# Turnigy FATBOY 8

## User's Guide


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This Turnigy product manufactured in Singapore by LEO Energy Pte Ltd, www.revolectrix.com

# Contents

# About FATBOY 8

- Simple to operate: just connect FATBOY 8 between a power source and a pack, select a pack-specific preset and start charging, discharging, cycling or monitoring. No jumpers, plugs or dials to set!
- Supports both balanced (depending on chemistry) and non-balanced charging (with certain safety limitations) of the following chemistries:
  - LiPo (1s to 8s balanced, 1s to 2s unbalanced; maximum charge rate of 2.0A for unbalanced charging).
  - Li-Ion (1s to 8s balanced, 1s to 2s unbalanced; maximum charge rate of 2.0A for unbalanced charging).
  - A123©/LiFePO4 (1s to 8s balanced, 1s to 10s unbalanced; maximum charge rate of 20A for unbalanced charging).
  - LiMn (1s to 8s balanced, 1s to 2s unbalanced; maximum charge rate of 2.0A for unbalanced charging).
  - NiCd (1s to 21s; maximum charge rate of 20A).
  - NiMH (1s to 21s; maximum charge rate of 20A).
  - 6V, 12V, 24V Lead Acid (Flooded, Gel, AGM, SLA).
- Holds up to 25 user configurable presets (User Presets), optimized for the different chemistries, providing charging strategies for most common RC charging needs. Also holds up to 50 Library Presets. Library presets can be copied to the User Preset bank at any time, at which point they become fully-functional.
- During balanced charging, each cell is balanced independently, providing exceptional charging safety and elevating RC packs to the safety level of cell phones. Typical packs of up to 4Ah capacity charge in 40 minutes or less using charger's 3C Auto Current Mode.
- Latest technology provides the ultimate in safety—even charges packs having hidden physical damage without danger of fire. A pack will not charge if individual cell voltages don't equal total pack voltage.
- Cell balancing to 78µV accuracy with a tolerance of 6mV and automatic over-charge protection assure longest pack life. Automatic temperature monitoring (adjustable by preset) prevents pack over-charging at low ambient temperatures and charger damage at high ambient temperatures. Cold weather settings adjustable per preset.
- Selectable modes: charge only, discharge only, cycle (charge/discharge any number of times) and monitor (no charge or discharge, just measure pack voltage).
- Selectable discharge:
  - Internal discharge 10mA to 10A, 100W max.
  - Regenerative discharge 10mA to 40A, 1344W maximum when powering the FATBOY 8 from a Lead Acid battery. Regenerative discharge takes most of that energy and puts it back into the input battery. For example, when you discharge a LiPo pack for storage, you will be recharging your Lead Acid input battery.
- Multifunction backlit display lets you select presets, replace default presets from a library and shows charging data such as individual cell voltages, charge current, supply voltage, and amount of charge (mAh) put into pack.
- FATBOY 8 Firmware Update Utility (Firmware Update Utility, a free download) allows you to update the charger's firmware to the latest version, take advantage of latest features, and restore the charger to Factory Default settings.

- Parallel charging takes advantage of the FATBOY 8's high power output. After connecting packs using Safe Parallel Adapters, simply tell FATBOY 8 how many packs are attached—the preset's charge/discharge rates are automatically multiplied by the number of parallel packs you specify.
- Setting Input Current Limiting prevents damage to your power supply or storage battery.
- Operates from any 12–32V DC power source. Inputs and outputs are protected against reverse polarity.

# Using FATBOY 8

## Quick reference

**IMPORTANT:** To prevent damage to the power source, you must specify the power source's voltage and current cutoffs before charging for the first time with a DC power supply, and before charging for the first time from a battery. After that, update the power source's operating characteristics any time you change to a different DC power supply or battery.

This quick reference lists common FATBOY 8 tasks. What do you want to do?

| To do this… | Do this… | |
|---|---|---|
| Select power source type* | 1. Apply power. | |
| | 2. Press any button. | |
| | 3. At the **Power Source?** screen, use the **INC** or **DEC** button to select **Battery** or **DC Power Supply** (i.e., what is currently powering the FATBOY 8). | |
| | 4. Press **ENTER** to display User Preset menu. | |
| Navigate the menus | ▪ In the User Presets menu: Press **INC** and **DEC** to scroll through User Presets. Press and hold **INC** or **DEC** to scroll rapidly. | |
| | ▪ In the User Presets menu: Press **ENTER** to set up to charge with the displayed preset. | |
| | ▪ In menus: Press **INC** and **DEC** to scroll through options. Press and hold **INC** or **DEC** to scroll rapidly. | |
| | ▪ In menus: Press **ENTER** to select the displayed option and move to the next screen. | |
| | ▪ Press **BACK** to go back one screen. | |
| | ▪ Press and hold **BACK** to go directly to the User Presets menu from any location. | |
| | ▪ Press **INC+DEC** (i.e., simultaneously) to access **Preset Settings**, **Charger Options**, **Manage Presets** and **Button Help** functions. | |
| Connect a pack | ▪ For balanced charging at any current: Attach pack discharge wires to Output jacks using banana cable, attach 9-pin connector to Balance Port (may require adapter). | |
| | ▪ For non-balanced charging: Attach pack discharge wires to Output jacks using banana cable. | |
| Charge, discharge, cycle or monitor a pack | 1. Apply power and select power source (see above). | Details |
| | 2. Connect pack. | |
| | 3. Press **INC** or **DEC** to select desired User Preset, then press **ENTER**. | |
| | 4. For each question, press **INC** or **DEC** to select correct answer, then press **ENTER**. | |
| | 5. **CHECKING PACK** indicates FATBOY 8 is attempting to detect attached pack. | |
| | 6. Screen displays preset's chemistry. If this matches pack's chemistry, press **ENTER** to start. (If they don't match, just wait for the next prompt, then press **ENTER** to return to the User Preset menu.) | |

| | | |
|---|---|---|
| | 7. During the operation:<br>• Press **INC** or **DEC** to view data.<br>• Press **ENTER** to change charge current.<br>• Press and hold **ENTER** to stop the operation. | |
| | 8. "Beep beep beep" indicates the operation is complete. Display shows elapsed time. Press **INC**/**DEC** to review data. Operation is complete, but "session" remains open so you can review collected data. Press and hold **ENTER** to terminate session (this erases session data). | |
| | 9. Disconnect pack. | |
| | 10. Press **ENTER** to return to User Preset menu. | |
| Charge packs in parallel | To ensure safety, only use Hobby King Safe Parallel Adapters and stackable safety banana plugs when charging/discharging/cycling packs in parallel. Connect up to 9 batteries of same chemistry, cell count and capacity in parallel by stacking banana plugs. Charge as above, but enter number of packs at **Parallel Packs?** question (e.g., 2P, 3P, 4P). FATBOY 8 multiplies preset's current setting by the number of "P" selected. | Details |

# Setting Input Current Limiting

**IMPORTANT:** To prevent damage to the power source, you must specify the power source's voltage and current cutoffs before charging for the first time with a DC power supply, and before charging for the first time from a battery. After that, update the power source's operating characteristics any time you change to a different DC power supply or battery.

You can set a variety of operating options, including the very important Input Current Limit and Input Low Voltage Cutoff. Because the FATBOY 8 is capable of high power output, **it is strongly recommended that you set Input Current Limiting and Low Voltage Cutoff settings before you use the FATBOY 8 for the first time**, and set it again any time you significantly change the power source - either DC power supply or Lead Acid battery.

The FATBOY 8 stores two profiles: one for a DC power supply and one for a Lead Acid battery. When you apply power to the FATBOY 8, the first thing you do is select the profile that matches the power source you are using. This makes it easy to change the profile from a DC power supply at home to a Lead Acid battery at the field.

If you don't configure Input Current Limiting and Low Voltage Cutoff to match your power source(s), these are the factory default settings:

- DC supply power source:
  - Voltage lower limit: 10V
  - Current upper limit: 25A
- Battery power source:
  - Voltage lower limit: 11V
  - Current upper limit: 25A
- Regenerative discharge, when enabled (it is disabled by default):
  - Regenerative voltage upper limit into Lead Acid battery: 14.40V
  - Regenerative current upper limit into Lead Acid battery: 10A

**Note:** All of the above parameters can be adjusted directly on the FATBOY 8, except Regenerative Amps and Regenerative Voltage, which are fixed.

The following procedure sets Input Current Limit and Input Low Voltage Cutoff for either a DC power supply or a Lead Acid battery.

1. Connect FATBOY 8 to a 10–32V DC power supply or Lead Acid battery.
2. Press any button on FATBOY 8's panel.
3. At the **Power Source?** screen, use the **INC** or **DEC** button to select **Battery** or **DC Power Supply** (i.e., what is currently powering the FATBOY 8).
4. Press **ENTER** to display the User Preset menu.
5. Press **INC+DEC** (i.e., press both **INC** and **DEC** at the same time) to display the Options menu (**Choose TASK?**).
6. Press **INC** or **DEC** until you see **Charger Options**, then press **ENTER**.
7. At the **Power Source?** screen, press **INC** or **DEC** to select **DC Power Supply**, then press **ENTER**.
8. At the **Supply Current Limit?** screen, press **INC** or **DEC** to specify the current limit appropriate for your DC power supply, then press **ENTER**. (Cutoff current should be

slightly less than the power source's maximum output current capability. To protect your power supply from damage, FATBOY 8 will never draw more current than you specify here, but charge current may not reach the preset or manually set value.)

9. At the **Low Sply Limit?** screen, press **INC** or **DEC** to specify the cutoff voltage, then press **ENTER**. (Cutoff voltage should be about 50% lower than the power supply's nominal output voltage. Example: For a 24V power supply, set the cutoff voltage to 12V. To protect your power supply, charging stops if the power supply's voltage drops below the value you set here.)
10. At the **Use Regenerative Discharge?** screen, press and hold the **BACK** button, as this feature does not apply to DC Power Supply setup. You will be returned to the User Preset menu. You have now successfully set Input Current Limit and Low Voltage Cutoff for your DC power supply or input battery. Next, repeat the process for your Lead Acid battery.
11. Press **INC**+**DEC** (i.e., press both **INC** and **DEC** at the same time) to display the Options menu (**Choose TASK?**).
12. Press **INC** or **DEC** until you see **Charger Options**, then press **ENTER**.
13. At the **Power Source?** screen, press **INC** or **DEC** to select **Battery**, then press **ENTER**.
14. At the **Battery Current Limit?** screen, press **INC** or **DEC** to specify the current limit appropriate for your Lead Acid battery, then press **ENTER**. (Maximum output current capability of Lead Acid batteries varies widely. Generally, a standard flooded Lead Acid car battery might deliver 25A continuously and 50A for short periods. An AGM style might not have any trouble delivering 50A continuously without suffering substantially shortened life. To protect your battery from damage, FATBOY 8 will never draw more current than you specify here, but charge current may not reach the preset or manually set value.)
15. At the **Bat. Low Cutoff?** screen, press **INC** or **DEC** to specify the cutoff voltage, then press **ENTER**. (Cutoff voltage should be no lower than 11V for a 12V Lead Acid battery. Lower cutoff will provide longer FATBOY 8 operating time at the expense of Lead Acid battery life. If you are using two 12V batteries in series for 24V operation, FATBOY 8 will automatically double the cutoff voltage you set here. To protect your power supply, charging stops if the power supply's voltage drops below the value you set here.)
16. At the **Use Regenerative Discharge?** screen, press **INC** or **DEC** to enable or disable this feature, then press **ENTER**. (Regenerative discharge puts energy back into a battery power source during pack discharge cycles.)
17. Press and hold the **BACK** button to return to the User Preset menu.

Input Current Limit and Low Voltage Cutoff setup is now complete. The next time you cycle power to the FATBOY 8, it will prompt you to select either DC Power Supply or Battery as the power source, but it will use the settings you entered to manage power from the selected source.

# Set options

**Tip:** A setting is saved as soon as you change it. Also, you don't have to go through the entire sequence below—at any time, you can press and hold the **BACK** button to return to the User Preset menu.

1. Connect FATBOY 8 to a 10–32V DC power supply or Lead Acid battery.
2. Press any button on FATBOY 8's panel.
3. At the **Power Source?** screen, use the **INC** or **DEC** button to select **Battery** or **DC Power Supply** (i.e., what is currently powering the FATBOY 8).
4. Press **ENTER** to display the User Preset menu.
5. Press **INC**+**DEC** (i.e., press both **INC** and **DEC** at the same time) to display the Options menu (**Choose TASK?**).
6. Press **INC** or **DEC** until you see **Charger Options**, then press **ENTER**.
7. The next screen is the **Power Source?** Screen. (See Setting Input Current Limiting for instructions on setting the Power Source and Regenerative Discharge options.)
8. Press **ENTER** until you see the **Node Connector?** Screen. For more information about wiring modes, see DEFAULT mode vs. XH/EH Wiring mode.
9. Press **ENTER** until you see the **Decimal Places for Cells?** screen. At the **Decimal Places for Cells?** screen, press **INC** or **DEC** to select **2** or **3**, then press **ENTER**. (This controls how many decimal places are displayed in cell voltage data screens.)
10. At the **Quiet Charging?** screen, press **INC** or **DEC** to select **Y** or **N**, then press **ENTER**. (**Y** = no beeps during charging, **N** = beeps during charging.)
11. At the **Speaker Volume?** screen, press **INC** or **DEC** to set speaker volume, then press **ENTER**. (1 = quietest. While setting volume, speaker beeps at volume shown on screen.)
12. At the **Charge Complete Beeps?** screen, press **INC** or **DEC** to set the number, then press **ENTER**. (This controls how many times FATBOY 8 repeats "beep beep beep" when charging is complete.)
13. At the **Preset Changes Always Save?** screen, press **INC** or **DEC** to select **Y** or **N**, then press **ENTER**. (**Y** = changes made to a User Preset at FATBOY 8 are always saved to the loaded preset). Setting to **N** is not recommended, but it provides a way to temporarily override preset parameters—once you move to another preset, any changes you made will be lost and the preset will revert to its previous state.) No matter what you choose for this option, you can always over-ride charge and discharge rate on-the-fly at the FATBOY 8 after a charge is started by pressing **ENTER**. This method never saves the changes to the preset in use.
14. At the **Choose TASK?** screen:
    - Press **INC** or **DEC** to select another setup function.
    - Press **BACK** to display the User Preset menu.

# Connect packs: basic

Always connect the pack to FATBOY 8's Safety Banana Output jacks and Balance Port.

The Balance Port accepts a 9-pin Turnigy balance connector, which supports packs up to 8s. If the pack has a different style balance connector, Hobby King offers a variety of adapters for most popular connector types and brands (visit the Hobby King Web site).

> **Note:** Best practice is to connect balance connector first, then connect discharge wires.

For non-balanced charging, connect the pack to the Safety Banana jack outputs only.

If stock Hobby King adapters don't work for your packs, you can make your own adapters using the Turnigy battery pigtail 10", 9 position, which consists of a 9-pin connector with un-terminated wires.

**See also**
Balance connector wiring
XH/EH wiring mode

# Power supplies

FATBOY 8 is one of the highest power RC battery chargers available. Running full power, it can deliver 1344W to batteries during charge. To achieve this, even on an 8 cell Li battery, it must boost the input voltage. This means the FATBOY 8 may draw up to 1600W from the input power supply.

To take advantage of FATBOY 8's full power capability, the power source should be 26.35V DC (higher voltage does not improve output power), and capable of delivering a minimum of 60A to FATBOY 8's input. Per Ohm's law, 26.35V x 60A = 1581W. However, it is generally not advisable to pull 100% of available power from a DC power supply. Therefore, if you want to attain 1344W of output power to an 8s Li battery, the power supply should be capable of 1700W or higher for best results.

Likewise, if you don't need FATBOY 8's full output power, it can operate from much lower power sources. Use the steps outlined in Setting Input Current Limiting to configure FATBOY 8 to never exceed the maximum capabilities of your input source(s), whether DC power supply or Lead Acid battery.

# Charge/discharge/cycle/monitor a pack

**Tip:** These detailed instructions will help you learn how to navigate through the charging process. For brief instructions, see the Quick reference. Once you become familiar with FATBOY 8 operations, you shouldn't need instructions at all.

**IMPORTANT:** To prevent damage to the power source, you must specify the power source's operating characteristics before charging for the first time with a DC power supply, and before charging for the first time from a battery. After that, update the power source's operating characteristics any time you change to a different DC power supply or battery.

1. Connect FATBOY 8 to a 10–32V DC power supply or 12–24V battery.
2. Press any button to display the **Power Source?** screen. Then:
   a. Press **INC** or **DEC** to specify the power source you are using.
   b. Press **ENTER**.

   **Note:** If this is the first time you are using this power source, you must specify the power source's operating characteristics at this time. If you previously specified power source operating characteristics, FATBOY 88 will use those settings.

3. Connect the pack to FATBOY 8:
   a. If the pack has a balance connector, connect the balance connector to FATBOY 8. (See Connect packs: basic for details.)
   b. Connect the banana jack cable between the pack/battery and the FATBOY 8.
4. In the User Preset menu:
   a. Press **INC** or **DEC** to locate the User Preset you want to use. Press and hold **INC** or **DEC** to scroll rapidly.
   b. Press **ENTER,** then go to step 5.

   Or

   c. Press and hold **ENTER**, then go to step 6 (if **Quick Start** is available for charging only; you can skip most questions).

   **Note:** If you will be charging LiPo pack(s) at 10A or higher, select a preset with **High Power** in its title.

5. For the selected User Preset:
   a. Press **INC** or **DEC** to select the correct answer to each question, then press **ENTER**.
      - **Parallel Packs?** (select **No** if charging a single pack, 2P to 9P for parallel connected packs; NOT ALLOWED for certain chemistries).
      - **Set Charge Rate?** (select a current).
      - **Set Dsch. Rate?** (select a current).

   b. At the **START?** question, select one of the following, then press **ENTER**:
      - **CHARGE ONLY** (i.e., no discharge).
      - **DISCHARGE ONLY** (i.e., no charge).
      - **MONITOR** (no charge or discharge, just monitor cell voltages).
      - **n CYCLE** (perform n charge/discharge cycles, as specified in preset).

> **Tip:** The number of cycles is specified in the preset. See Modify a Preset to change the number of cycles or any other aspect of the preset.

6. FATBOY 8 displays **CHECKING PACK** to see whether a pack is connected. If a pack is connected, then...
7. FATBOY 8 displays the preset's chemistry (for example, **LiPo**) and prompts you to verify it is the same as the pack's chemistry (which should also be, for example, **LiPo**). This safety check is your chance to prevent charging if the preset and pack don't match.
   - If the displayed chemistry matches the pack's chemistry, press **ENTER** to start charging. Go to step 9.

Or

   - If the displayed chemistry does not match the pack's chemistry, do nothing—the screen will time out. At the prompt, press **ENTER** to see the Preset Menu. Go to step 4.

8. During operations:
   - Press **INC** or **DEC** to view various charging data screens (the number of screens and the data displayed depends on how the User Preset is configured).

   Press **ENTER** to override the charge and discharge current (for this session only).

To stop the operation:

   - Press and hold **ENTER**. You'll see **CHARGER STOPPED**.
   - Press **ENTER** to return to the User Preset menu.

9. When the operation is complete, FATBOY 8 will "beep beep beep" several times and the display will show **ELAPSED [time] / [chemistry] DONE**. Press **INC** and **DEC** to review data screens.

> **Note:** NiMH, NiCd and Lead Acid user presets may switch to trickle charge (depending on how the preset is configured) when charging is complete.

> **Note:** The operation is now complete, but the "session" remains open so you can review collected data. Once you press and hold **ENTER**, data collected during the operation will be discarded. If you disconnect the pack before ending the session, FATBOY 8 will display a "Pack Removed" error. This is a non-critical error, and you can ignore it in this situation.

10. Press and hold **ENTER**. Screen displays **CHARGER STOPPED**.
11. Press **ENTER** or **BACK** to return to the User Preset menu.
12. Disconnect the pack from FATBOY 8.
13. FATBOY 8 is ready to charge another battery (step 3).

## Start faster

When following the instructions above, you probably noticed that FATBOY 8 asks a lot of questions before it starts a charge, discharge, cycle or monitor. That enables you to specify exactly what operations FATBOY 8 will perform. If all you want to do is Charge a battery, and once you have a preset configured properly:

Press and Hold **ENTER** to Activate the Quick Start option if you don't want to select options such as discharge/cycle/monitor. When activated, Quick Start lets you bypass

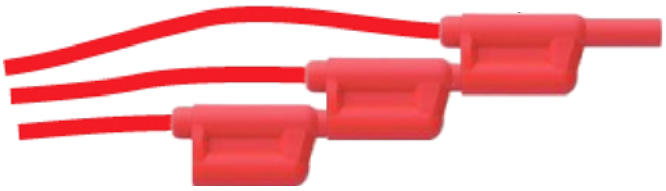
many of the questions needed to start a process.  FATBOY 8 will go straight into the CHARGE process using the preset's settings for charge current.

# Charge/discharge/cycle packs in parallel

FATBOY 8 can charge, discharge or cycle up to nine LiPo or A123 packs in parallel. Parallel operations can save a lot of time, but you must follow these rules:

- Always use Safe Parallel Adapters (available at the Hobby King Web site). Never use standard adapters.
- Connect only one pack per Safe Parallel Adapter. Daisy-chain multiple adapters!
- Parallel operations using Safe Parallel Adapters requires that you connect both the balance wires and discharge wires to the FATBOY 8.
- Always observe proper polarity!
- Packs must have the same cell count.
- Packs must be the same chemistry.

The best way to connect discharge wires in parallel is to stack the plugs on the safety banana cables like this:



Charging proceeds like single-pack charging, except at the **Parallel Packs?** question, use **INC** and **DEC** to specify the number of packs connected in parallel. FATBOY 8 multiplies the preset's charge/discharge rates by the number of "P" selected.

# Regenerative discharge

Regenerative discharge routes most of the energy from the pack being discharged back into the Lead Acid battery powering the FATBOY 8. This feature is only available when the FATBOY 8 is powered from a Lead Acid battery. Regenerative discharge supports up to 40A, 1344W maximum.

Regenerative discharge

- Enable/disable regenerative discharge at the FATBOY 8 using the instructions provided in this section for the supply battery.

FATBOY 8 automatically determines whether it is connected to a Lead Acid battery or a DC power supply. If it detects a power supply, it switches to internal discharge (10mA to 10A, 80W maximum).

# Modify a preset

You can change many preset properties directly on FATBOY 8. Use this procedure at any time.

1. In the User Preset menu, use **INC** or **DEC** to select the preset you want to modify. Press and hold **INC** or **DEC** to scroll rapidly.
2. Press **INC**+**DEC** to access options.
3. At the **Choose TASK? > Preset Settings** screen, press **ENTER**. You now see the first of several settings for the preset.
4. In each property screen:
   - Press **INC** or **DEC** to select the desired value, then press **ENTER** to save that value and move to the next screen.
   - Press **ENTER** to move to the next setting screen without changing the property.
   - Press **BACK** to move to the previous setting screen.
   - At any time, press and hold **BACK** to return to the User Preset menu. Property changes you made will be applied to the preset.
5. When you see **Choose TASK? > Preset Settings** again, you have completed a full pass through all properties for the preset.
6. Press **BACK** to return to the User Preset menu.

**See also**
Manage presets

# Manage presets

On FATBOY 8 you can:

- Clear a User Preset.
- Copy a Library Preset for use as a User Preset.

## Clear a User Preset

You can remove User Presets you don't need. For example, if you don't regularly charge A123 and Lead Acid batteries, you can remove those to limit the Preset Menu to the presets you do use.

1. In the User Preset menu, use **INC** or **DEC** to select the preset you want to clear. Press and hold **INC** or **DEC** to scroll rapidly.
2. Press **INC**+**DEC** to access options.
3. In the **Choose TASK?** screen, press **INC** until you see **Manage Presets**, then press **ENTER**.
4. In the **Clear Current Preset?** screen, press **INC** to display **Y**, then press **ENTER**.
5. In the **Confirm CLEAR Preset?** screen, press **INC** to display **Y**, then press **ENTER**.
6. In the **Preset Cleared** screen, press and hold **BACK** to return to the User Preset menu. You'll see **EMPTY PRESET** for the preset you just cleared.

## Copy a Library Preset

FATBOY 8 is equipped with up to 50 Library Presets. A Library Preset is a preset that can not be changed or used until you copy it to a User Preset slot. The Library already contains duplicates of the Factory Default User Presets, which can be copied to the User Preset slots, in the event you delete something and you want it back, and the Library also includes Presets which are not available in the User Preset bank by default. You can replace an existing User Preset with a Library Preset, or—if less than 25 User Presets are installed—you can create a new User Preset from a Library Preset by copying it into an EMPTY slot. After you load a Library Preset into a User Preset slot, you can change its properties.

1. In the User Preset menu, use **INC** or **DEC** to select the slot where you want the new preset. Selecting an **EMPTY PRESET** is usually better unless you are intentionally overwriting an existing preset. Press and hold **INC** or **DEC** to scroll rapidly.
2. Press **INC**+**DEC** to access options.
3. In the **Choose TASK?** screen, press **INC** until you see **Manage Presets**, then press **ENTER**.
4. In the **Clear Current Preset? > N** screen, press **ENTER**.
5. In the **Copy Preset from Library?** screen, press **INC** to display **Y**, then press **ENTER**.
6. In the Library Preset list, press **INC** or **DEC** to select the Library Preset you want to copy, then press **ENTER**.
7. In the Confirm COPY from Library? screen, press **INC** to display **Y**, then press **ENTER**.
8. In the Library Preset has been Copied screen, press and hold **BACK** to return to the User Preset menu. You'll see the new preset.
9. As needed, modify the new preset's properties.

# Using the Firmware Update Utility

## About the Firmware Update Utility

The free FATBOY 8 Firmware Update Utility (Firmware Update Utility) gives you the ability to update the firmware of the FATBOY 8 or Restore Factory Default settings. In order to connect the FATBOY 8 to the computer and use the Firmware Update Utility, you are required to use one of the PC USB available from Hobby King.

For more information on installing the FATBOY 8 Firmware Update Utility, visit the Hobby King website. You will require not only the Firmware Update Utility program, but also the correct driver for the PC USB interface.

### Launching the Firmware Update Utility Software

**Start > All Programs > Hobby King > Turnigy 10XC**.

### Connecting the charger to your computer

* The FATBOY 8 Firmware Update Utility is a free download. But to actually connect the charger to the PC and use the application you will require the PC USB Interface. This device also requires the proper driver to support your version of Windows.

1. If the Firmware Update Utility Software isn't running, launch it now.
2. Now plug the USB plug into your computer. Windows should locate the device and load the driver you just installed.
3. Now power up the charger and plug the 3-pin connector into the jack on the charger's left side. The black wire should be toward the outside of the charger's case.
4. With COM port set to "Auto" (Firmware Update Utility program lower left corner) watch the message line just below the program's menu bar.

- If "Waiting to Start" appears, everything is working properly and you are ready to use the program.
- If "Checking Com COMx for data" or "No Data from 10XC Charger" doesn't go away, the program can't communicate with the charger. To correct this, unplug the PC interface from the PC and the charger and begin again at Step 1 above. If problem persists, contact Hobby King Technical Support.

### Updating charger firmware

When you are ready to update the charger:

1. Be sure the charger is connected to the computer, and is powered up.
2. Disconnect all packs from the charger.
3. In the Firmware Update Utility program window, select the firmware you want to install.
4. Click Update Firmware.
5. Wait—and do nothing—until updating is complete.

**Note:** During firmware downloading, do not disconnect the charger from power, do not disconnect the charger from the computer, and do not exit the Firmware Update Utility Software. If the firmware update is compromised for any reason, disconnect the PC interface from the charger and from the PC, re-boot the computer, cycle power to the charger, then repeat steps 1 – 5 above.

## Restoring Factory Defaults

To restore Factory Defaults, click the “Factory Default” button

# Other information

## Charging tips

### General information

- Because FATBOY 8's cell balancing technology monitors individual cells, you don't need to cool a pack before charging it. Go from flying to charging to flying again without waiting.
- Cells in a pack have different voltages when they are discharged. FATBOY 8 balances (equalizes) cell voltages while it is charging the pack.
- During charging, cells that charge the fastest are the weakest cells in the pack. At the end of charging, cells with the highest voltage are weakest. This happens because weaker cells have lower capacity, and they charge faster than stronger cells.
- If FATBOY 8 displays **LOW VOLT RESTORE**, the pack was over-discharged during its last use or there is an issue with the wiring of the pack(s) connected. The charger will attempt to repair LiPo cells measuring between 0.5V and 2.7V, or A123 cells measuring 0V to 2.0V. To avoid additional damage to restored cells, do not over-discharge a repaired pack.

  **CAUTION: LOW VOLTAGE RESTORE** mode is designed to prevent fires when packs are damaged. If you see the FATBOY 8 go into this mode of operation, allow the pack to charge for a few minutes, then stop and re-start the charge. But do not continue the process. Locate the real cause of the problem. Continuing to force over-ride **LOW VOLTAGE RESTORE** can result in fire.

- By definition, end-of-life for a LiPo cell is when the cell can only be charged to 80% of its original capacity rating. The number of charge/discharge cycles a cell undergoes before reaching end of life depends on several factors, including cell quality, discharge rate, internal heat generated during use, and other parameters. Cells in an older pack may be more out of balance, but FATBOY 8 will still balance them to within 6mV by the end of charge. For this reason, it may take longer to balance older packs. The charger may show FUEL=99% for several hours while it is balancing a high capacity (3Ah and up) "veteran" pack that is severely out of balance, but User Presets might be set to stop balancing after a preset time. Often, the last few millivolts of balancing take a very long time and do not significantly improve overall pack charge or performance.

### Charging packs

- You can top off packs, or remove them when they are partially charged. There is no way to damage a pack when using FATBOY 8. (The only exception to this is if you are using Safe Parallel Adapters and you accidentally connect two packs having different number of cells together in parallel. This is less a function of the FATBOY 8 and more about assuring proper connection of packs to the FATBOY 8.)

- If a pack is at 80% or less of its capacity when connected to an auto-detect speed controller, the controller may lower its cut-off voltage. This could over-discharge the pack during the flight. Auto-detect speed controllers should properly set cut-off voltage if packs are charged to at least 90%.
- To save time, stop charging when the pack reaches about 95% of capacity. That last 5% takes the longest. By default, User Presets notify you with two beeps when a pack reaches 90% of capacity (that threshold can be easily adjusted using the Firmware Update Utility).
- Some cells may sag 0.10V within an hour after charging. This is normal as packs age.

## Storing packs

- For best results, LiPo and A123 packs should be stored at 50% of capacity. Use FATBOY 8's **LiPo All Brands Storage Charge** preset to prepare LiPo packs for storage, and the **A123 All Cpcty Storage Charge** to prepare A123 packs for storage.

  **CAUTION:** Be sure the storage preset matches the battery chemistry. Using the incorrect preset will damage cells.

- LiPo packs charged to 100% should not be cooled below room temperature. Cells at 90% or less capacity can be cooled below 32ºF (0ºC).

# DEFAULT Wiring mode vs. XH/EH Wiring mode

By default, the FATBOY 8 ships with the balance connector (output) set for FATBOY 8 DEFAULT wiring. This wiring mode supports FATBOY 8 adapters directly. However, FATBOY 8 also supports the popular XH/EH Wiring mode for the balance connector. In the DEFAULT Wiring mode, the FATBOY 8 always expects pack + on pin 9 of the FATBOY 8's balance port on the front of the unit. When switched to XH/EH mode, the FATBOY 8 will look for pack + on the last wire connected to the battery pack without any empty pins in between.

If you already own XH/EH adapters that came with another brand of charger, for example, it's easy to modify these to plug into the FATBOY 8's balance port by cutting the adapter's existing balance plug off and replacing it with the Turnigy 9 position battery pigtail. See illustrations on the following pages.

Then, set the FATBOY 8 to XH/EH mode as follows:

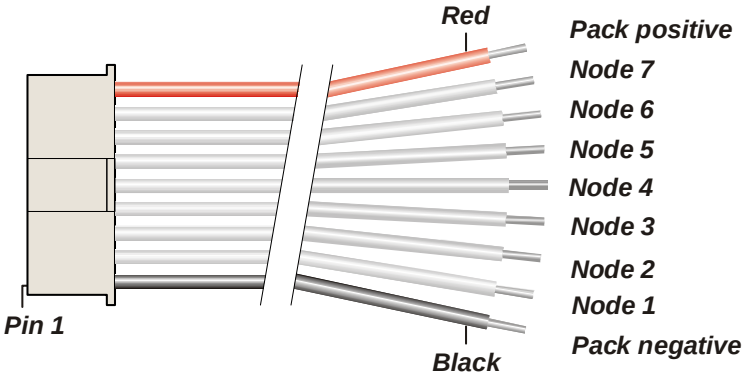
## Switching to XH/EH mode at the FATBOY 8:

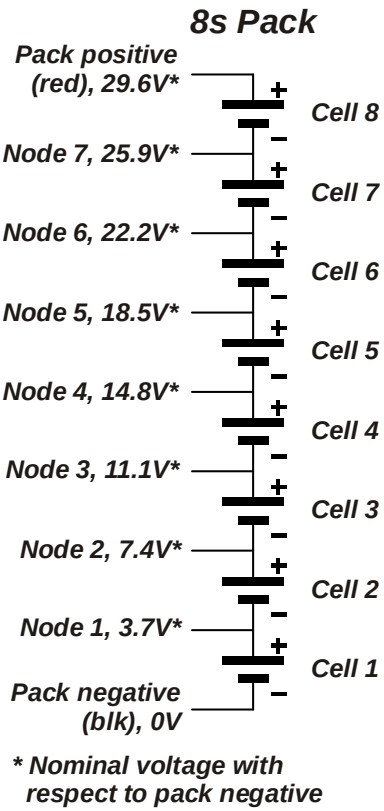
1. Press **INC+DEC** (i.e., press both **INC** and **DEC** at the same time) to display the Options menu (**Choose TASK?**).
2. Press **INC** or **DEC** until you see **Charger Options**, then press **ENTER**.
3. Press **ENTER** until you see **Node Connector?**
4. Press **INC** or **DEC** until you see **XH/EH Wiring** on line 2 of the LCD.
5. Press and Hold **BACK** to return to the Preset Menu. Your changes are saved the moment you make them.

# Balance connector wiring

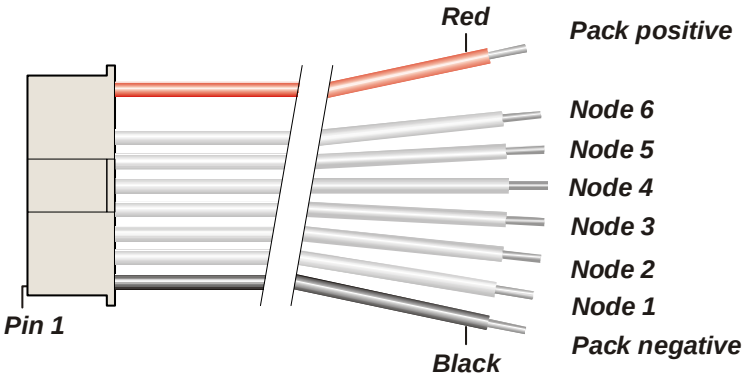
## When using DEFAULT Wiring mode (Factory Default Setting)

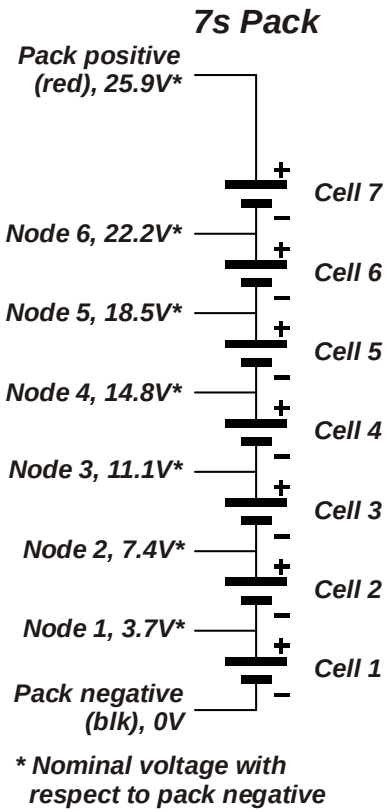
The following diagrams shows how a 9 pin Turnigy (JST PA series) balance connector must be wired to an 8s, 7s, 6s, 5s, 4s, 3s, 2s, and 1s battery pack when the FATBOY 8 is set to DEFAULT Wiring mode (Factory default). Whether the following is accomplished via the available adapters, or by physically connecting (soldering) the 9 pin Turnigy pigtail to a battery pack directly, this is what the FATBOY 8 must see at its balance connector (output):



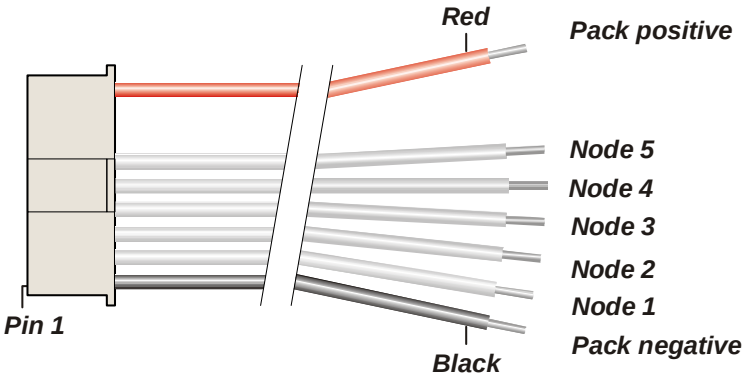



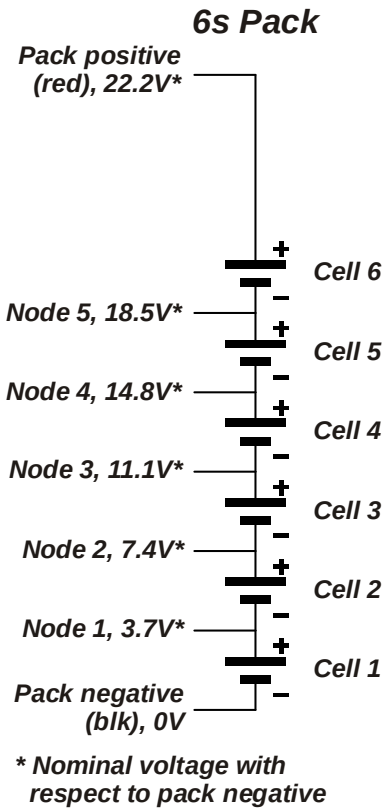

**Turnigy Connector/DEFAULT Wiring Mode**



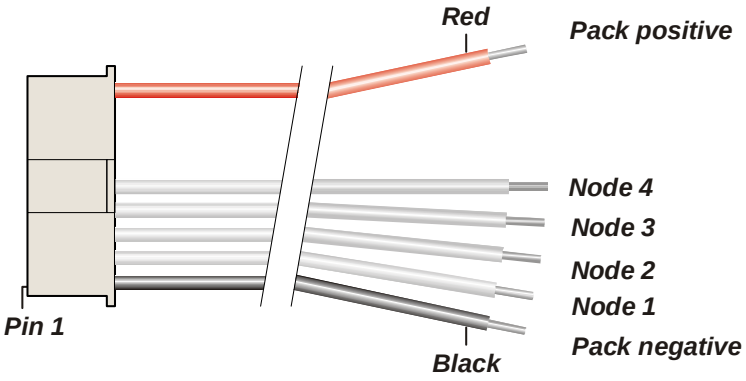



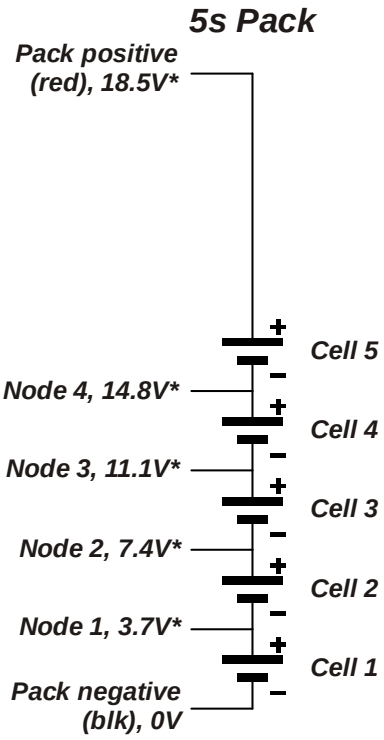

**Turnigy Connector/DEFAULT Wiring Mode**



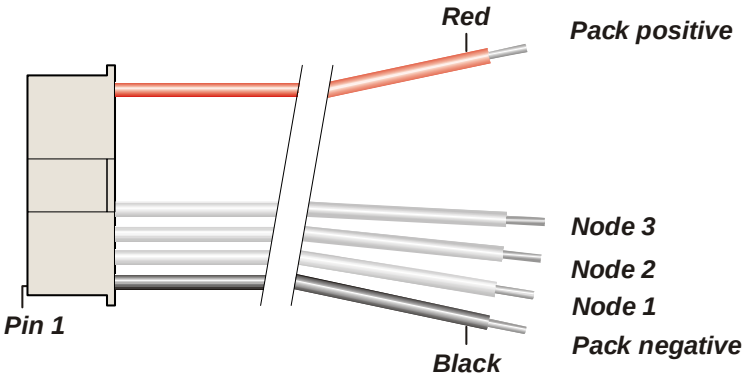



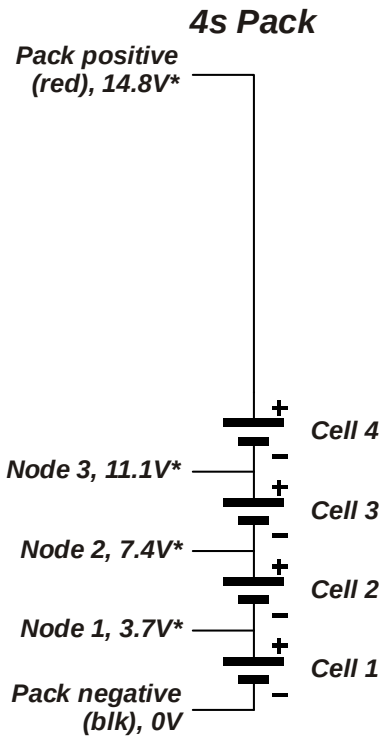

**Turnigy Connector/DEFAULT Wiring Mode**



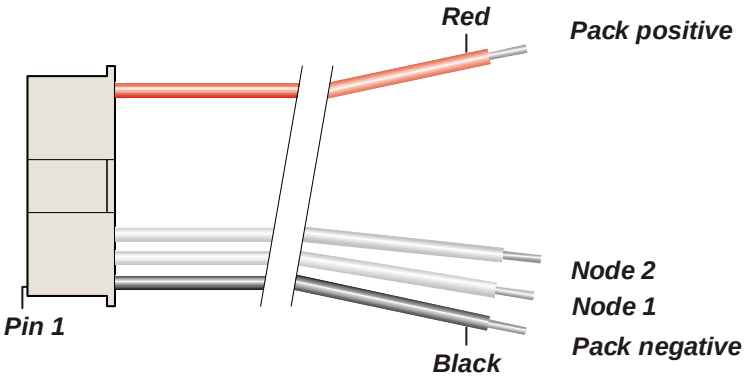



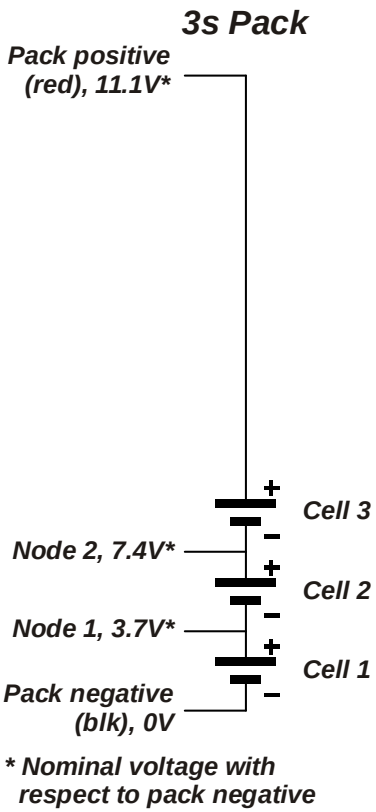

**Turnigy Connector/DEFAULT Wiring Mode**



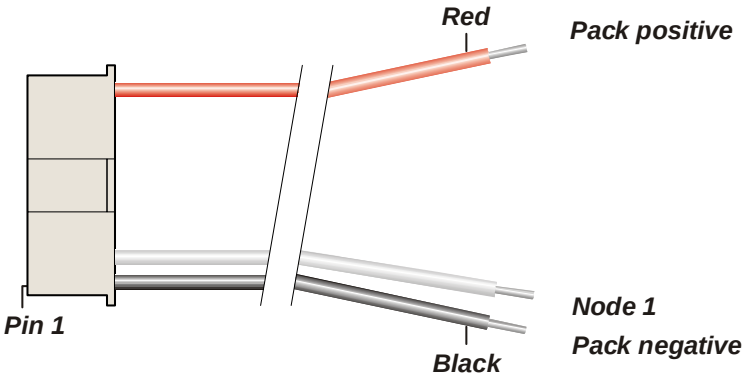



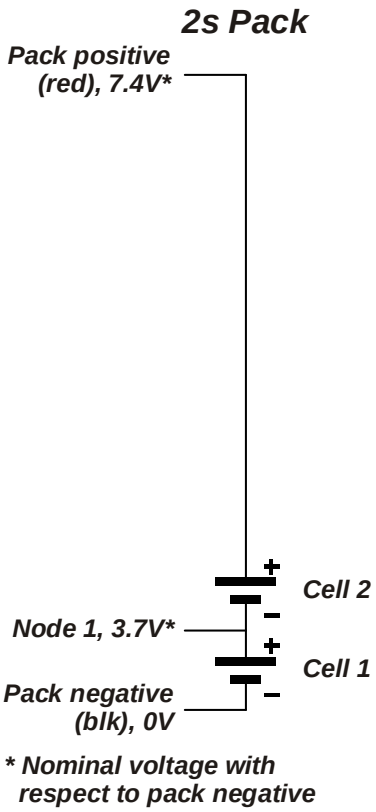

**Turnigy Connector/DEFAULT Wiring Mode**



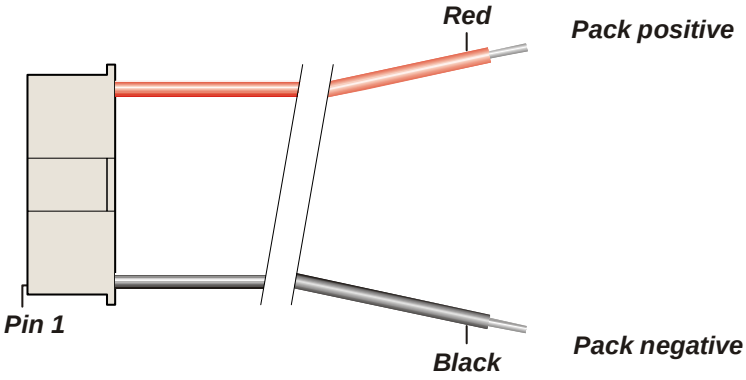



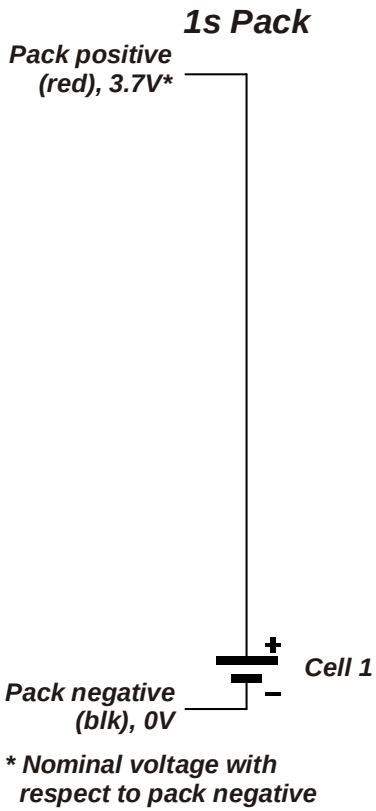

**Turnigy Connector/DEFAULT Wiring Mode**




**Turnigy Connector/DEFAULT Wiring Mode**

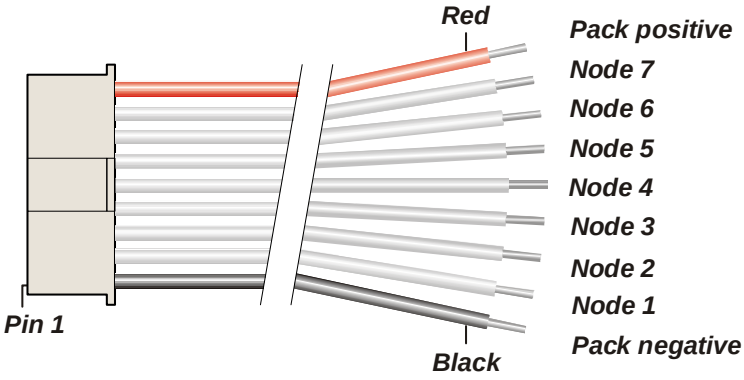


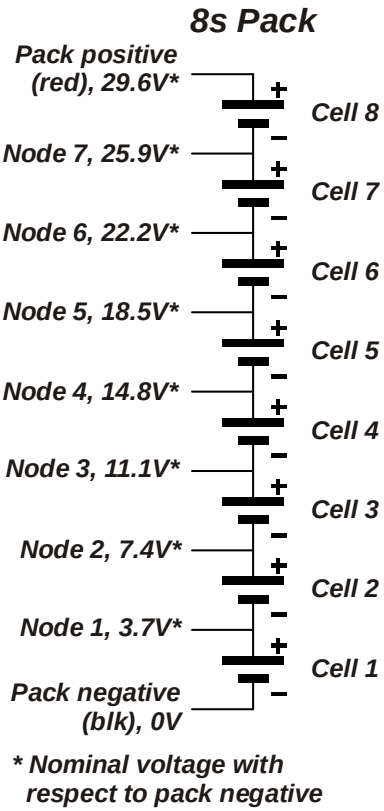




**Turnigy Connector/DEFAULT Wiring Mode**

## When using XH/EH Wiring mode

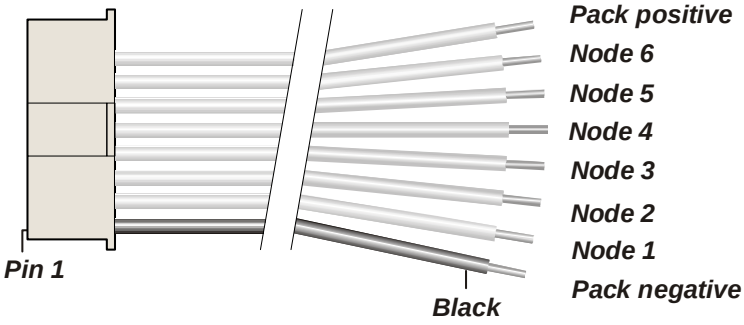
These diagrams show how a 9 pin Turnigy (JST PA series) balance connector must be wired to an 8s, 7s, 6s, 5s, 4s, 3s, 2s, and 1s battery pack when the FATBOY 8 is set to XH/EH Wiring mode. You may choose to set the FATBOY 8 to XH/EH MODE and splice the 9 pin Turnigy pigtail to an XH/EH adapter you already own. Use these illustrations to guide you. Whether the following is accomplished via the an XH adapters, or by physically connecting (soldering) the 9 pin Turnigy pigtail to a battery pack directly, this is what the FATBOY 8 must see at its balance connector (output):

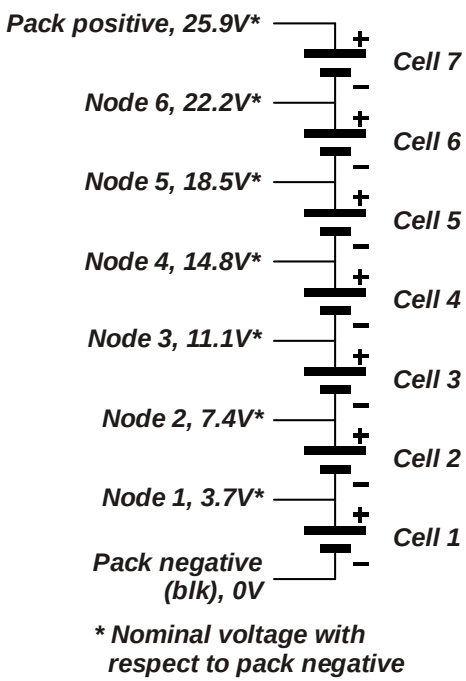



**Turnigy Connector/XH and EH Wiring Mode**

## 7s Pack

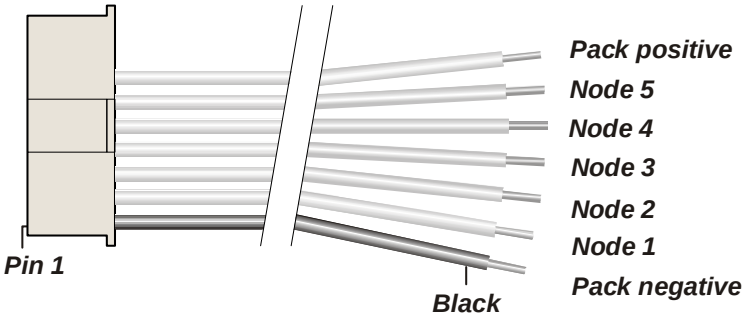


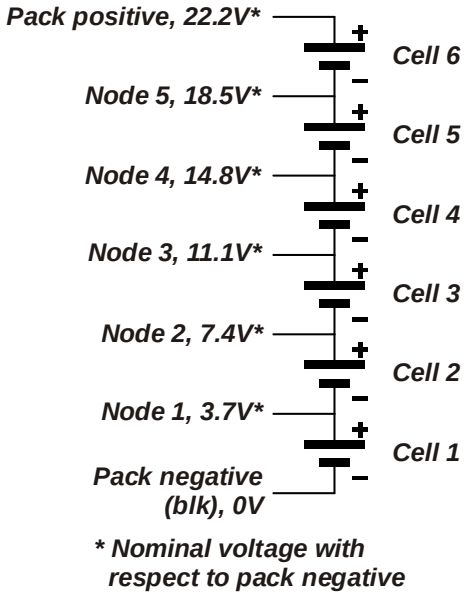




* Nominal voltage with respect to pack negative

**Turnigy Connector/XH and EH Wiring Mode**

## 6s Pack

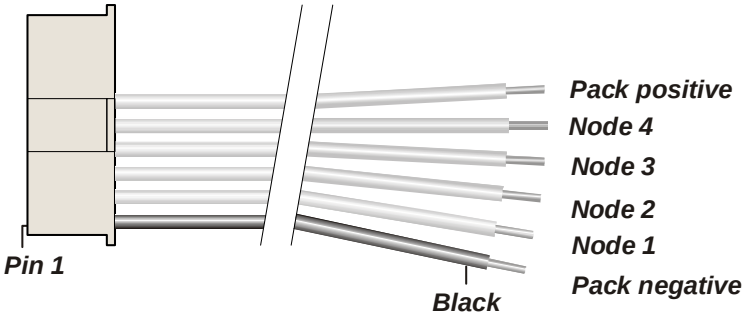


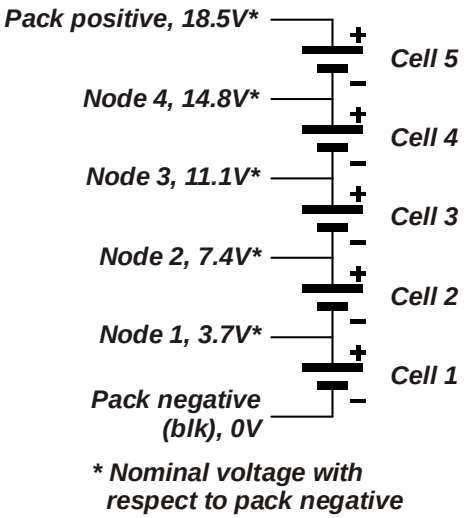




* Nominal voltage with respect to pack negative

**Turnigy Connector/XH and EH Wiring Mode**

### *5s Pack*

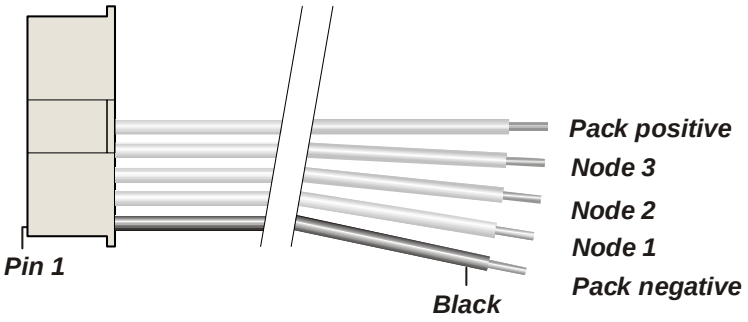


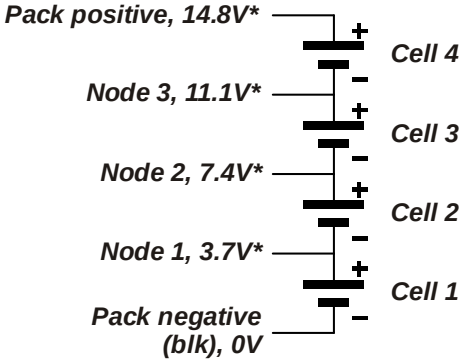




** Nominal voltage with respect to pack negative*

**Turnigy Connector/XH and EH Wiring Mode**

### *4s Pack*

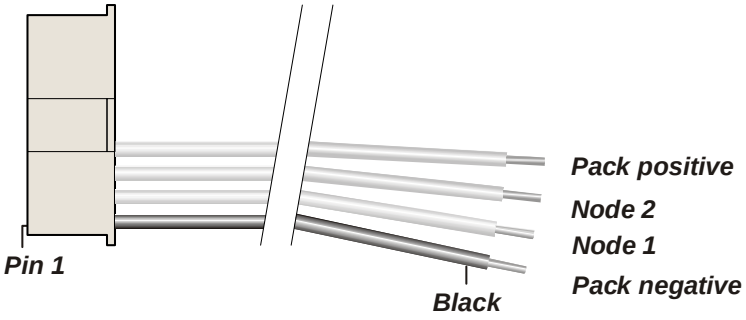


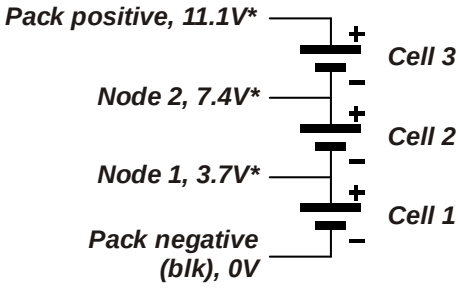




** Nominal voltage with respect to pack negative*

**Turnigy Connector/XH and EH Wiring Mode**

### *3s Pack*

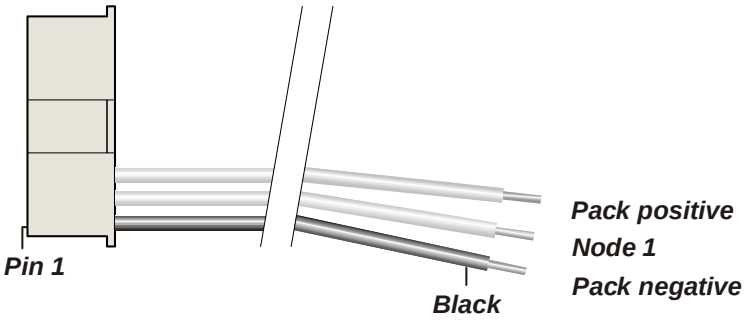


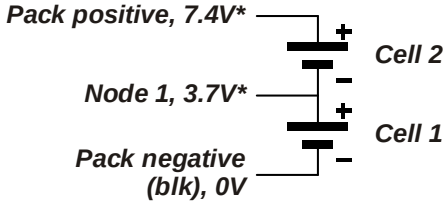




** Nominal voltage with respect to pack negative*

**Turnigy Connector/XH and EH Wiring Mode**

### *2s Pack*

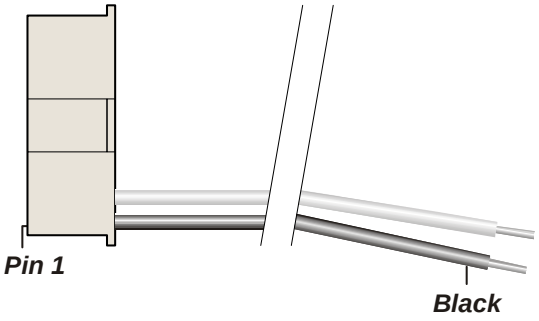



** Nominal voltage with respect to pack negative*

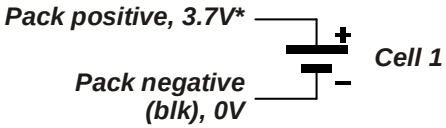
**Turnigy Connector/XH and EH Wiring Mode**

## *1s Pack*




***Pack positive***

***Pack negative***




**** Nominal voltage with respect to pack negative***

**Turnigy Connector/XH and EH Wiring Mode**

# LiPo factory presets

## LiPo Generic Accurate Charge

Basic LiPo preset can be used for any LiPo battery. Fuel Table is optimized for generic LiPo batteries from C discharge ratings up to 20C. Selectable charge rates include 1C, 2C, 3C AUTO or 10 mA to 10.0A manual. Optimization is for the most accurate charging with termination settings of C/20 and max of 30 min timeout for C.V. mode. This pre-set requires that every cell in the battery is charged to exactly 100%. If using high C rate discharge batteries (25C and higher), Fuel Gauge readout may not be accurate and AUTO charge rate may be higher or lower than expected. Default charge rate setting is 1C AUTO. Max Auto Amps parameter is default to 6A for this preset which means that unless you alter it, this preset will not exceed 6A max charge rate during AUTO charge. Other defaults: discharge rate setting is 2A, discharge voltage 3.3V/cell.

## LiPo Generic Faster Charge

Basic LiPo preset can be used for any LiPo battery. Fuel Table is optimized for generic LiPo batteries from C discharge ratings up to 20C. Selectable charge rates include 1C, 2C, 3C AUTO or 10mA to 10.0A manual. Optimization is for faster charging with termination settings of C/10 and max of 15 min timeout for C.V. mode. This preset does not require that every cell in the battery is charged to exactly 100%. If using high C rate discharge batteries (25C and higher), Fuel Gauge readout may not be accurate and AUTO charge rate may be higher or lower than expected. Default charge rate setting is 2C AUTO. Max Auto Amps parameter is default to 6A for this preset which means that unless you alter it, this preset will not exceed 6A max charge rate during AUTO charge. Other defaults: discharge rate setting is 2A, discharge voltage 3.3V/cell.

## LiPo Generic High Power

High Power LiPo preset can be used for any LiPo battery, but optimized for medium to high capacity packs. Also good for balance charging multiple LiPo packs in parallel. Fuel Table is optimized for generic LiPo batteries from C discharge ratings up to 20C. Selectable charge rates include 1C, 2C, 3C AUTO or 10 mA to 40A manual. Optimization is for faster charging with termination settings of C/10 and max of 15 min time-out for C.V. mode. This preset does not require that every cell in the battery is charged to exactly 100%. If using high C rate discharge batteries (25C and higher), Fuel Gauge readout may not be accurate and AUTO charge rate may be higher or lower than expected. Default charge rate setting is 10A Manual. Unless you create a custom preset and generate a custom fuel table, we recommend using Manual charge rate settings when charging using High Power presets. Max Auto Amps parameter is default to 10A for this preset which means that unless you alter it, this preset will not exceed 10A max charge rate during AUTO charge. Other defaults: discharge rate setting is 4A, discharge voltage 3.3V/cell.

## LiPo Generic Long Life (4.1V)

Basic LiPo preset copied from Preset 1 above but with end-charge voltage reduced to 4.1V. All other parameters are the same. Use this preset if you wish to have the longest life from your LiPo batteries, but be aware, your flight times will be reduced slightly. Fuel Table is optimized for generic LiPo batteries from C discharge ratings up to 20C, but table is revised to correlate to lower end charge voltage.

## LiPo Generic Small Balanced

Special LiPo preset designed for charging small batteries but still using balance connector. This preset is recommended for battery sizes as small as 10 mAh and up to 500 mAh. Preset requires manual charge rate settings of between 10 and 500 mA in 5 mA increments by default. Optimization is for the most accurate charging with termination settings of C/20 and max of 30 min timeout for C.V. mode. This preset requires that every cell in the battery is charged to exactly 100%. If using high C rate discharge batteries (25C and higher), Fuel Gauge readout may not be accurate. Default charge rate setting is 350 mA. Other defaults: discharge rate setting is 500 mA, discharge voltage 3.3V/cell.

## LiPo 1s/2s Small Non Balanced

Special LiPo preset designed for charging small Park Flier type batteries that are not equipped with balance connectors. Be cautious when charging any LiPo battery non-balanced. FATBOY 8 is not capable of detecting imbalance between cells. Never charge unattended using this preset. This preset is recommended for battery sizes as small as 10 mAh and up to 2000 mAh. Preset requires manual charge rate settings of between 10 and 2A in 5 mA increments by default. Fuel Table is optimized for generic LiPo batteries from C discharge ratings up to 20C. Optimization is for faster charging with termination settings of C/10 and max of 15 min timeout for C.V. mode. This preset does not require that every cell in the battery is charged to exactly 100%. If using high C rate dis-charge batteries (25C and higher), Fuel Gauge readout may not be accurate. Default charge rate setting is 350 mA. Other defaults: discharge rate setting is 500 mA, dis-charge voltage 3.3V/cell.

## LiPo All Brands Storage Charge

Special LiPo preset (any capacity) designed to storage charge or discharge a battery up or down to 3.86V per cell. FATBOY 8 will automatically determine whether a charge or discharge process is required. This preset will balance charge to storage level, but terminates discharge on the lowest cell in the pack. Upon discharge termination, FATBOY 8 does incorporate CC/CV discharge algorithms for precise terminating voltage. Manual charge rate setting is required when using this preset and ranges from 10 mA to 10A. Charge and discharge termination voltage can be independently adjusted to further assure termination accuracy. Fuel Table is optimized for generic LiPo batteries from C discharge ratings up to 20C. Optimization is for super-faster charging with termination settings of C/5 and max of 15 min timeout for C.V. mode. This preset does not require that every cell in the battery is charged to exactly 100%. If using high C rate discharge batteries (25C and higher), Fuel Gauge readout may not be accurate. Default charge rate setting is 2A. Other defaults: discharge rate setting is 10A, charge voltage 3.86V/cell, dis-charge voltage 3.83V/cell.

# A123 factory presets

## A123 2300 mAh Accurate Charge

Optimized for balance charging A123, 2300 mAh battery packs (requires balance wires on the pack). Fuel Table is optimized for this specific battery type and capacity. Selectable charge rates include 1C, 2C, 3C, 4C, 5C AUTO or 10 mA to 10A manual. Optimization is for the most accurate charging with termination settings of C/20 and max of 30 min timeout for C.V. mode. This preset requires that every cell in the battery is charged to exactly 100%. This preset may also be used for LiFePO4 type batteries which have similar charge characteristics. When using LiFePO4 batteries, Fuel Gauge readout may not be accurate and AUTO charge rate may be higher or lower than expected. Default charge rate setting is 4.6A Manual. Max Auto Amps parameter is default to 10A for this preset which means that this preset will not exceed 10A max charge rate during AUTO charge. Other defaults: discharge rate setting is 2.25A, discharge voltage 2.8V/cell.

## A123 2300 mAh Faster Charge

Optimized for balance charging A123, 2300 mAh battery packs (requires balance wires on the pack). Fuel Table is optimized for this specific battery type and capacity. Selectable charge rates include 1C, 2C, 3C, 4C, 5C AUTO or 10 mA to 10A manual. Optimization is for faster charging with termination settings of C/20 and max of 15 min timeout for C.V. mode. This preset does not require that every cell in the battery is charged to exactly 100%. This preset may also be used for LiFePO4 type batteries which have similar charge characteristics. When using LiFePO4 batteries, Fuel Gauge readout may not be accurate and AUTO charge rate may be higher or lower than expected. Default charge rate setting is 4.6A Manual. Max Auto Amps parameter is default to 10A for this preset which means that this preset will not exceed 10A max charge rate during AUTO charge. Other defaults: discharge rate setting is 2.25A, discharge voltage 2.8V/cell.

## A123 2300 mAh High Power

High Power A123 Preset optimized for Fast balance charging A123, 2300 mAh battery packs (requires balance wires on the pack). Also good for balance charging multiple A123 packs in parallel. Preset requires manual charge rate settings of between 10 mA and 30A. Fuel Table is optimized for this specific battery type and capacity. Optimization is for faster charging with termination settings of C/20 and max of 15 min time-out for C.V. mode. This preset does not require that every cell in the battery is charged to exactly 100%. This preset may also be used for LiFePO4 type batteries which have similar charge characteristics. When using LiFePO4 batteries, Fuel Gauge readout may not be accurate. Default charge rate setting is 10A Manual. Other defaults: discharge rate setting is 10A, discharge voltage 2.8V/cell.

## A123 2300 mAh Non Bal. 1-5s

Optimized for non-balance charging A123, 2300 mAh battery packs (balance wires not required on the pack). Fuel Table is optimized for this specific battery type and capacity. Selectable charge rates include 1C AUTO or 10 mA to 20A manual. Optimization is for faster charging with termination settings of C/10 and max of 15 min timeout for C.V. mode. This preset is not capable of charging every cell in the battery to exactly 100% because it does not have access to individual cell voltages. Imbalance will be present at the end of charge; however, A123 cells are not as sensitive to this problem. Nevertheless, charging A123s using the balanced charge preset(s) is recommended

when-ever possible. This preset may also be used for LiFePO4 type batteries which have similar charge characteristics. When using LiFePO4 batteries, Fuel Gauge readout may not be accurate and AUTO charge rate may be higher or lower than expected. Max Auto Amps parameter is default to 5A for this preset which means that unless you alter it, this preset will not exceed 5A max charge rate during AUTO charge. Default charge rate setting is 4.6A manual. Because this preset is not restricted by the balance connector, it can handle 1-5 cells of this battery type only. Other defaults: discharge rate setting is 2.25A, discharge voltage 2.8V/cell.

## A123 2300 mAh Non Bal 8s Fixed

Optimized for non-balance charging A123, 2300 mAh battery packs (balance wires not required on the pack). Fuel Table is optimized for this specific battery type and capacity. Selectable charge rates include 1C AUTO or 10 mA to 20A manual. Optimization is for faster charging with termination settings of C/10 and max of 15 min timeout for C.V. mode. This preset is not capable of charging every cell in the battery to exactly 100% because it does not have access to individual cell voltages. Imbalance will be present at the end of charge; however, A123 cells are not as sensitive to this problem. Nevertheless, charging A123s using the balanced charge preset(s) is recommended when-ever possible. This preset may also be used for LiFePO4 type batteries which have similar charge characteristics. When using LiFePO4 batteries, Fuel Gauge readout may not be accurate and AUTO charge rate may be higher or lower than expected. Max Auto Amps parameter is default to 5A for this preset which means that unless you alter it, this preset will not exceed 5A max charge rate during AUTO charge. Default charge rate setting is 4.6A manual. This is an example of a fixed-count preset. It will not auto-detect the cell count of a battery pack. It is designed specifically for an 8 cell A123 pack. If your A123 pack has a different number of cells, copy this preset to an EMPTY preset slot, rename it, and alter the “Cells” parameter found in the “Detection” tab of the Firmware Update Utility. Otherwise, you may find an A123, fixed cell preset already designed for your battery in the Preset Library of the FATBOY 8 or within the Firmware Update Utility. Other defaults: discharge rate setting is 2.25A, discharge voltage 2.8V/cell.

## A123 1100 mAh Accurate Charge

Optimized for balance charging A123, 1100 mAh battery packs (requires balance wires on the pack). Fuel Table is optimized for this specific battery type and capacity. Selectable charge rates include 1C, 2C, 3C, 4C, 5C AUTO or 10 mA to 6A manual. Optimization is for the most accurate charging with termination settings of C/20 and max of 30 min timeout for C.V. mode. This preset requires that every cell in the battery is charged to exactly 100%. This preset may also be used for LiFePO4 type batteries which have similar charge characteristics. When using LiFePO4 batteries, Fuel Gauge readout may not be accurate and AUTO charge rate may be higher or lower than expected. Default charge rate setting is 2.2A manual. Max Auto Amps parameter is default to 6A for this preset which means that this preset will not exceed 6A max charge rate during AUTO charge. Other defaults: discharge rate setting is 1A, discharge voltage 2.8V/cell.

## A123 1100 mAh Faster Charge

Optimized for balance charging A123, 1100 mAh battery packs (requires balance wires on the pack). Fuel Table is optimized for this specific battery type and capacity. Selectable charge rates include 1C, 2C, 3C, 4C, 5C AUTO or 10 mA to 6A manual. Optimization is for faster charging with termination settings of C/20 and max of 15 min timeout for C.V. mode. This preset does not require that every cell in the battery is charged to exactly 100%. This preset may also be used for LiFePO4 type batteries which have similar charge characteristics. When using LiFePO4 batteries, Fuel Gauge

readout may not be accurate and AUTO charge rate may be higher or lower than expected. Default charge rate setting is 3.3A Manual. Max Auto Amps parameter is default to 6A for this preset which means that this preset will not exceed 6A max charge rate during AUTO charge. Other defaults: discharge rate setting is 1A, discharge voltage 2.8V/cell.

## A123 1100 mAh Non Bal. 1-5s

Optimized for non-balance charging A123, 1100 mAh battery packs (balance wires not required on the pack). Fuel Table is optimized for this specific battery type and capacity. Selectable charge rates include 1C AUTO or 10 mA to 10A manual. Optimization is for faster charging with termination settings of C/10 and max of 15 min timeout for C.V. mode. This preset is not capable of charging every cell in the battery to exactly 100% because it does not have access to individual cell voltages. Imbalance will be present at the end of charge; however, A123 cells are not as sensitive to this problem. Nevertheless, charging A123s using the balanced charge preset(s) is recommended whenever possible. This preset may also be used for LiFePO4 type batteries which have similar charge characteristics. When using LiFePO4 batteries, Fuel Gauge readout may not be accurate and AUTO charge rate may be higher or lower than expected. Max Auto Amps parameter is default to 3A for this preset which means that unless you alter it, this preset will not exceed 3A max charge rate during AUTO charge. Default charge rate setting is 2.2A manual. Because this preset is not restricted by the balance connector, it can handle 1-5 cells of this battery type only. Other defaults: discharge rate set-ting is 1A, discharge voltage 2.8V/cell.

## A123 1100 mAh Non Bal 8s Fixed

Optimized for non-balance charging A123, 1100 mAh battery packs (balance wires not required on the pack). Fuel Table is optimized for this specific battery type and capacity. Selectable charge rates include 1C AUTO or 10 mA to 10A manual. Optimization is for faster charging with termination settings of C/10 and max of 15 min timeout for C.V. mode. This preset is not capable of charging every cell in the battery to exactly 100% because it does not have access to individual cell voltages. Imbalance will be present at the end of charge; however, A123 cells are not as sensitive to this problem. Nevertheless, charging A123s using the balanced charge preset(s) is recommended whenever possible. This preset may also be used for LiFePO4 type batteries which have similar charge characteristics. When using LiFePO4 batteries, Fuel Gauge readout may not be accurate and AUTO charge rate may be higher or lower than expected. Max Auto Amps parameter is default to 3A for this preset which means that unless you alter it, this preset will not exceed 3A max charge rate during AUTO charge. Default charge rate setting is 2.2A manual. This is an example of a fixed-count preset. It will not auto-detect the cell count of a battery pack. It is designed specifically for an 8 cell A123 pack. If your A123 pack has a different number of cells, copy this preset to an EMPTY preset slot, rename it, and alter the “Cells” parameter found in the “Detection” tab of the Firmware Update Utility. Otherwise, you may find an A123, fixed cell preset already designed for your battery in the Preset Library of the FATBOY 8 or within the Firmware Update Utility. Other defaults: discharge rate setting is 1A, discharge voltage 2.8V/cell.

## A123 All Cpcty Storage Charge

Special A123 preset (any capacity) designed to storage charge or discharge a balanced battery up or down to 3.335V per cell. FATBOY 8 will automatically determine whether a charge or discharge process is required. This preset will balance charge to storage level, but terminates discharge on the lowest cell in the pack. Upon discharge termination, FATBOY 8 does incorporate CC/CV discharge algorithms for precise terminating voltage. Manual charge rate setting is required when using this preset and ranges from 10 mA to 10A. Charge and discharge termination voltage can be independently adjusted to further assure termination accuracy. Fuel Table is optimized for A123 2300 mAh

batteries. Optimization is for faster charging with termination settings of C/20 and max of 15 min timeout for C.V. mode. This preset does not require that every cell in the battery is charged to exactly 100%. If using A123 1100 mAh or LiFePO4 batteries, Fuel Gauge readout may not be accurate. Default charge rate setting is 2.2A. Other defaults: discharge rate setting is10A, charge voltage 3.335V/cell, discharge voltage 3.32V/cell.

## A123 Store Non Bal. 1-5s

Special A123 preset (any capacity) designed to storage charge or discharge a non-balanced battery up or down to 3.335V per cell. FATBOY 8 will automatically determine whether a charge or discharge process is required. This preset will charge to storage level and terminates discharge on the lowest cell in the pack. Upon discharge termination, FATBOY 8 does incorporate CC/CV discharge algorithms for precise terminating voltage. Manual charge rate setting is required when using this preset and ranges from 10 mA to 10A. Charge and discharge termination voltage can be independently adjusted to further assure termination accuracy. Fuel Table is optimized for A123 2300 mAh batteries. Optimization is for faster charging with termination settings of C/10 and max of 15 min timeout for C.V. mode. This preset is not capable of charging every cell in the battery to exactly 100% because it does not have access to individual cell voltages. Imbalance will be present at the end of charge; however, A123 cells are not as sensitive to this problem. Nevertheless, charging A123s using the balanced charge preset(s) is recommended whenever possible. If using A123 1100 mAh or LiFePO4 batteries, Fuel Gauge readout may not be accurate. Default charge rate setting is 2.2A. Other defaults: discharge rate setting is 10A, charge voltage 3.335V/cell, discharge volt-age 3.32V/cell.

## A123 Store Non Bal 8s Fixed

Special A123 preset (any capacity) designed to storage charge or discharge a non-balanced battery up or down to 3.335V per cell. FATBOY 8 will automatically determine whether a charge or discharge process is required. This preset charge to storage level and terminates discharge on the lowest cell in the pack. Upon discharge termination, FATBOY 8 does incorporate CC/CV discharge algorithms for precise terminating voltage. Manual charge rate setting is required when using this preset and ranges from 10 mA to 10A. Charge and discharge termination voltage can be independently adjusted to further assure termination accuracy. Fuel Table is optimized for A123 2300 mAh batteries. Optimization is for faster charging with termination settings of C/10 and max of 15 min timeout for C.V. mode. This preset is not capable of charging every cell in the battery to exactly 100% because it does not have access to individual cell voltages. Imbalance will be present at the end of charge; however, A123 cells are not as sensitive to this problem. Nevertheless, charging A123s using the balanced charge preset(s) is recommended whenever possible. If using A123 1100 mAh or LiFePO4 batteries, Fuel Gauge readout may not be accurate. Default charge rate setting is 2.2A. This is an example of a fixed-count preset. It will not auto-detect the cell count of a battery pack. It is designed specifically for an 8 cell A123 pack. If your A123 pack has a different number of cells, copy this preset to an EMPTY preset slot, rename it, and alter the “Cells” parameter found in the “Detection” tab of the Firmware Update Utility. Otherwise, you may find an A123, fixed cell preset already designed for your battery in the Preset Library of the FATBOY 8 or within the Firmware Update Utility. Other defaults: discharge rate setting is 10A, charge voltage 3.335V/cell, discharge voltage 3.32V/cell.

# NiMH, NiCd and Lead Acid factory presets

## NiCd Fast Charge with Trickle

Basic NiCd Fast Charge with Delta Peak Cutoff and Trickle Charge. Requires manual charge rate setting of between 10 mA and 20A, with default value of 1A. Can charge from 1 to 21 cell packs. Fallback default setting is 8mV. Trickle charge rate is 1/20C of the charge rate setting. Charge will timeout in 4 hrs if peak is not reached. Trickle charge timeout is set for 1 Day. This preset is for constant current charging applications only. Do not use this for Li, Pb, or other chemistries. Other defaults: discharge rate set-ting is 1A, discharge voltage 1V/cell.

## NiMH Fast Charge with Trickle

Basic NiMH Fast Charge with Delta Peak Cutoff and Trickle Charge. Requires manual charge rate setting of between 10 mA and 20A, with default value of 1A. Can charge from 1 to 21 cell packs. Fallback default setting is 5mV. Trickle charge rate is 1/20C of the charge rate setting. Charge will timeout in 4 hrs if peak is not reached. Trickle charge timeout is set for 1 Day. This preset is for constant current charging applications only. Do not use this for Li, Pb, or other chemistries. Other defaults: discharge rate set-ting is 1A, discharge voltage 1V/cell.

## NiCd/NiMH 24 Hr Trickle Charge

Basic NiCd or NiMH 24 Hour Trickle Charge preset. Requires manual charge rate setting of between 10 mA and 500 mA with default value of 100 mA. Can charge from 1 to 21 cell packs. Trickle charge timeout is set for 1 Day.

## Lead 12V SLA or Gel Cell

Basic Pb (Lead) preset for charging 12V SLA or Gel Cell batteries. Requires manual charge rate setting of between 10 mA and 40A, with default value of 7A. Charges 12V battery only. If you require a 24V charge, this preset is available in the library and can be copied into the user bank (see manual for instructions). Charge will timeout in 16 hours even if end charge voltage setting of 2.33V/cell (default) is not achieved.

# Specifications:

**For Battery types:** Lithium Polymer (1s to 8s balanced, 1s to 2s unbalanced), Lithium Ion (1s to 8s balanced, 1s to 2s unbalanced), Lithium Manganese (1s to 8s balanced, 1s to 2s unbalanced), A123 (LiFePO4) (1s to 8s balanced, 1s to 10s unbalanced), NiCd (1s to 21s), NiMH (1s to 21s), 6v, 12v, 24v Lead Acid batteries (Flooded, Gel, AGM, SLA)

**Pack capacity:** 20 mAh to 360Ah

**Input voltage:** 10-32VDC, reverse polarity protected

**Input current:** 1A to 60A, software limited

**Power conversion:** Synchronous DC/DC converter, supports multiple switcher frequencies of 31.25 kHz, 62.5 kHz, 125 kHz; user selectable by preset, 85% to 93% efficiency depending on output current

**Output battery charge current:** Adjustable range 10mA to 40A, limited by 60A input current*

**Output battery discharge current:** Internal discharge 10mA to 10A, 80W max Regenerative discharge 10mA to 40A, 1344W max**

**Continuous max output power:** 612W @ +12VDC input, 1344W @ +26.35VDC

**Cell balancing:** Resolution 78uV (16 bit) for 1s-8s Li or A123 (LiFePO4) balanced charging

**Voltage calibration:** Cell voltage measurements are factory calibrated to +/- 6 mV

**Current calibration:** Charge current is factory calibrated on a 4A standard; calibration is to +/- 1mA

**Measurement accuracy:**
Voltage resolution: 78uV (16 bit)
Voltage tolerance: +/- 6mV
Charge current: +/- 1%
Capacity added to pack: +/- 1%

**Serial data output:** 19.2kbps, 8 bits, 1 start bit, 1 stop bit, no parity

**Data integrity:** Checksum, CRC checking

**Cooling fans:** Twin, 13 CFM, 50mm diameter

**Heat sink:** Internal 200W aluminum, thin finned

**Output battery connector:** “Turnigy” compatible, JST PA series, 9 position

**LCD:** 2 line, 16 character, light grey/blue backlit

**Size:** 5.82" x 6.55" x 3.57"

* *Please note, for safety reasons, available charger current may be limited for certain battery types and/or charging modes, e.g., non-balanced charge of Li*

# Troubleshooting

Operating errors appear as safety codes in the display. If possible, correct the error. If errors continue, contact Hobby King Customer Service.

| Safety Code/Message | Problem |
|---|---|
| Increase Supply | NiCd/NiMH charging can't maintain constant current |
| Supply <10 Volts | Supply voltage is too low |
| Supply >32 Volts | Supply voltage is too high |
| Supply Unstable | Check connections. Increase wire size to charger |
| Preset no 8Sv2 | Preset is meant for a different charger |
| Bad Preset Version | Preset has a bad version number |
| NiCd Amps Hi Temp | NiCd/NiMH charging can't maintain constant current. Reduce charge current |
| Series Chargers | Check the battery output. Make sure the pack is not in series with another pack. |
| P. Library Empty | No presets are in the library |
| Low Voltage Cell | A cell is too low |
| Preset is Hidden | A hidden preset is trying to run |
| Reverse Polarity | Check the output pack |
| Preset is Empty | Preset will not run on charger |
| ENTR not Pressed | The chemistry has not been confirmed |
| System Softstart | Check the power supply connections. Check the FATBOY 8 input current limiting |
| Preset is Locked | Locked presets can not be changed |
| Cell No Add Up | Check the node connector and adapters. |
| Max Cells Error | The unbalanced cell limit has been exceeded |
| No Pack | A pack has not been detected |
| Bad Cell Count | Check the node wires and adapter. Check that the proper node wiring configuration is selected (XH or DEFAULT) |
| Lost Data Link | Slave charger has an error |
| Cells Exceeded | The maximum allowed number of cells has been exceeded |
| Un-Bal Only | The node wire shouldn't be connected in unbalanced charging |
| Charge Timeout | The maximum charge time has been exceeded |
| Cell Cnt Changed | The cell count has changed. Check the pack |
| NiCd Detected | A NiCd/NiMH pack has been detected in another chemistry |
| Wrong Cell Count | Check the node wiring and/or selected node type (XH or DEFAULT) |
| Sply V. down 37% | The supply voltage has dropped too much |
| Sply < Low Limit | The supply voltage is less than the low limit set point. |
| Options Corrupt | The options checksum is bad. Factory Restore the charger. |
| Hi node V.Drop | Node only charging has a high voltage drop. Check the wiring. |
| Node Over Amps | Check the wiring |
| 1 Primary Only | Check the charger addresses |
| ERROR ON EXP. CH | One of the slaves has stopped |
| ERROR ON PRIMARY | The master charger has stopped |
| Banana Over Amps | Check the wiring for a loose connection. Check the supply wiring too. |
| WDT System Reset | Check the supply wiring |
| SVS System Reset | Check the supply wiring |

| | |
|---|---|
| Bananas Removed | The bananas were removed when charging |
| Negative Amps | Check the supply wiring |
| Chg. Not Allowed | The preset will not allow charging |
| Cell V. Too Hi/L | The cell voltage is out of range |
| Pack Below 3.0V | The pack voltage is too low. Check the preset Flag Bad Pack setting |
| REPLACE BAD PACK | Check the preset Flag Bad Pack setting |
| Exp. Ch Com. Err | Check that all the chargers have a good common ground |

| | |
|---|---|
| Safety Code #78 | High voltage when off |
| Safety Code #79 | CH1CELLS out of range |
| Safety Code #80 | Regenerative voltage setting is corrupt |
| Safety Code #81 | CHSNUMBER stuck in loop |
| Safety Code #82 | Amps out of range |
| Safety Code #83 | Supply low volt setting is corrupt |
| Safety Code #84 | Regen and charge enabled |
| Safety Code #85 | Amps negative in charge |
| Safety Code #86 | Amps positive in discharge |
| Safety Code #87 | Regen with no discharge |
| Safety Code #88 | AMPSDSCHRANGE in charge mode |
| Safety Code #89 | Supply battery has changed |
| Safety Code #90 | Unknown screen number |
| Safety Code #92 | Mux number error |
| Safety Code #93 | Calibration checksum bad. Send charger to factory |
| Safety Code #94 | Bad EEPROM write |
| Safety Code #95 | Bypass Over-volt Check node wiring or selected node wiring |
| Safety Code #96 | PWM ratio too high. Check the power supply and output wiring |
| Safety Code #97 | Amps were not read on startup |
| Safety Code #98 | P_RAMPRESET not master |
| Safety Code #99 | Bad mode number |
| Safety Code #100 | Temperature out of range |
| Safety Code #105 | Preset not factory validated |
| Safety Code #106 | Preset number out of range |
| Safety Code #107 | Charge timeout out of range |
| Safety Code #108 | Preset loaded while charging |
| Safety Code #109 | Charge termination unknown |
| Safety Code #110 | Expansion channel found in mode 30 |
| Safety Code #111 | Preset cell over volts too high |
| Safety Code #112 | MEASUREDDUTY16 > 1024 |
| Safety Code #113 | Charge PWM not regulating |
| Safety Code #114 | Bad preset flash check while running |
| Safety Code #115 | Bad preset flash checksum on start |
| Safety Code #116 | Bad preset ram checksum on start |
| Safety Code #117 | Bad segment checksum on start |
| Safety Code #118 | Bad segment checksum while running |

| | |
|---|---|
| Safety Code #119 | Bananas connected while charging |
| Safety Code #120 | Cell count not verified |
| Safety Code #121 | Shunt FET off while CHG/DSCHING |
| Safety Code #122 | Unknown chemistry |
| Safety Code #123 | No next charge screen to show |
| Safety Code #124 | Bad run screen number |
| Safety Code #125 | Cell count is zero |
| Safety Code #126 | Serial0 recursive overflow |
| Safety Code #127 | Discharge mode timeout |
| Safety Code #128 | Peek detect set past 15 minutes |
| Safety Code #129 | NiCd/NiMH chem. must use fallback |
| Safety Code #130 | Lith chem. Must not use fallback |
| Safety Code #131 | Oscillator calibration erased. Send back to factory |
| Safety Code #132 | Bad amps calibration. Send back to factory |
| Safety Code #133 | PWM duty cycle too low |
| Safety Code #134 | Bad options on expansion channel |
| Safety Code #135 | Zero amps PWM too high |
| Safety Code #136 | Charge and discharge are enabled |
| Safety Code #137 | Bad preset checksum in ram |
| Safety Code #138 | Discharge amps are positive |
| Safety Code #139 | Discharge is over 120 watts |
| Safety Code #140 | Amps set too low |
| Safety Code #141 | Cell detection minutes is zero |
| Safety Code #142 | No prev charge screens to show |
| Safety Code #143 | Corrupt charge voltage |
| Safety Code #144 | Copy preset error |
| Safety Code #145 | Discharge set amps out of range |
| Safety Code #146 | Discharge cutoff volts error |
| Safety Code #147 | Discharge and bypass are enabled |
| Safety Code #149 | Bypass and discharge at the same time |
| Safety Code #151 | PWMOUT16 is zero |
| Safety Code #152 | Switching frequency changed while charging |
| Safety Code #154 | Bad Exp. Ch. Preset CRC |
| Safety Code #155 | Exp. Ch. Start error |
| Safety Code #156 | Network buffer full |
| Safety Code #157 | Unknown NETBUFFER command |
| Safety Code #159 | Discharge over current |
| Safety Code #200 | Memory dump location 1 |