

Hyperion EOS-0610iNET Charger - User's Manual

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Warnings:

The EOS 0610i is a carefully-designed charger with many built-in safety features, such as reverse polarity protection, input voltage error warning, and cell-count mismatch warnings for lithium chemistry batteries. HOWEVER, IT IS THE RESPONSIBILITY OF THE USER TO INSURE THAT THE CHARGER IS CONFIGURED AND USED IN A SAFE MANNER IN PROPER ENVIRONMENT. Note that as cell count of lithium batteries becomes higher, all warning systems become less accurate. We STRONGLY recommend use of the built-in Hyperion LBA10 balancer when charging lithium batteries at all times. LBA balancers provide much additional safety, because the LBA monitors each individual cell and controls the charger accordingly.

- Always be sure that the charger is properly configured for the correct battery type
- Be sure that the batteries you charge are capable of charge at the rate you select
- Never charge batteries unattended
- Charge only in a fire-resistant environment, such as on concrete or brick, rather than wood surfaces
- Do not charge near easily flammable materials
- Do not charge batteries inside a model
- Charging outdoors is recommended whenever practical
- Use only high-quality gold 4mm bullet connectors for charge output cable connection to the charger. See "setup"
- Properly insulate and regularly inspect all connectors to eliminate the possibility of short circuit. Damage caused by output short circuit is not covered by warranty.
- Never allow the charger case to contact an AC/DC power supply case while powered
- Do not drop or cause other shock to the charger, nor subject it to moisture or water
- Do not attempt to charge battery packs made from different types of cells, a mixture of old and new cells, or cells made with chemistry not supported by the EOS 0610i
- Do not attempt to charge "non-rechargeable" dry cells
- Do not open the case of the charger under any circumstances. Doing so will void the warranty
- Keep the charger away from children or pets at all times.

**PUT SAFETY AHEAD OF ALL OTHER CONSIDERATIONS!
SEEK MEDICAL ATTENTION IN EVENT OF ANY INJURY!**

Specifications:

- Charges 1 to 6 cells Lithium Polymer Batteries (3.7V/cell nominal types)
- Charges 1 to 6 cells Lithium Ion Batteries (3.6V/cell nominal types)
- Charges 1 to 6 LiFePO4 (A123) cells (LiFePO4 3.3V/cell nominal, A123 3.3v support)
- Charges 1-16 cell NiCd/Ni-MH in three modes: Normal, Linear, and Automatic
- Charges 1~12 cell Lead Acid Batteries (2V/cell)
- Built-in Hyperion LBA10/300 Balancer with 10A max rating and 300mA max balance rate per cell
- 0.1A -10.0A Charge Current in 0.1A steps
- 250 Watts Max Charge Output (delivered even with 6S lithium polymer!)
- TCS - Terminal Capacity Selection
- Rich Data Displays during and after charging and discharging
- PC Port for Data Logging and Firmware upgrades
- Temperature Sensor Port
- Wide Voltage Input Range 11v~28v for higher efficiency when charging high-voltage packs, and compatibility with a wider selection of AC/DC power supplies
- Power Supply Amperage Control to allow reliable charging with lower-output power supplies
- Power Supply Voltage Control works in concert with Amperage control to insure the charger does not overload your power supply
- Input Cable with 4mm Male Connectors + Clamps
- Output Cable Set Included, with 4mm Connectors
- Integral, Thermostat-Controlled Cooling Fan
- Rugged Aluminum Case with Insulating End Caps
- 2-Line, 16-Char, Blue Backlit LCD Data Display highly visible in all conditions
- 10 User-definable Memory Positions

And... You may "Network" connect two EOS0610iNET together, using option cable #HP-EOS0610-MS. In this case, you can charge two separate but similar Lithium Polymer, Lithium Ion, or LiFePO4 (A123) Packs as a single unit, to make flight packs from 7S to 12S – **at 500W max charge power!**

For example, for our demo Yak54 180e, we use 2 separate packs of Hyperion VX5000-6S lithium polymer on networked EOS0610i chargers and get true 2C charge rates. At charge finish, we simply connect the two packs in series as 12S, and fly! It is the ultimate "power-for-the-dollar" big-pack charging system on the planet today...

GENERAL SETUP and NOTES

The EOS0610iNET comes with male 4mm Bullet connectors (aka 'banana plugs') attached to the power INPUT cables. These cables are appropriate for attaching directly to most high-quality AC-DC power supply units, such as the BK Precision (USA) model 1692(15V, 40A, 600W). Also included are large Terminal Clips with matching 4mm female bullet connectors, for attaching directly to 12V~24V lead-acid batteries.

Output side 4mm Male Connector + Cable assembly (#HP-EOSOUTCORD) is also supplied. Carefully solder your preferred battery connector to the free ends, with correct Red (+) / Black(-) Polarity. If you make up additional output cables, note that MINIMUM inner cable diameter should be 2.5mm (14ga) and MAXIMUM cable length is 20cm (8").

It is critically important that you use either a fully charged 12V~24V lead-acid automobile battery (or better, deep-cycle marine battery) - or a high quality AC-DC power supply in the range of 12V to 28V DC output, with minimum current rating of 10A. When charging high voltage batteries at high current (charger output 250W) the AC/DC Power Supply (PS) should be 15V minimum with rating of 350W or more, to insure reliable performance. Note that PS load control features DO allow you to use lower-rated power supplies reliably, but that total charger output wattage will be limited accordingly. (see details later in this manual)

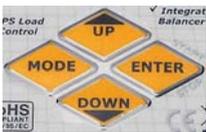
If you have any trouble charging after confirming that input and output cables are properly connected and of the proper materials, be sure to check the charger on an automotive battery. Many problems are associated with poor quality or inadequate switching AC-DC power supplies. Use PS Load control as needed to reduce load on your PS, or get a better PS....

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.

Memory Positions for Charging, and Settings per Battery Type

Ten MEMORY positions - M0 to M9 - allow you to set parameters for CHARGING your packs, such as BATTERY TYPE [NiMH, NiCd, LiPo, LiIon, A123/LiFePO4, Lead-Acid], battery CAPACITY, Charge RATE, Cutoff Voltage, Temperature, and more.

BATTERY CHARGING - Let's try it once to learn it... (ex: LiPo battery with balance connector)



MODE: Scrolls between MENUS for MEMORY (Charging), USER SETUP, DATA VIEW, BALANCER
MODE also selects SYNC mode when two chargers are Networked together
UP/DOWN: Scroll through the settings within Menus, Selects values for Settings
ENTER: Selects any Setting to CHANGE / Charge START (long push) / Charge STOP

Attach the charger to an appropriate DC power. Connect the Output Cable 4mm bullet connectors to the Red(+) and Black(-) output ports on right side of the charger. Connect your Battery Main Connector to the Mating Connector you have previously soldered to the Output Cable set. Connect your **Lithium Polymer battery** Balance Connector to the EOS Balance Multi-Adapter. (see end of this doc for more information an balance multi-adapters for various brand lithium packs)

Customers who charge in any Lithium Mode (LiPo, LiIon, A123) without Balancer Connected assume ALL Risk.

Note: Always connect the Output Cable set to charger first, then battery. After charging is finished, always disconnect the Battery connector from Output Cable set first, then disconnect Output Cable set from charger (if desired).

After the Welcome screen, the charger will always display the most recently used memory position.

Pressing **ENTER** once will make the Memory Position start flashing. Flashing values can be changed with **UP / DOWN** keys. Press **DOWN** to scroll through the ten available memory positions.

Press **ENTER** again to confirm the memory position that you wish to use.

From the memory screen, now press **DOWN** to get to *BATT TYPE*, press **ENTER** to start *BATT TYPE* flashing for selection.

Press **DOWN** until you see your desired Battery Type (LiPo in this case). Press **ENTER** to confirm.

Press **DOWN** again to select Pack Voltage which matches your battery

Note: the Charger shows both pack voltage and the number of cells in Series (S) on this screen, matching the Voltage and Battery Type you have selected. If the "S" and the Voltage **don't** match your battery, you have the **wrong Battery Type** selected (like confusing LiIon 3.6v with LiPo 3.7v types). Use **UP** key to reach *BATT TYPE* again, and reset *BATT TYPE* properly.

Press **DOWN** to get to *BATT CAPACITY*; press **ENTER** to make the mAh value flash and adjust with the **UP** or **DOWN** buttons until it matches your battery, by increments of 100mAh (to max of 20,000mAh). Press **ENTER** to confirm.

If your battery is 730mAh, for example, you could set this to 700mAh. The default CHARGE RATE (set in next screen) for lithium is 1C of capacity (equal to 0.7A for a 700mAh setting). But RATE is adjustable independently up to 2C for lithium, so the *BATT CAPACITY* setting mainly provides additional safety; the charger will terminate charge whenever charged-in capacity exceeds 120% of your *BATT CAPACITY* setting.

Press **DOWN** to get to *CHG CURRENT*. This is limited to 2C with respect to the battery capacity for Lithium Polymer (LiPo 3.7v/cell types) and Lithium Ion (LiIon 3.6v/cell types). For other cell types, there is not restriction, up to the 10A limit of the charger, so BE SURE you know what *CHG CURRENT* setting to use for your battery (see also below text on cell types).

Press **DOWN** to *TEMPERATURE CUT-OFF*. Requires option part #HP-EOS1210I-SEN, temp sensor. This is most often used by advanced users for NiMH race charging. Default setting of 50 degrees Celsius is fine in most cases.

Press **DOWN** to *SAFETY TIMER* - Adjustable between 20 and 300 minutes. An alarm will sound during charging after selected time interval during charging has elapsed. Set the time for about 30% longer than it should take your pack to charge. Keep in mind that a badly balanced pack may take longer than normal to charge, so don't set this too tight. A Lipo pack at 1C rate

should take about 120 minutes to charge, so timer of about 160~180 minutes may be appropriate. Note that other safety checks based on capacity and voltage are also working for you, and that charging should never be left unattended in any case.

Press **DOWN** to *TCS CAPACITY* – For LiPo and LiIon battery types Terminal Capacity Selection is available from 50% to 100% of pack capacity. During the charge, the EOS0610i will continually estimate capacity in the pack, and either terminate the charge or sound a signal tone when your selected TCS percentage is reached, depending on percentage you set. See end of manual for more details on TCS.

Pressing **DOWN** for a last time returns you to the 'Memory Select' screen.

Holding the **ENTER** key pressed down for two seconds or more will start the charge process for LiPo, LiIon, and A123 types, no matter where in the MEMORY (CHARGE) screens you may be. With your LiPo battery plugged into the balancing port and Red/Black main power wires connected to charger Output ports, hold down **ENTER**. The charger will read "CHARGE START SOLO MODE". Hold down **ENTER** again, the charger will then read ****BATTERY CHECK**** and then ask you to confirm the number of cells in your battery pack. Press **ENTER** for a final time to start charging.

Note: If the Lithium-based pack is NOT connected to the balancer port, the Charger will read NO BALANCER rather than asking you to confirm the cell count. We strongly recommend using the balancer at ALL times. However, if you wish to charge without balancer – at your own risk – when you see the NO BALANCER screen simply push ENTER again to start charging.

Holding down **ENTER** at any time while charging a battery will then **STOP** charging.

BATTERY CHARGING - EXTENDED DETAIL

Consult the documentation or labels provided with your battery to determine the correct capacity setting. It is very important to get this right, as the charger uses the capacity setting to determine nominal charge rate (amperage), TCS percentage, and safety termination. Incorrect settings could damage the battery, and could even cause an accident.

----- **For all battery types CAPACITY is given in mAh** (at *BATT CAPACITY* screen). Selection is in increments of 100mAh. **CURRENT** is set in Ampere (at *CHG CURRENT* screen), so divide mAh by 1000 to get Amperage. For 700mAh, current is 0.7A for 1C, up to 1.4A for 2C max. For 1800mAh, 1.8A (1C)~3.6A (2C) and so on.... All Hyperion LiPo packs are rated for safe 2C charging. Hyperion does not support nor recommend ever charging Lithium Polymer at rates higher than 2C.

----- **Lithium Polymer (3.7v) vs. Lithium Ion (3.6v)** Please be absolutely sure that you know the type of lithium battery you are charging, the capacity in mAh, and the number of cells wired in series and the pack voltage! Lithium Ion (3.6v) should never exceed 1C charge rate, unless you have SPECIFIC guidance from a reliable maker to the contrary.

----- **A123 / LiFePO4 Cells:** The A123/LiFePO4 charge/discharge modes are intended for cells with 3.3V nominal produced by A123 Company, or other-brand LiFePO4 cells which are recognized to be of good quality from well-known makers. In *MEMORY MODE*, choose A123 for *BATT TYPE*, for charging such cells. The A123 charge mode MAY work with "no brand" LiFePO4 cells having 3.3V nominal voltage, but Hyperion has found some "knock off" cells in the market of very questionable quality. **Customers who use A123 mode (LiFePO4 mode) to charge such off-brand cells assume all risk.**

Due to the nature of A123/LiFePO4 cells (wide divergence in cell voltages during charging) and due to the high rates at which they can be charged, one **MUST ALWAYS use a cell balancer** when using A123 Mode; failure to do so will result in poor pack performance at best, and damage to cells at worst. **Customers who charge in A123 mode without balancer connected assume all risk.**

A123 CHG CURRENT (A) setting: The EOS 0610iNET does NOT limit max charge rate for A123-type cells or other-brand LiFePO4. For A123-Brand Phosphate-based cells it is our position that 4C~4.3C rate is the target MAX, as of this writing. Therefore, 9.2A~10A max for the A123 2300mAh cells, and 4.4A~5.0A for the newer 1100mAh size. Consult battery maker documentation for other brands or future A123 types.

----- **NiCd and NiMH:** Set BATT TYPE from MEMORY MODE screen as we did before in the LiPo example. Consult the battery manufacturer's documentation to determine the proper settings for VOLTAGE, CAPACITY, and CHG CURRENT.

In addition to the Charge settings we have already seen in Lipo Mode, three additional settings exist for NiCd and NiMH battery types. These are essentially "expert" settings, and should be left at defaults unless you know why you want to change them: **PEAK SENS** (peak sensitivity – delta V) – default for NiCd is 7mV/C and NiMH is 5mV/C
TRICKLE – sets a low current at which the charger will continue to charge the pack AFTER normal charge is ended
PEAK DELAY – Short interval after peak is detected during which the charger will continue to charge before terminating

STARTING CHARGE / SELECTING CHARGE TYPE: After setting *MEMORY MODE* Charge parameters, holding down the **ENTER** button takes you to a Sub-Menu with three options for NiCd/NiMH charge type. Press **ENTER** once to start the current setting flashing, and use **DOWN** key to scroll through the three choices. Long press **START** after your selection to start charging:

AUTOMATIC – Essentially ignores your setting for CURRENT, but charges at rate determined by the internal resistance of the battery pack. Especially useful when you don't know what settings you should make due to lack of documentation.

LINEAR – Charges at whatever rate you have selected from start to finish (if the charger detects no problem with settings).

NORMAL – Charges according to your RATE setting but uses an intelligent algorithm to alter current as needed during charge.

----- **Lead Acid Batteries:** Set Pb for BATT TYPE, correct voltage at the BATT VOLTS screen and the mAh at the BATT CAPACITY screen, and amperage at the CHG CURRENT screen. Consult the battery manufacturer's documentation to determine all of these settings.

OTHER MODE SELECTIONS

Pressing the MODE button will scroll you through the MEMORY (charge), DATA VIEW, BALANCER and USER SETUP screens.

---- DATA VIEW

Press the **MODE** button until you reach the *DATA VIEW* screen.

Use **DOWN** (or UP!) key to scroll through the various information presented:

- * *INPUT* – Current input voltage from the power supply
- * *OUTPUT* – The output voltage of charger while charging, or pack voltage of the battery while connected but not charging
- * *BAT. RES* – The internal resistance (IR) of the battery pack in $m\Omega$.
(IR value appears some seconds after charge is started, and will become more accurate as charge progresses)
- * *TEMP* and *PEAK TEMP* – Current Temp, and Peak Temp recorded during the charge (requires option sensor HP-EOS1210I-SEN)
- * *CHARGE TIME, CHARGE CURRENT*
- * *PEAK CHARGE VOLTAGE*

---- BALANCER MODE (Lithium types only)

BALANCER MODE has two functions: Displaying Data while charging, or use as a standalone balancer before charging.

Try it out with a LITHIUM battery pack which has the proper Balance Connector attached. Attach the charger to an appropriate DC power supply, and connect your battery pack's main and balance connectors to Charger as previously described.

Press the **MODE** button until you reach the *BALANCER* Mode screen.

- * Press **DOWN** once to reach the SELECT VOLTAGE screen. This screen simply shows you a very accurate voltage for each cell in the pack, in turn. You will see [1CL] at upper right, and a voltage displayed below, to three decimal places; for example: 3.982.
- * Press **ENTER** to make the [1CL] flash, and **UP** to see the voltage for the second cell, third cell, etc...
- * When you have seen the voltage for the last cell in the pack, press **DOWN** to reach the next screen:
 - AVG. V shows the **average** voltage per cell, across the whole pack.
 - V. GAP shows the **difference** between the highest and lowest volt cells in the pack
- * Press **DOWN** to reach the next screen, which shows voltage for every cell in the pack to two decimal places (like 3.98).

Press **ENTER** for two seconds. You will see *BALANCE START / SOLO MODE*.

- **If you are NOT Networked** to another EOS0610i charger, press and hold ENTER for 2 seconds. The charger will check the battery, and then ask you to confirm the number of cells in the pack. If correct, Short Press ENTER once to start balancing.
- **If you ARE Networked** to a second 0610iNET charger, and want to balance two packs (of same capacity, type) as a single unit – such as 4S VX3700 and 5S VX3700 to make a 9S series-connected flight pack – then LONG press **ENTER** and then **DOWN** key to change from SOLO MODE to SYNC MODE. LONG press **ENTER** to start *BATTERY CHECK*. Each charger will show a number of cells on its own screen for confirmation. If both are correct, SHORT Press **ENTER** to begin balancing.
(see more on networking below)

After Balancing has begun, you may return (using UP or DOWN keys) to the screen which shows all cell voltages together. Cells which are **higher** in voltage will show the decimal point alternating to a larger square shape, indicating that these cells are being discharged, while the lower voltage cells are not. Long press **ENTER** to stop balancing at any time.

---- USER SETUP (these settings are "sticky" until you change them again)

Press the **MODE** button until you reach the *USER SETUP* - TEMP MODE screen.

- * Press **ENTER** and use **DOWN** (or UP!) key to select temperature display in degrees Fahrenheit or Celsius

Press **DOWN** to scroll through the following screens, and **ENTER** then **UP/DOWN** to change settings on each screen:

- * *BUTTON SOUND* screen - ON or OFF
- * *FINISH SOUND TIME* screen - OFF, ON (continuous), 1 Minute, 15 Seconds, 5 Seconds
- * *FINISH SOUND MELODY* screen – Choices **1 to 10** (all are about equally irritating...) with "preview" of sound
- * *POWER SUPPLY VOLTAGE* screen – Set at the rated voltage of your supply [set to 12V if single car battery]
- * *POWER SUPPLY CURRENT* screen – Set at the rated CURRENT (A) of your supply [set to 40A if car battery]

Power Supply Voltage and Current together comprise PS Load Control. The EOS0610iNET is an extremely powerful charger, and can – particularly when charging high-voltage packs at high rate settings - pull more amperage than many power supplies can deliver. To avoid stressing your PS and having charges terminated prematurely, you can tell the charger the rating of your supply, to limit the load on the supply, and max wattage of the charger. If you find the PS is still overloaded, reduce the setting for POWER SUPPLY CURRENT until the problem goes away (or buy a stronger PS unit!).

Network Charging

Two EOS0610iNET chargers can be connected by option cable #HP-EOS0610-MSC to get an incredible 500W of charging smart charge/balance power for large models using lithium-based packs with balance connectors attached. In this case, one uses two packs of the same CAPACITY and TYPE of cells [such as Hyperion CX5350 4S and CX5350 6S to make a 10S flight pack – or 5S and 5S to make 10S, etc...] and charge the two packs in SYNC mode to insure that the cells in both packs are closely matched. After charging, connect the two packs in series and fly.

With the two chargers connected by a network cable, one charger is the master and one is the slave. Whichever charger you use to choose the pack settings automatically becomes the Master. On the master, you set the TYPE (like LiPo or A123), the number of cells, and the CHARGE RATE. On the other charger you set nothing at all. The slave charger simply polls the balancer to determine the cell count, and sets RATE and CAPACITY according to the master.

When all is connected and Master settings have been made, then LONG press **ENTER** and then **DOWN** key to change from SOLO MODE to SYNC MODE. LONG press **ENTER** to start *BATTERY CHECK*. **Each charger will show a number of cells on its own screen for confirmation.** If both are correct, SHORT Press **ENTER** to begin charging. Couldn't be easier... This system is made for packs which are wired and flown together after charging, so charge performance is always best if the two packs start with about the same capacity remaining in each pack. If this isn't the case, it is best to individually charge each pack first to a certain TCS % Capacity setting – for example 60% - before performing the first SYNC charge...

TCS Feature (Terminal Capacity % Selection)

This feature is selected from the MEMORY screen by pressing DOWN. Estimated Capacity (EP) can be set from 50% to 100%. The charger uses your setting for Battery Capacity in addition to sophisticated measurements and calculations to make a close estimate for the currently charged capacity in the pack during charging.

There are two good reasons why you might want to charge a Lithium Battery to something less than full capacity. The first is for long-term storage. Lithium batteries are best stored after charging to 55%~60% of nominal capacity. So this use is easy to understand. If the TCS setting for LiPo or LiIon is between 50% and 60%, the charger will terminate the charge at that point.

The second aim is to get more flight time in during a typical day at the field, by stopping the charge when the battery is 90% to 95% full, for example. Due to the CC/CV method by which LiPo are charged, charging the last few mAh back into the pack takes a LOT more time than the first few mAh did... So if you want to get in the air ASAP, and don't mind a shorter flight then [set TCS](#) at 90%~95% could save you a good bit of charge time. When TCS is set for 65% to 95%, the charger will sound a unique double-tone repeatedly, for an interval of 10 seconds, so you can stop charging and fly. If you don't catch the warning, the charger will continue to charge to full capacity, as a safety measure.

(Note: since the TCS setting is "sticky" you may forget to change it from previous session!)

NiMH, NiCd, and A123/LiFePO4 can all be set for TCS as well, in ranges from 5% to 120% depending on type. However, this is mostly reserved for advanced users with special needs in testing – and TCS should generally remain at 100% for these types.

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 recent THUNDERPOWER and all FLIGHTPOWER* packs from 2S to 6S.

Tech Note*: Due to the wiring arrangement on some Thunderpower and FlightPower 4S packs only, the 4S packs may need the 6th wire removed in order to function properly with HP-EOSLBA-26TP MultiAdapter for 4S charging.

SEE DIAGRAM at <http://media.hyperion.hk/dn/eos/eoslba26/EOSLBA26TP-FP4Smod.gif>

Charging Lithium Polymer (3.7v Nominal) in Excess of 1C Rate

Every Hyperion lithium polymer battery ever produced is capable of reliable charging in excess of 2C.

Note: These are the charge C rates for which less than 0.3% degradation was found in Hyperion Lithium Packs:

HP CX: 3.0C, HP VX: 3.0C, HP VZ: 3.0C

(50-cycle tests completed at 1.0, 2.5, 2.75, 3.0C rates, 0.3% is within measurement error, so not significant, esp if charged at lower rate)

If 2C is Good... Why not 3C?

2C is the sensible limit for fast charging lithium polymer. Due to the CC/CV nature of the lithium charging process, the returns from increasing charge rate diminish very quickly after 2C. That is, **total charge time is only a couple minutes shorter at 3C compared to 2C, yet charge rate has to increase 50% for that small gain.** Given this, the risk/benefit equation lands squarely on the side of 2C max rates. Additionally, since many batteries are not capable of charging reliably past 2C, chargers which do allow 3C charging are much more likely to cause damage to batteries, or even accidents. It is simply too easy to make a mistake with the Charge Rate setting, and there are no electronic safeguards which can be reliably employed against making such a mistake. **If using other than Hyperion lithium packs, consult your battery's documentation for allowed C rates, before exceeding 1C charge rate.**

Error and Information Displays

INPUT VOLTAGE ERROR	Input voltage is below 11.0V or exceeds 28V
OUTPUT BATT CONNECT ERROR	Battery not detected
OUTPUT BATT REVERSE POLARITY	Battery is connected in reverse polarity to Output leads
OUTPUT CIRCUIT PROBLEM	Non-Specific Circuit error. Check all connections, settings, battery condition
OUTPUT BATT OPEN CIRCUIT	Battery disconnected during charging
OUTPUT VOLTAGE TOO HIGH	Battery voltage too high to match charger settings
OUTPUT VOLTAGE TOO LOW	Battery voltage too low to match charger settings
PAUSE... CHARGER TOO HOT	Charger Pauses due to overheating. Remove obstructions to Fan Airflow
TEMPERATURE SENSOR ERROR	Polarity Wrong or other connection error
BATTERY TEMP TOO LOW	When the temp of the battery is too low
BATTERY TEMP TOO HIGH	Battery temp is too high to be charged!
BALANCE VOLTAGE CELL TOO HIGH	When the balancing cell voltage is too high
SYNC COMMAND ERROR	When communication is not properly working at SYNC mode or error at counterpart charger occurs
PAUSE... CHARGER TOO HOT	Charger temp is too high – pause until temperature drops
TRK	Charger is trickle charging pack after termination

Troubleshooting

- (1) Check again that the battery you are trying to charge and the settings on the EOS 0610i match. Battery type (such as NiMH or Lithium), battery capacity, 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, 14ga)
 - *Are proper length - 20cm (8") on output side
- (3) Attach the charger input connectors to a 12V automotive battery that is in good condition and fully charged. Wiggle the Terminal clips into the battery posts to insure that you have a good connection. Many charger problems are due to poor quality or inadequate switching AC-DC power supplies, so this test is necessary to eliminate those from the list of suspects.
- (4) Try another 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 NiMH battery if you are failing to charge Lithium 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, wired incorrectly, 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 - that is, has the charger been working properly before, or failing from new condition?

Enjoy the Power!

The Hyperion Team

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 – nor any other cause of damage unrelated to a defect in materials or workmanship. 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.