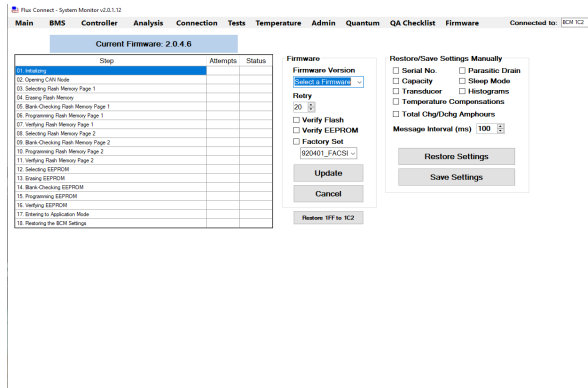
a. If firmware 2.0.4.12 does not appear in the drop-down list, then contact a Product Support representative.

6. Select firmware 2.0.4.12 and click the "Update" button.
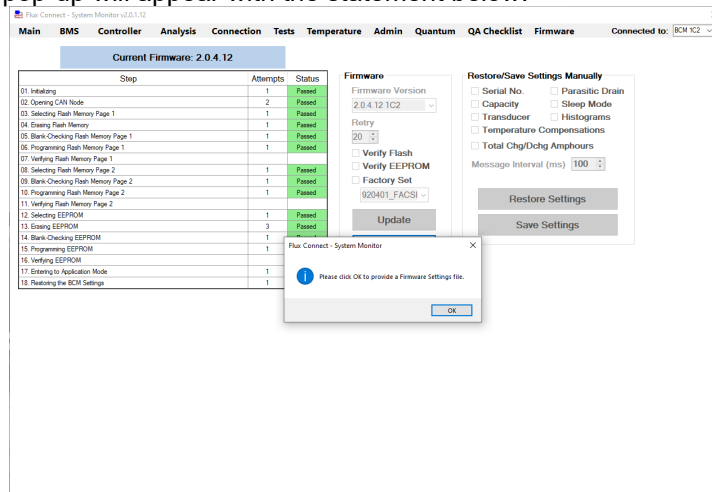7. The following pop-up will appear with the statement below.
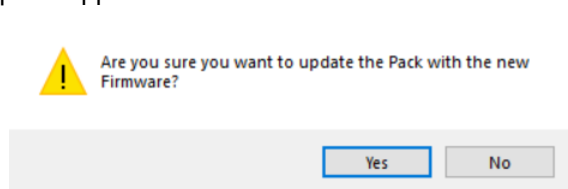
a. Wait for about one minute and then click "Yes".
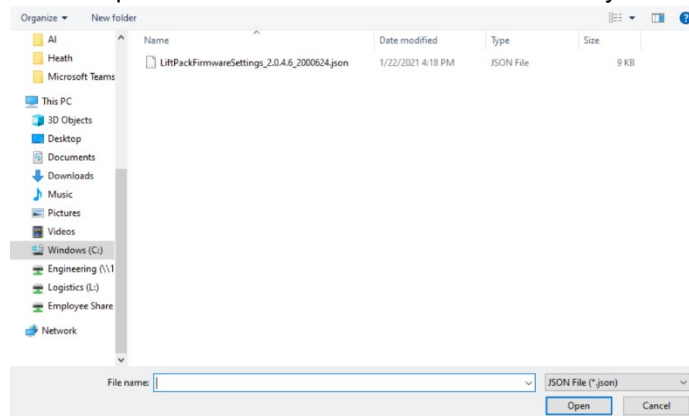
8. The table to the left will now begin to populate.

Current Firmware: 2.0.4.6

Step	Attempts	Status
01. Initializing	1	Passed
02. Opening CAN Node	2	Passed
03. Selecting Flash Memory Page 1	1	Passed
04. Erasing Flash Memory	1	Passed
05. Blank-Checking Flash Memory Page 1	1	Passed
06. Programming Flash Memory Page 1	1	Passed
07. Verifying Flash Memory Page 1		
08. Selecting Flash Memory Page 2	1	Passed
09. Blank-Checking Flash Memory Page 2	1	Passed
10. Programming Flash Memory Page 2	1	Passed
11. Verifying Flash Memory Page 2		
12. Selecting EEPROM	2	Passed
13. Erasing EEPROM	3	Passed
14. Blank-Checking EEPROM	1	Passed

    a.   This section of the process may take about 7 minutes.

    b.   Firmware 2.0.4.12 should now be displayed alongside the "Current Firmware" statement.

9. The following pop-up will appear with the statement below.

    a.   Click "Ok".

10. A window will automatically appear asking to open a file from your device. On this same window, select the file name that possesses the serial number of the battery and click "Open".

11. The following pop-up will appear with the statement below.

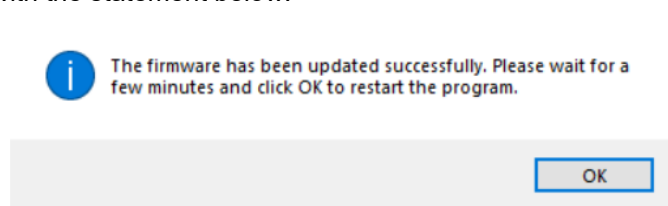> ⚠ The program is about to restore the BCM settings with Firmware 2.0.4.6 and Serial No. 2000624. Please confirm if the information is correct.
>
> [OK] [Cancel]
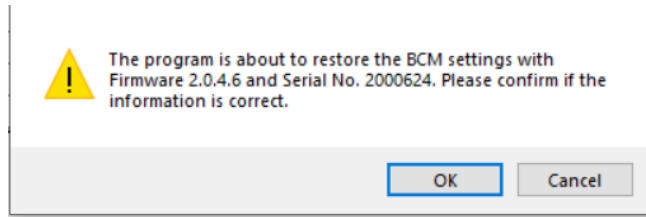
    a. Click "OK".

12. Allow the program to keep running and do not click "CANCEL". After a minute, the following pop-up will appear with the statement below.

> ⓘ The firmware has been updated successfully. Please wait for a few minutes and click OK to restart the program.
>
> [OK]

    a. Click "OK".

13. The GUI will close and reopen automatically.

Phase 3: Update the Battery's Factory Settings (estimated time: 5 minutes)

1. Go to the "QA Checklist Tab".
2. Click on the drop-down arrow on the right hand of the screen (E).

Capacity from I.D. plate	Factory settings
Flux Power 72AH	920401_FACSET_S8_BMS2_FX_72_rB
Flux Power 100 AH	920402_FACSET_S8_BMS2_FX_100_rB
Flux Power 180 AH	920403_FACSET_S8_BMS2_FX_180_rB

    a. The Ah of the battery is displayed on the battery's I.D. plate.
    b. Select the factory settings with the corresponding Ah of the battery.

3. Click the "Factory Settings" button (A) and allow the table to the left to populate.

Setting	Default Value/Threshold	Value	Result
Ews Mode	Enabled	Enabled	Pass
Charger Max Current (A)	27.00	27.00	Pass
Charger Max Voltage (V)	27.84	27.84	Pass
Over Current Protection Charge (10s)	200	200	Pass
Over Current Protection Discharge (10s)	-200	-200	Pass
Over Current Protection Charge (2min)	1000	400	Fail
Over Current Protection Discharge (2min)	-1000	-400	Fail
Over Discharge Voltage	2.50	2.50	Pass
Over Discharge Timeout	10	10	Pass
Over Discharge Latch	Unlatched	Unlatched	Pass
Current Sensor	HASS	HASS	Pass
Quantum Balancing	Disabled	Disabled	Pass
Quantum Imbal Voltages	Voltage1: 3.48 Voltage2: 3.55 Voltage3: 3.65	Voltage1: 3.48 Voltage2: 3.55 Voltage3: 3.65	Pass
Quantum Time Factors	Factor1: 0.225 Factor2: 0.45 Factor3: 0.5	Factor1: 0.225 Factor2: 0.45 Factor3: 0.5	Pass
Contactor Operation Check	Disabled	Disabled	Pass
Contactor Operation Check Polarity	NormallyClosed	NormallyClosed	Pass
Slave Strings	0	0	Pass
Balance Voltage Override	Enabled	Enabled	Pass
Node Dropoff	Enabled	Enabled	Pass
BMSM Count	2	2	Pass
BMSM Shunt Duty Cycle (%)	30	30, 30	Pass
BMSM Shunt Voltage Offset	0.01	[3.48, 3.48, 3.48, 3.48] [3.48, 3.48, 3.48, 3.48]	Pass

Buttons shown to the right of the table: 920405_FACSET_S8_BMS2_VF_10, Factory Settings ← A, Validate ← B, Print, Save As ← D, ☑ Validation Enabled ← C. E ↓

    a. It may take 1 minute for the table to populate.

4. Once the table has been populated, click on the "Validate" button (B).
    a. Use the scroll bar to scroll down the chart to make sure that all populated

categories in the table have "Passed".
5. If all categories have "Passed" then skip to step 7.
6. If at least one category has failed, then conduct the following:
    a. Click the "Factory Settings" button (A).
    b. Uncheck the "Validation Enabled" option (C).
    c. Click the "Validate" button again (B).
    d. Use the scroll bar to scroll down and make sure all categories are labeled as "Pass".
    e. If at least one category has failed, then repeat step 6.
    f. If step 6 has been repeated 3 times, then contact a Product Support representative.
7. Click on the "Save As…" button (D).
    a. Navigate to the folder that had been saved on the device's desktop to save this file.
    b. Title this file as the serial number of the battery.

Phase 4: Validating that the Update Process Worked (estimated time: 1 minute)
1. The firmware update process is now complete. To be sure that the process was completely successful conduct the following:
    a. Close the GUI.
    b. Cycle the breaker.
    c. Launch the GUI again.
    d. Navigate to the Firmware tab and ensure that the battery possess the new firmware 2.0.4.12
    e. If the new updated firmware is not present, then contact a Product Support representative for further assistance.
2. Ensure that the battery's SOC gauge is still at 100% SOC.
    a. If the battery's SOC gauge is not at 100% SOC, then plug the battery in to charge and allow the battery to reset itself to 100%.