HYPERION EOS 0403i USER'S MANUAL

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EOS 0403i Special Features

*INPUT power DC 11V~15V

*Powerful, yet super-compact and portable. Excellent field charger!

*Integrated Hyperion LBA Balancer for LiPo (3.7v) and LiFe (3.3v) based cells

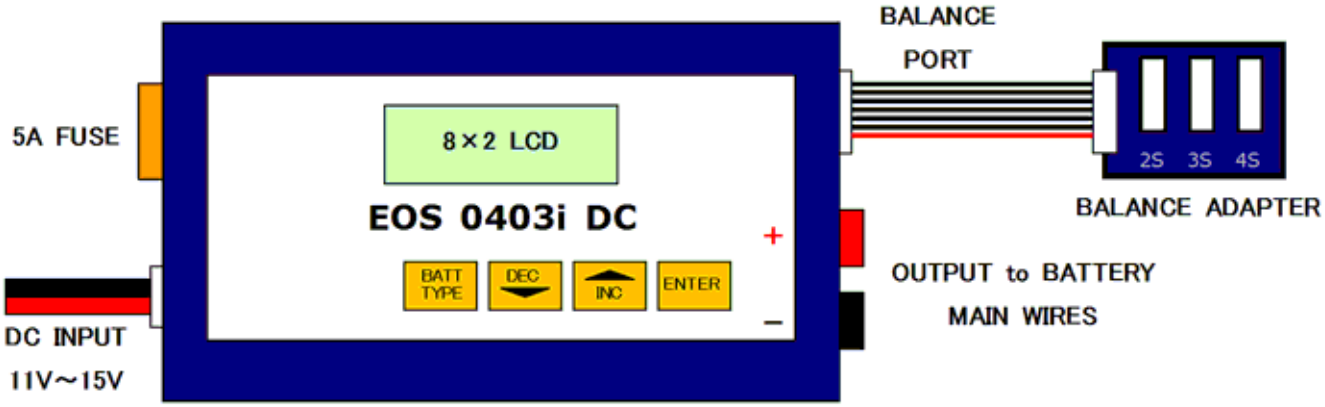
*Balance Multi-Adapter for Hyperion Compatible 2S to 4S packs included

* One Output harness with gold connectors included (#HP-EOSOUTCORD)

* Optional multi-connectors for the most common brands are also available (see details end of document)

*Clear and easy-to-read LCD Screen with Warnings for common setup errors

*Packaged in a rugged aluminum case - Long Input leads



Specifications

Input voltage range	11.0-15.0V DC
Appropriate battery types and range of series-connected cells	2-4 LiPo – Lithium Polymer cells (**3.7V/cell type only**)
	2-4 LiFePO4 – Lithium Iron (**3.3V/cell types**, inc. A123 brand cells / LiFePO4 cells)
Charge current	0.1A ~ 3.0A MAX, by 100mA steps (constrained by 36W Max total output)
Display type	2-line, 16 character backlit LCD

Safety precautions

- **KEEP CHARGER AWAY FROM CHILDREN AND PETS AT ALL TIMES!**
- **This charger is ONLY for Lithium (3.7V/cell), A123 (3.3V/cell), cells. DO NOT connect others, such as 3.6V/cell Lithium-Ion, NiCd, NiMh, Lead-Acid or any non-rechargeable batteries!**
- **Always place the charger on a firm, level, and fireproof surface for charging**
- **Do not place the battery or charger on or near flammable materials while in use: Keep away from carpets, cluttered workbenches, etc**
- **Do not exceed cell manufacturer's suggested max charge rates**
- **Do not use automotive type battery chargers to power the charger**
- **Do not leave the charger unattended while charging**
- **Do not allow water, moisture or foreign objects into the charger**
- **Do not open the charger, nor attempt any repair as it is dangerous and will void your warranty**
- **Do not obstruct the air intake holes on the charger**
- **ALWAYS follow correct connection sequence, as given below**
- **CAREFULLY FOLLOW THE BATTERY PACK MAKER'S RECOMMENDATIONS AND SAFETY ADVICE!**
- **USE BALANCER when charging any Lithium based battery pack!!!**

IMPORTANT NOTE: Lithium cell types should be charged while connected to the Balancer. Charging without the balancer connected greatly increases the chance of accident. The larger the pack is, or higher the cell count, the more critical it is that Balancer be used. Only very small LIPO packs in 2S or 3S configuration (such as 300mAh) should ever be charged without balancer (these often do not have balancing connectors to save weight). LiFePO4 (A123) packs should ALWAYS use balancer, due to the nature of their charge process.

In all cases, charge in a fireproof environment with persons in attendance!!

Initial Setup

The EOS 0403i main output uses 4mm Bullet Connectors (aka Banana Plugs). Solder your chosen battery-side connector to the bare wire ends of your harness, taking great care to observe proper polarity. You should use 12swg wire leads to make the output harness between charger and battery main wires. Harness wire leads should not exceed 20cm in length. Pre-assembled output harnesses are available under Hyperion Part #HP-EOSOUTCORD.

If, after carefully reading the following pages on usage, you have any difficulty using the charger please refer to the final pages for troubleshooting guide and warranty terms. It is well to carefully check your charger before making a return, as problems in setup, cabling, or power supply are much more common than defects in the charger. Chargers returned by the user and later found not defective will only be returned to the user at the user's expense and may incur a service charge.

Functions of the charger configuration buttons:

*The **INC** and **DEC** buttons are used to:
Increase or **Dec**rease flashing values, such as Charge Current.
Scroll through DATA VIEW screens while Charging/Balancing

*The **BATT TYPE** and **ENTER** buttons can be either SHORT pressed or LONG (~1 second) pressed

- Short press **BATT TYPE**: Scroll battery **types, charge and balance options**
- Long press **BATT TYPE**: View input/output Data during Charging or Balancing
- Short press **ENTER** to Enter Charge or Balance
- ENTER a second time as below to Confirm Settings, then START with:
  Short press **ENTER**: a buzzer will sound at charge finish time
  Long press **ENTER**: terminating without buzzer sounding at finish

Charging/Balancing LiPo and LiFe Packs

To begin cycle through the four options, by short-pressing of the **BATT TYPE** button to select the function you want:
LIPO CHG – **CHARGE** a **Lithium Polymer** (3.7v/cell type) pack, with or without balancer attached
LIPO BLC – **only BALANCE** a **Lithium Polymer** (3.7v/cell type) pack. Only available if the balancer is attached to the pack
LIFE CHG - CHARGE a **Lithium Iron** (LiFePO4/A123 3.3v/cell type) pack, with or without balancer attached
LIFE BLC– **only BALANCE** a **Lithium Iron** (LiFePO4/A123 3.3v/cell type). Only if the balancer is attached to the pack

LIPO Charging example: (LifePO4-A123 follows same sequence, but choose LIFE CHG Batt Type)

ALWAYS FOLLOW this connection sequence, and reverse sequence to disconnect after charging:
1) Connect OUTPUT harness 4mm plugs to the sockets located on the right side of the charger.
Take care that the Output Harness RED wire bullet connector goes to the (+) socket, and BLACK wire to (-) .
2) Connect Charger INPUT alligator clips to an appropriate DC power source:
a) A 12V automobile battery
b) A quality, low-noise DC power supply of 12~15V with 6A+ rating.
3) Connect the (LiPo/Life) battery Main (+/-) wires to the charger OUTPUT leads (+RED, - Black) in correct polarity
4) Connect the Balance Connector from your pack (if available) to the correct EOS0403i Multi-Adapter connector (2S,3S,4S)

*** Short** Press the **BATT TYPE** button until the screen shows **LIPO CHG**
* Press **INC** or **DEC** to set the charge current appropriate for your battery. If your battery pack is 2000mAh, setting the charge current to 2A will mean you are charging at a 1C rate. Likewise, if you want to charge a 1000mAh battery you should set your charge current to 1A, to charge at a 1C rate, or 2A to charge at "2C" rate. Do not exceed charge rates of 1C, unless your battery manufacturer allows. Hyperion LIPO are certified for rates up to 2C max. A123 LiFe 1100 and 2300mAh cylindrical cells allow up to 4.3C rates max (see further charge rate detail on final page of this document).

Short**-press **ENTER** to perform a battery check. A 3-cell Lipo with balance adapter the charger will show * 3S ** BLC CONN**, if your battery's cell count and the charger's screen match, you can **short**-press or **long**-press **ENTER** again to confirm the settings and begin charging. Short-pressing **ENTER** will cause a buzzer to sound when charging finishes, a long-press **ENTER** will cause the charge to end with NO buzzer.

During charging, you may press **BATT TYPE** to enter Data-View mode, and **INC**/**DEC** buttons to scroll screens.

For example with a 4S LiPo the screens might show:
I = 12.00V - This is the input voltage from the power supply or 12V auto/marine lead-acid battery
O = 15.65V - Shows the Output voltage from charger to the battery being charged or balanced

Press DEC to view the second screen:
ChgCAPA
510mAh - This is the number of mili-Amp-hours that have been charged into the battery

Press DEC to view the third screen:
1 = 3.900V - The Voltage of the 1st cell in your battery
2= 3.905V - The Voltage of the 2nd cell in your battery

Press DEC once more to view the fourth Information Display screen:
3 = 3.895V - The Voltage of the 3rd cell in your battery
4 = 3.900V - The Voltage of the 4th cell in your battery

Press BATT TYPE to return to the charging or balancing screen.

You can also **Press ENTER** during charging and then the **INC** or **DEC** buttons to adjust the charge current.

Note that the charger display will differ when charging with balancer vs. without balancer, as in this 4S pack example:
WITH Balancer properly connected, the display will show ***** 4S ** BLC CONN***
WITHOUT Balancer connected, the display will show ****4S* OK? NO BLC!***
With the balancer properly wired and connected, the charger knows exactly how many cells are in the pack. When charging **without** balancer, the charger must calculate the number of cells based on total pack voltage. As such, you must be SURE to confirm that the charger is correct whenever charging without balancer. If you see the message for No-Balance charging, but you are connected to the balance port, it means that there is something wrong with the wiring of the balance connector. In that case, remove the pack from the charger before continuing and troubleshoot the pack problem.

---- Balancing Mode (BLC) for LIPO or LIFE packs is as given above, but without need for setting "Current".

Relation of total pack nominal voltage and "S" setting for LiPo and LiFe Packs

Number of LiPo Cells Wired in Series (Pack Voltage)			
1S **3.7V**	2S **7.4V**	3S **11.1V**	4S **14.8V**
Number of LiFePO4 Cells Wired in Series (Pack Voltage)			
1S **3.3V**	2S **6.6V**	3S **9.9V**	4S **13.2V**

Note: The EOS0403i does **not support** charging of legacy **3.6v Lithium Ion** cell types.
Never attempt to charge such cells, under any circumstances, using this charger.

TROUBLESHOOTING
(1) Check again that the battery you are trying to charge and the settings on the EOS 0403i match. Battery type (such as LiFe or LiPo), "S" number of cells (charge voltage), and charge rate must all be correct.

(2) Check that the input cable and output cables:
- *****Have proper connectors in good condition
- *****Are not frayed, worn, cut, or damaged
- *****Are the proper gauge (2.5mm, 14swg or higher)
- *****Are proper length – 20cm (8") on output side

(3) Attach the charger input connectors to a 12V battery (auto or marine lead-acid) that is in good condition and fully charged. Wiggle the Terminal clips into the battery posts to insure that you have a good connection.

(4) Try another target battery for charging. If your RC battery is in poor condition, **over discharged**, or in some other way defective the charger may correctly refuse to charge it based on safety algorithms.

(5) Try another RC battery type. For example switch to a LiFe battery if you are failing to charge LiPo types. Success with one type but failure with another generally indicates that the charger is working properly. The failing battery type is almost certainly in poor condition, or you have improperly set the charger for it.

(6) Contact your dealer with full details and description of the problem, including the type of input power source, RC battery type and cell count, and history of the charger – specifically, has the charger been working properly before, or failing from new condition?

BALANCE MULTI-CONNECTORS
Hyperion Balance Multi-Connectors for most common lithium pack brands are available from your dealer: #HP-EOSLBA-26xx
Applications list below may be subject to change, depending on maker decisions outside our control. If your brand is NOT listed, email your battery maker to ask them WHICH OF THE BRANDS BELOW they are compatible with.

HP: fit HYPERION, POLYQUEST, PolyQ, ETEC, and some other brand packs.
EH: fit KOKAM, GRAUPNER and ROBBE
XH: fit ALIGN and DUALSKY packs
TP: fit THUNDERPOWER (2007 and on) and all FLIGHTPOWER* packs from 2S to 4S.

ERROR MESSAGES	
INPUT VOLTAGE	Input voltage is below 11.0V or exceeds 15.0V
NO BATTERY	Battery not detected
REVERSE POLARITY	Battery is connected in reverse polarity to Output leads
CIRCUIT PROBLEM	Non-Specific Circuit error. Check battery condition
LOW PACKVOLT	Battery voltage too low to match charger settings
OVER CELLVOLT	If voltage per cell is too high during balancing, this message may appear
LOW CELLVOLT	If cell's voltage falls too low during balancing, this message may appear
OPEN BAL.PORT	If a balancing connector is disconnected at the balancing port of the charger during balancing

Further Notes on "C" rates and charge maximum currents:

* Again, whenever unsure about the charge rating for your battery in "C", stay with rates of 1C or less.

* Hyperion Lithium Polymer (types CL, CX, VX, VZ) can be charged up to 2C maximum rates.

* Calculate "1C" as (Capacity in mAh)/1000 example: 1500mAh/1000 = 1.5Ah

* The EOS 0403i has power output maximums of 3A or 36W total, whichever comes first. That means that the charger can charge 2S and 3S packs up to 3A, and will max out at about 2.25A for a 4S pack. As a result, the charger can charge, for example, a 2S or 3S pack of 1500mAh cells at 2C, or a 4S 1500mAh pack at about 1.5C (2.25A/1.5A). For another example, the charger can charge a 2S or 3S 2100mAh pack at 3A rate, so about 1.43C (3.0A/2.1A) max for 2100mAh packs.

* For another example… A123 brand LiFe 1100mAh packs may be safely charged at the 0403i max rate of 3A, so max available C rate for a 3S pack would be 3A/1.1A = 2.72C, leading to a typical charge time of 18 to 28 minutes, depending on the starting capacity and balance state of the pack…

* NOTE! Lithium batteries use "CC/CV" charge curves. That means that Current is reduced as pack capacity charged-in rises. As a result, if you start with a battery which is NOT fully discharged, you may not see the charge rate as go high as you have set, as the CC/CV curve is already reducing below max charge rate. This is normal and correct.

WARRANTY

HYPERION Chargers are guaranteed to be free from defects in materials and workmanship for a period of one calendar year from date of purchase. Your selling dealer is your first point of contact for warranty issues. Return postage costs are the responsibility of the user in all cases. Submit copy of original receipt with the return.

Damage due to physical shock (dropping on the floor, etc), inappropriate power supply (automotive battery charger, etc!), water, moisture, and humidity are specifically NOT covered by warranty. It is well to carefully check your charger before making a return, as problems in setup, cabling, or power supply are much more common than defects in the charger.

Enjoy the Power!

The Hyperion Team