

## Flux Power Prototype Jumper User Guide

## Table of Contents

1. Introduction .....	3
2. Recovery Setup.....	3
2.1 Battery Identification .....	3
2.2 Equipment Required .....	4
3. Connecting the Prototype Jumper .....	4
3.1 Internal Charger Prototype Jumper .....	5
3.2 Dyno Prototype Jumper .....	7
4. The 24V Power Jumper Plug .....	9
5. Reading the LiFT Pack's Voltage.....	10
5.1 Serial Numbers 170- or 180- (Flux Connect LiFT Pack GUI).....	11
5.2 Serial Number 200- (Flux Connect – System Monitor 2).....	12
6. Flux Power Contact Details.....	14

## 1 Introduction

These two Flux Power prototype jumpers, and one fully processed jumper, are intended for a specific range of Flux Power branded batteries only. Only LiFT Pack S-Series S8 batteries with a serial number beginning with a 170-, a 180-, or a 200- can be properly recovered from an overdischarged state with one of these prototype jumpers. Using them on any other type of Flux Power branded battery can cause significant damaged that can void the battery's warranty.

## 2 Recovery Setup

### 2.1 Battery Identification

Only LiFT Pack S-Series S8 batteries with a serial number beginning with a 170-, a 180-, or a 200- can be properly recovered with these prototype jumpers. The serial number of each battery, and battery type, can be found on the I.D. plate of the battery. A LiFT Pack S-Series S8 battery will have its I.D. plate stamped onto its top face. The serial number is displayed as shown in the figure below.

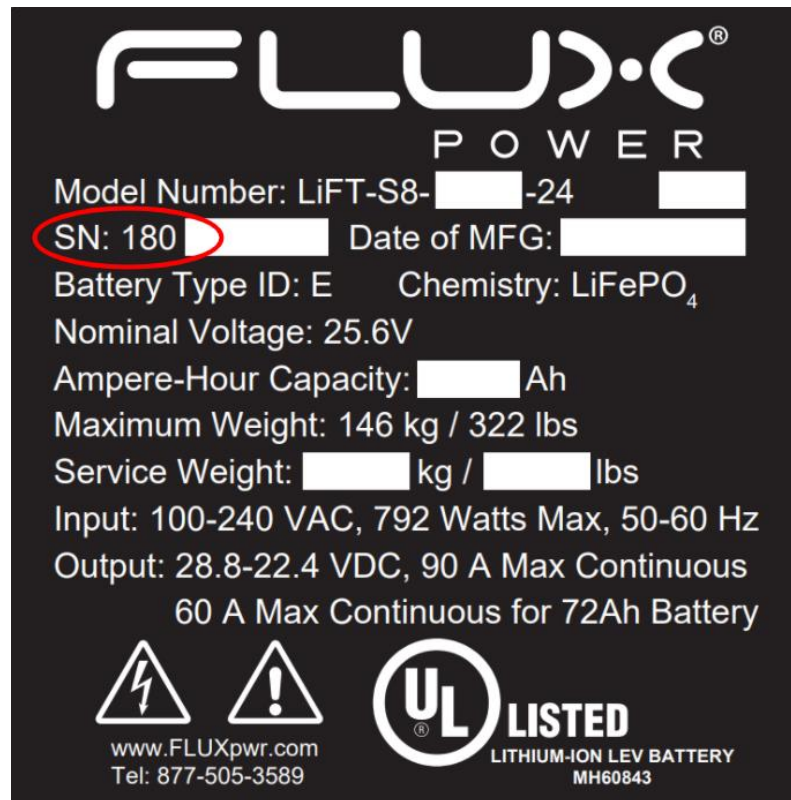


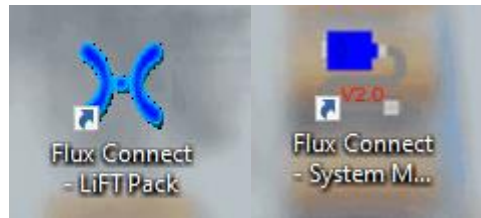
Figure 1: LiFT Pack S-Series S8 I.D. plate and serial number location

If the over discharged battery does not fit these requirements for prototype jumper use, then contact a Flux Power Product Support representative for further assistance.

## 2.2 Equipment Required

In addition to obtaining one of the prototype jumpers themselves, there are a few other components required to properly jump the battery. The required equipment is listed below.

1. A laptop or tablet equipped with the proper Flux Power Graphic User Interface (GUI) and PCAN drivers. A battery with a serial number of 170- or 180- will require a device with the Flux Connect LiFT Pack GUI. A battery with a serial number of 200- will require a device with the Flux Connect System Monitor 2 GUI. If the device is not equipped with the proper GUI or PCAN drivers then contact a Product Support representative to obtain these components onto your device.



**Figure 2: GUIs**

2. A PCAN dongle will also be required to properly connect the device to the battery. The prototype jumper will have a Communications Cable on its harness with a gray DB9 connection. This is where the PCAN dongle will connect to the prototype jumper. This connection is seen in the figure below. Contact a Flux Power Product Support representative to obtain this item if it is not already present.



**Figure 3: PCAN dongle connection**

## 3 Connecting the Prototype Jumper

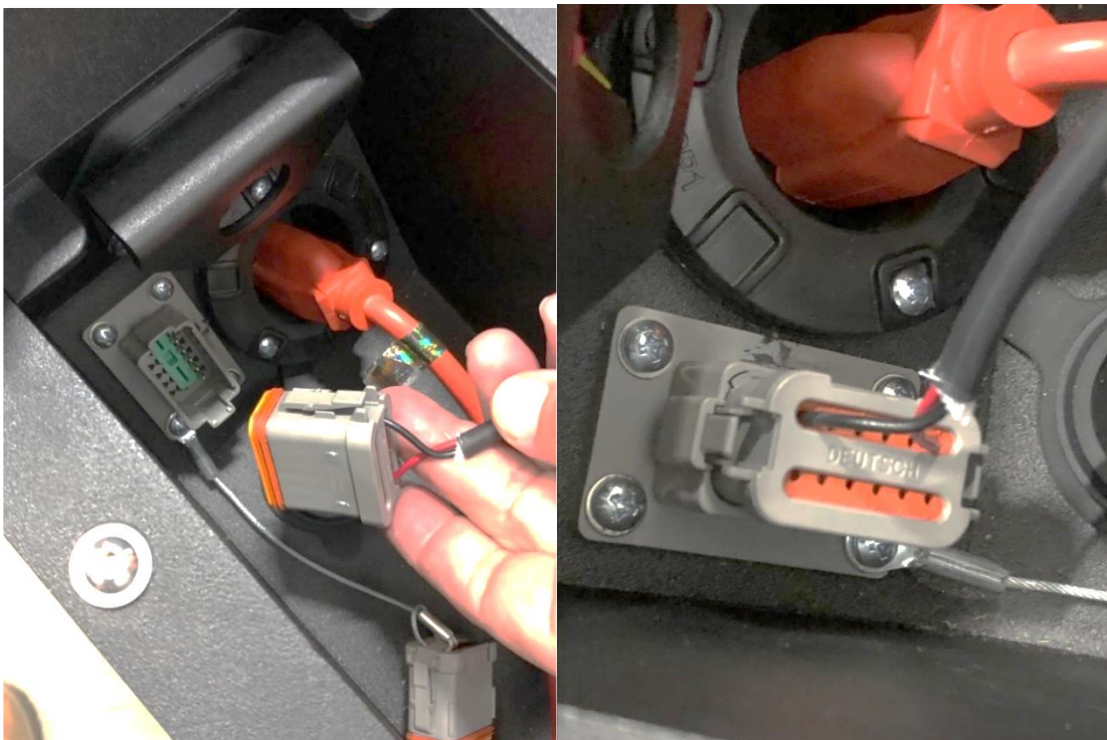
There are two prototype jumpers, and one fully processed jumper, that can be used to recover an overdischarged battery within the specified requirements listed earlier in this document. This section will cover the process of commencing the recovery process (properly assembling all connections). Section four will give guidance on what to observe when using the GUI. Both sections must be carried out properly. Failure to carry out both sections can cause significant damage to the battery and void its warranty.

## 3.1 Internal Charger Prototype Jumper



**Figure 4: Internal charger prototype jumper**

1. Close the circuit breaker on the battery. This is done by firmly pressing the yellow tab of the breaker back inside.
2. Do not plug the battery in to charge. This step will be conducted later.
3. Connect the charger's attached 2-pin output into the battery's communication port. Make sure that the red wire going into the 2-pin output is positioned below the black wire as seen in the image below.





# User Guide

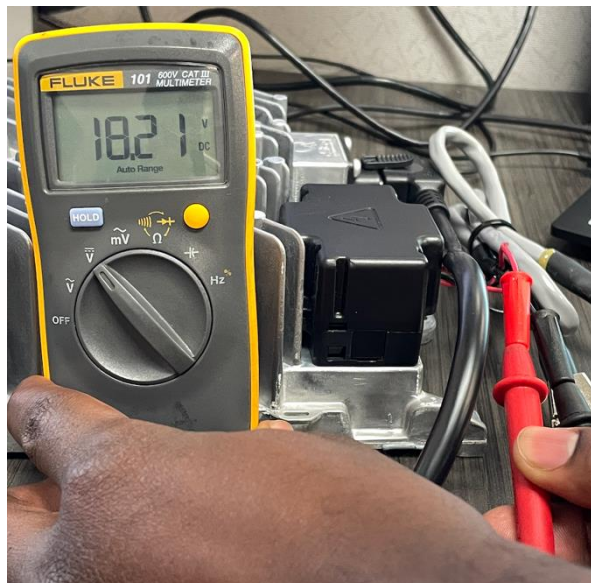
**Figure 5: Connecting the jumper to the battery**

4. Insert the voltmeter's leads into the corresponding red and black plugs attached to the charger. The voltmeter's positive lead will be inserted into the charger's red plug. The voltmeter's negative lead will be inserted into the charger's black plug.



**Figure 6: Connecting voltmeter to prototype jumper**

5. Set the voltmeter to volts DC.
6. Plug the AC cable into the charger.
7. Plug the charger's AC cable into the AC power source.
8. All the lights on the charger will illuminate at once. Then only the blue AC Power Indicator on the charger will stay on. A few seconds afterwards the green Battery Charging indicator and the yellow Charging Output Indicator (lightning bolt) will illuminate.
9. The voltmeter will display the battery's voltage as it begins to rise. At about 12V all the battery's components will be working so that the internal charger can begin charging on its own. Note, in the figure below the battery is at 2.245V, which means it still needs to be brought back up to its proper nominal voltage.



**Figure 7: Observing the battery's voltage from the prototype jumper**

10. As the battery approaches 18V the Delta Q jumper will output at a lower rate than before.
11. Once the voltmeter displays about 18V plug the battery into charge through its AC extension cord. If the battery does not reach 18V then continue to section 4.

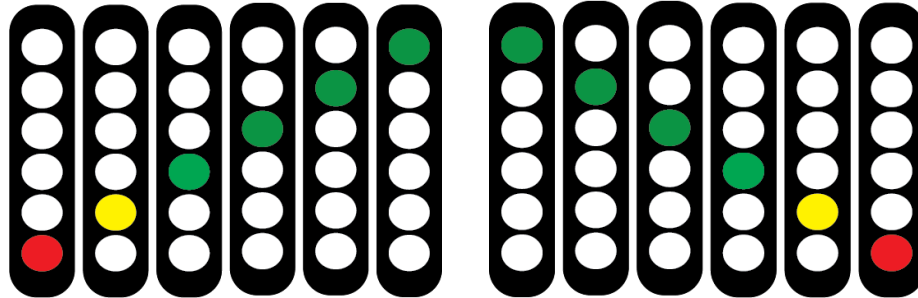


Figure 8: Cascading sequence of the lights on the SOC gauge during charging

12. A charging battery will have the LED lights on the State of Charge (SOC) gauge light up in a scrolling sequence. If the SOC gauge indicates that it is charging, then remove the prototype jumper from the communications port. If not, then proceed to section 4.

## 3.2 Dyno Prototype Jumper



Figure 9: Dyno prototype jumper

1. Close the circuit breaker on the battery. This is done by firmly pressing the yellow tab of the breaker back inside.
2. Do not plug the battery in to charge. This step will be conducted later.
3. Connect the Dyno's attached 2-pin output into the battery's communication port. Make sure that the red wire going into the 2-pin output is positioned below the black wire as seen in the image below.



**Figure 10: Connecting the jumper to the battery**

4. Insert the voltmeter's leads into the corresponding red and black stained inserts. The voltmeter's positive lead will be inserted into the red stained insert. The voltmeter's black lead will be inserted into the black stained insert.



**Figure 11: Connecting voltmeter to prototype jumper**

5. Set the voltmeter to volts DC.
6. Plug the jumper's attached AC cable into an AC power source.
7. The voltmeter will display the battery's voltage as it begins to rise. At about 12V all the battery's components will be working so that the internal charger can begin charging on its own.
8. As the battery reaches this 12V threshold the jumper will output at a lower rate than before. Once the voltmeter displays 12V plug the battery in to charge through its AC extension cable.



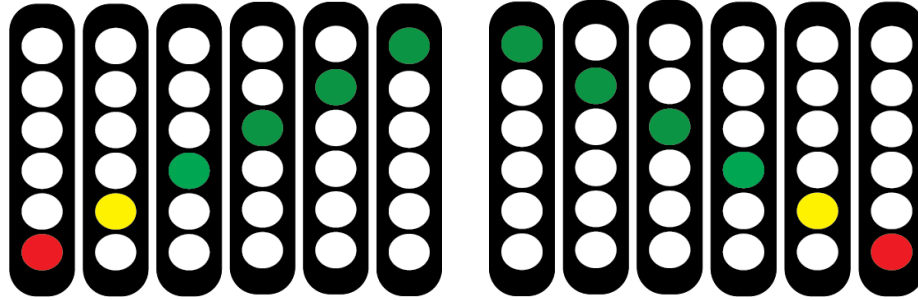


Figure 12: Cascading sequence of the lights on the SOC gauge during charging

9. A charging battery will have the LED lights on the State of Charge (SOC) gauge light up in a scrolling sequence. If the SOC gauge indicates that it is charging, then remove the prototype jumper from the communications port. If not, then proceed to section 4.

## 4 The 24V Power Jumper Plug



Figure 13: 24V Power Jumper

1. Close the circuit breaker on the battery. This is done by firmly pressing the yellow tab of the breaker back inside.
2. Connect the 24V Power Jumper Plug's attached 2-pin output into the battery's communication port. Make sure that the red wire going into the 2-pin output is positioned below the black wire as seen in the image below.
3. Plug the battery in to charge.



**Figure 14: Connecting the jumper to the battery**

4. There currently are no available connections on the 24V Power Jumper Plug that allow the user to read the battery's voltage with a voltmeter and or connect to the battery with a tablet or computer. Therefore, it is advised that the setup remain on the battery for about 30 minutes. At this point, remove the 24V Power Jumper Plug and allow the battery to charge on its own. If the battery does not charge on its own, then contact Product Support for further assistance.

## 5 Reading the LiFT Pack's Voltage

The GUI used to properly communicate with the battery is dependent on the battery's serial number. Refer to section 2 of this document to find out what serial number this battery has. The device will also need to be equipped with the proper PCAN drivers.

## 5.1 Serial Numbers 170- or 180- (Flux Connect LiFT Pack GUI)

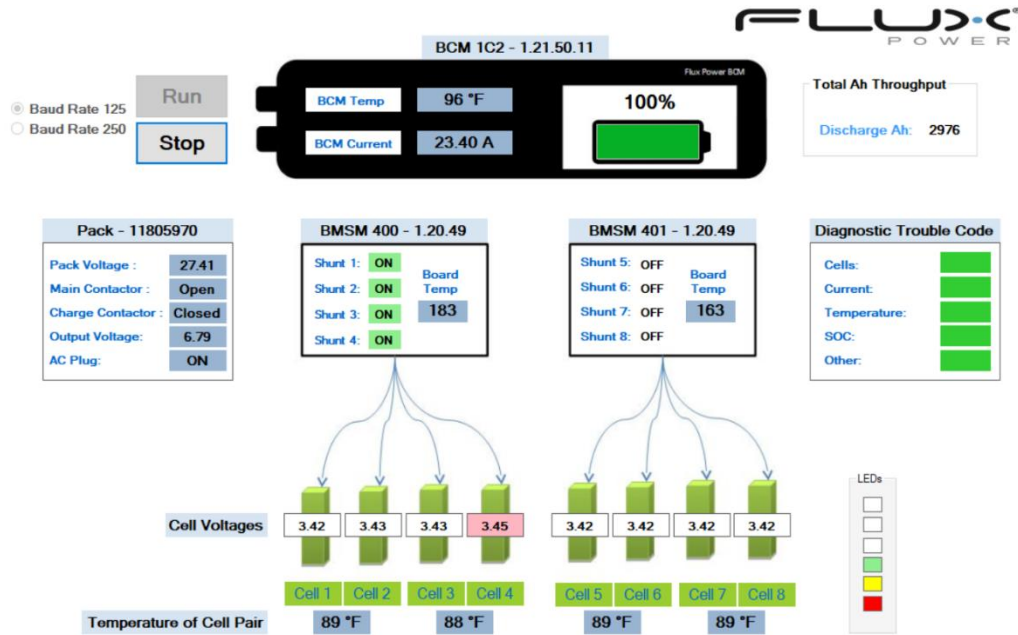


Figure 15: Flux Connect – LiFT Pack GUI

1. Connect the white USB end of the PCAN dongle to the DB9 connection from the prototype jumper's harness.
2. Open the GUI on the device.
3. Ensure that "Baud Rate 125" is selected.
4. Click on the RUN button.
5. If the GUI does not begin to populate then wait for the battery to complete its cycle to turn on. A fully populated GUI will display temperatures and all cell voltage values. This may take 2 minutes.
6. If the voltmeter is displaying 16-18V, and the GUI still does not populate after 5 minutes, then remove the jumper, turn off the battery, and contact a Product Support representative.
7. If the GUI does populate, then make sure that the AC Plug category on the screen is labeled as ON.
8. Check the value of the BCM Current on the top of the screen.
9. If the value is between 10A - 25A then the battery is now charging on its own after a successful jumping procedure.
10. If the value is between 0A – 2A then the battery's internal charger is not working. Please contact a Flux Power Product Support representative for further assistance.
11. Check the cell voltages of the battery on the bottom of the screen.
12. If the difference between the highest cell and the lowest cell is 2V or greater, then turn off the battery, remove all connections, and contact Product Support. Consider potential voltage scenarios and actions from the table below.

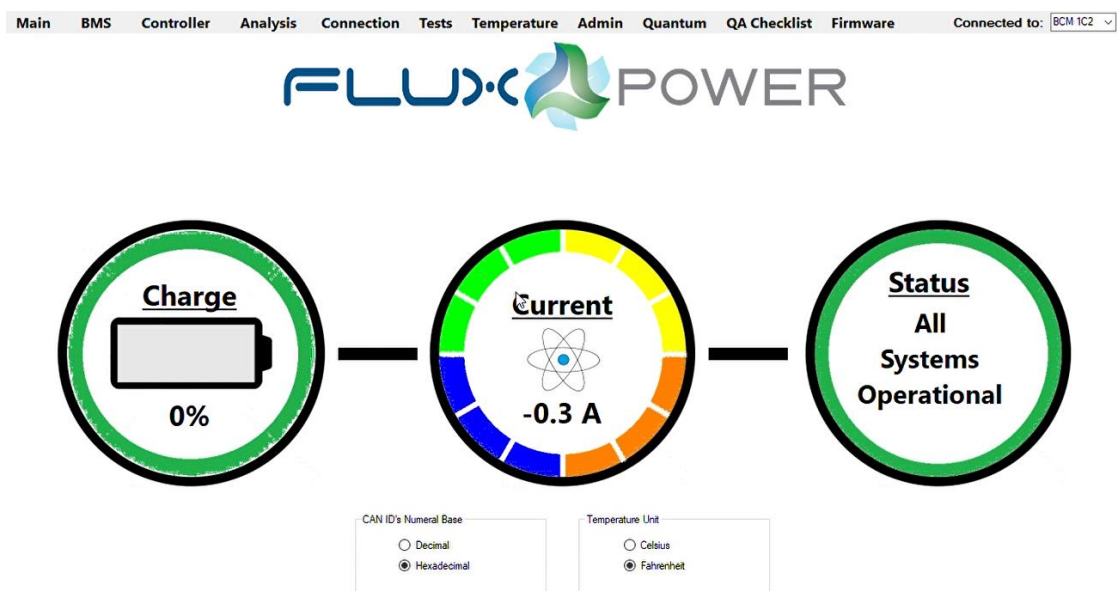
	High Cell (V)	Low Cell (V)	Voltage Difference (V)	Action
Scenario 1	2.8	0.8	2.0	Turn off the battery and remove all connections.
Scenario 2	2.8	1.0	1.0	Continue to monitor the cells. Pack has potential to balance but if voltage difference

				continues to increase then turn off the battery and remove all connections.
Scenario 3	3.3	2.3	1.0	Continue to monitor the cells. Pack has potential to balance. If voltage difference continues to increase, or remains the same, then turn off the battery and remove all connections.

**Table 1: Voltage difference tables for different scenarios**

13. If the cells slowly rise to 2.8V together, then remove the jumper and allow the battery to charge on its own.

## 5.2 Serial Number 200- (Flux Connect – System Monitor 2)



**Figure 16: Flux Connect – System Monitor 2 GUI**

1. Remove the battery's AC extension cable from its AC power source.
2. Connect the white USB end of the PCAN dongle to the DB9 connection from the prototype jumper's harness.
3. Open the GUI on the device.
4. A populated GUI will display some State of Charge (SOC) percentage and or some current draw that is not a constant 0.0A.
5. If the voltmeter is reading 16-18V off the battery, and the GUI still does not populate, then remove the jumper, turn off the battery, and contact a Product Support representative.

# User Guide

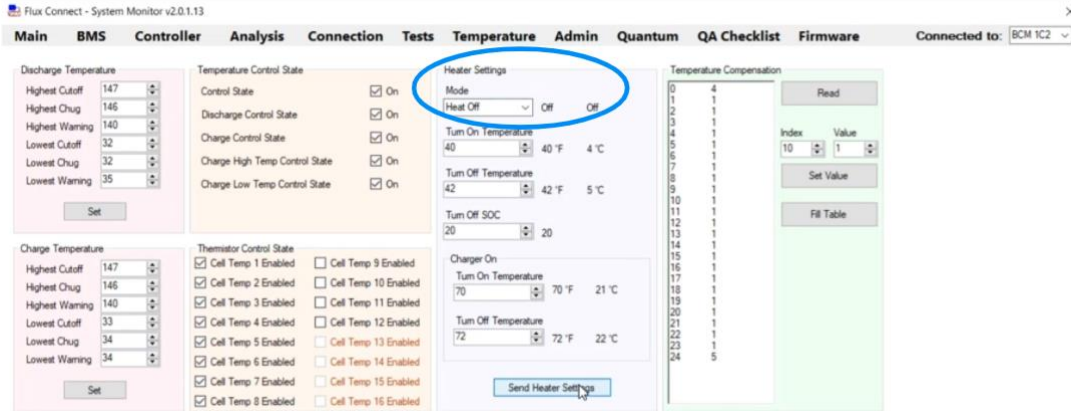


Figure 15: Temperature tab

6. Select the Temperature Tab on the top of the screen. Under Heater Settings, in the Mode option, change “Automatic” to “Heaters off”. Click on the “Send Heater Settings” button below.

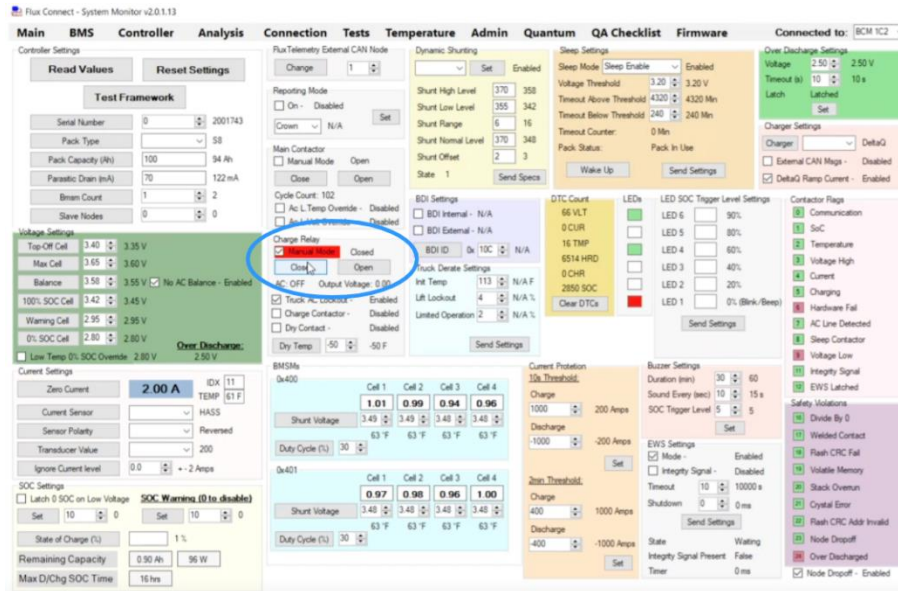


Figure 17: Admin tab

7. Select the Admin Tab. Under Main Contactor select the unmarked box for Manual Mode. Click on the “Close” button below that.

8. On the GUI, observe the current as it increases to 5A.

9. On the Admin Tab, ensure that all cells increase past 2.8V with the maximum difference between the highest and lowest cell being 2V. Otherwise contact a Product Support representative. Consider potential voltage scenarios and actions from the table below.

	High Cell (V)	Low Cell (V)	Voltage Difference (V)	Action
Scenario 1	2.8	0.8	2.0	Turn off the battery and remove all connections.



Scenario 2	2.8	1.0	1.0	Continue to monitor the cells. Pack has potential to balance but if voltage difference continues to increase then turn off the battery and remove all connections.
Scenario 3	3.3	2.3	1.0	Continue to monitor the cells. Pack has potential to balance. If voltage difference continues to increase, or remains the same, then turn off the battery and remove all connections.

**Table 2: Voltage difference tables for different scenarios**

10. On the top right of the screen under Over Discharge Settings, click on the “Set” button.
11. Select the Temperature Tab. Under Heater Settings, in Manual, change “Heat off” to “Automatic”. Click on the “Send Heater Settings” button.
12. Select the Admin Tab. Once all 8 cell voltages reach past 3V, then under Main Contactor, uncheck the box for Manual Mode.
13. The battery should now be charging on its own. If it is not, then contact Product Support.

## 6 Flux Power Contact Details

Flux Power Inc.  
Address: 2685 South Melrose Drive,  
Vista, CA 92081  
Tel: 877-505-3589  
Fax: 760-741-3535  
Email: [Support@fluxpower.com](mailto:Support@fluxpower.com)  
Web: [www.fluxpower.com](http://www.fluxpower.com)

WARNING – Risk of Fire – No User Serviceable Parts