

Li-24

2S-4S LiPo/LiFe Balancing Charger



INSTRUCTION MANUAL



The Li-24 LiPo/LiFe balancing charger is the perfect entry-level charger for modelers using up to 4S LiPo batteries. Inexpensive and very easy to operate, the Li-24 utilizes the CC/CV charge method, with voltages customized for LiPo/LiFe batteries. Capable of operating from 100-240V AC or input sources, this tiny, lightweight charger is perfect for use at home or in the field. Selectable charge currents range from 1A to 3A and a built-in balancing function ensures all cells are charged to optimum voltage every time.



It is strongly recommended to read this manual completely before use! Damage resulting from misuse or modification will void your warranty.



WARNING!! Charging lithium-based rechargeable batteries poses a risk of FIRE! NEVER treat lithium-based batteries in the same manner as other battery types. NEVER leave lithium batteries unattended while being charged! ALWAYS charge lithium-based batteries in a fireproof location! Failure to follow all care and handling instructions contained in this manual could result in quick, severe, permanent damage to the batteries and all surroundings!! Follow all safety precautions when using such batteries, as listed on page 3 of this manual!

SPECIFICATIONS

AC Input:	100-240V AC 60Hz, U.S. plug	Output Connections:	4mm banana sockets
Output Power:	20W	Display Type:	4 red cell LEDs and 1 multi-colored status LED
Battery Types:	2-4S LiPo/LiFe	Balancing Connector:	ElectriFly® style 2-4S
Fast Charge Start:	Auto start at hook up	Dimensions:	4.4 x 2.7 x 1.6 in. (111 x 69 x 41mm)
Fast Charge Current:	1A, 2A, 3A*	Weight:	6.2 oz (176 g)
Controls:	Auto-start, switchable current selector		

**Note: Maximum charge current for a 4S pack will be ~1.4A.*

SPECIAL FEATURES

- Built-in balancing for 2-4S LiPo.
- 1A, 2A, 3A selectable charge rates.
- Select between LiPo and LiFe battery type.
- Built in balancing connector for 2S, 3S and 4S.
- Includes Deans® Ultra Plug® connector* and 18AWG charging cable with 4mm banana plugs included.
- Built in 4mm banana battery sockets.
- Reverse voltage protection.

IMPORTANT PRECAUTIONS



- Do not leave the charger unattended while in use.
- **Disconnect the battery and remove input power from the charger immediately if the charger or battery becomes hot!!**
- **Disconnect the battery if it begins to swell while being charged!**
- Do not attempt to charge any battery types other than LiPo and LiFe as permanent damage to the battery and charger could result.
- Do not allow water, moisture or foreign objects into the charger.
- Do not block the air intake holes, which could cause the charger to overheat.
- Do not attempt to use batteries with more cells or total voltage than listed in the specifications.
- Do not place the charger or battery on flammable surfaces or near combustible materials while in use, such as carpet, cluttered workbench, paper, plastic, vinyl, leather, and wood, inside an R/C model or full sized automobile.
- Allow the charger and battery to cool down between charges.
- Always disconnect the charger from its power source when not in use.

GLOSSARY OF TERMS

Amps (A): The unit of measure for charge current.

Milli-amps (mA): A unit of measure for current, being 1/1000 of an amp (.001A). So 2500mA is the same as 2.5A ($2.5 \div 1000$). Or, to convert amps to milli-amps, multiply the A number by 1000. So .025A is the same as 25mA.

Capacity and milli-amp hours (mAh): The amount of energy a battery can store is called its **capacity**, which is defined as how much current a battery can supply constantly over one hour of time. Most hobby batteries are rated for capacity in “mAh” or **milli-amp hours**. A 650mAh battery can deliver 650mA of current for one hour ($650\text{mA} \times 1\text{hr} = 650\text{mAh}$). A 3200mAh battery can deliver 3200mA (3.2A) of current for one hour ($3200\text{mA} \times 1\text{hr} = 3200\text{mAh}$), etc.

CC/CV: Lithium based batteries are charged using the “Constant Current/Constant Voltage” method (cc/cv). Constant current is delivered during the first part of the charge. When the battery reaches a pre-set voltage, constant current is no longer delivered and a constant voltage is applied to the battery. As the battery’s voltage becomes equalized to the voltage on the charger’s output, charge current will steadily begin to drop. This is normal. When current reaches an approximate value of $1/10C$, the charge process will end completely.

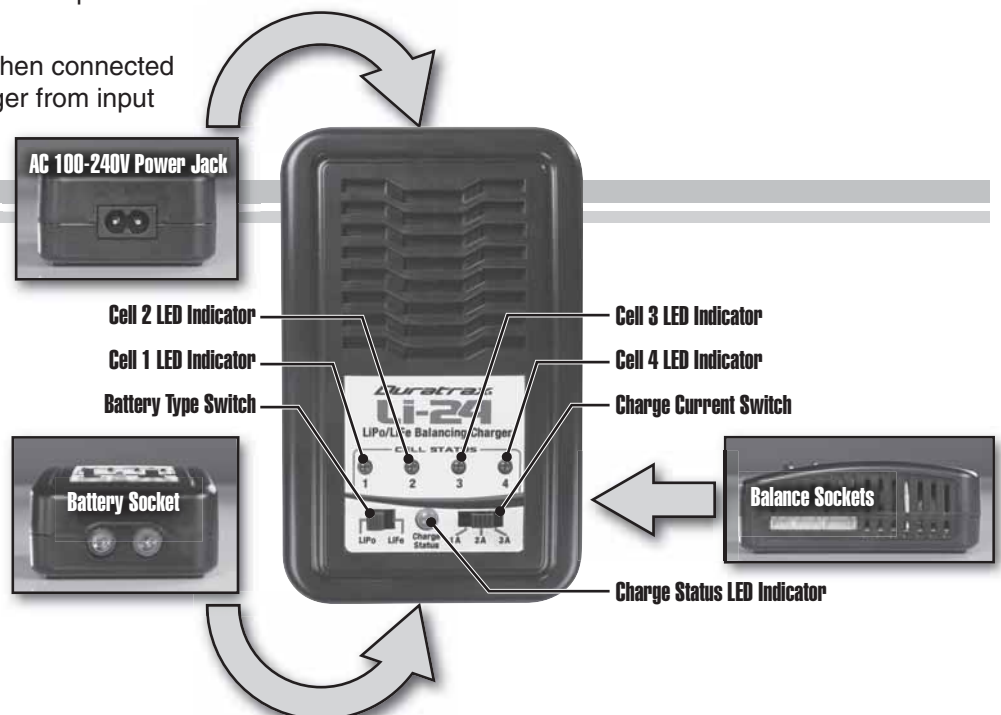
“C” rating: Capacity is also referred to as the “C” rating. Some battery suppliers recommend charge currents based on the battery’s “C” rating. A battery’s “1C” current is the same number as the battery’s rated capacity number, but noted in mA or amps. A 600mAh battery has a 1C current value of 600mA, and a 3C current value of ($3 \times 600\text{mA}$) 1800mA or 1.8A. The 1C current value for a 3200mAh battery would be 3200mA (3.2A), etc.

INPUT POWER

AC Input: For indoor use, connect the AC power cord to a 110V-240V AC outlet.

The charger will be on at all times when connected to input power. Disconnect the charger from input power when not in use.

CONTROLS



CARE AND HANDLING OF LiPo/LiFe BATTERIES



WARNING!! DO NOT try to charge lithium-polymer (LiPo) or lithium-ferrite (LiFe) cells in the same way as other battery types! Always read the instructions that are included with your lithium batteries carefully before use. Failure to follow these care and handling instructions can quickly result in severe, permanent damage to the batteries and their surroundings and even start a **FIRE!**

- **ALWAYS** charge lithium batteries in a fireproof location, which could be a container made of metal or ceramic tile. Monitor the area with a smoke or fire alarm, and have a lithium approved fire extinguisher available at all times.
- **ALWAYS** use a LiPo charge bag when charging lithium batteries, such as the Great Planes® SafeCharge™ LiPo Battery Charge Bag (GPMP0751).
- **NEVER** attempt to extinguish a lithium fire with water or a non-lithium approved fire extinguisher! Use **ONLY** a “Class D” fire extinguisher.
- **ALWAYS** provide adequate ventilation around LiPo/LiFe batteries during charge, while in use, and during storage.
- **NEVER** allow LiPo/LiFe cells to overheat at any time, as they can and usually will become physically damaged and could possibly **EXPLODE** or catch **FIRE!!** If a battery becomes overheated (over 140°F, 60°C), disconnect it from the charger **IMMEDIATELY!**
- **NEVER** continue to charge LiPo/LiFe batteries if the charger fails to recognize full charge. LiPo/LiFe cells which swell or emit smoke may be in an overcharge condition and should be disconnected from the charger immediately.
- **NEVER** charge LiPo/LiFe batteries at currents greater than the maximum rated current as specified by the battery's manufacturer.
- **NEVER** allow LiPo/LiFe cells to come in contact with moisture or water at any time.
- **NEVER** allow the internal electrolyte from LiPo/LiFe batteries to get in the eyes or on skin – wash affected areas immediately if they come in contact with the electrolyte and contact your physician!
- **ALWAYS** keep lithium batteries away from children.

DETERMINING BATTERY SPECIFICATIONS

Always read your battery's label and/or instruction sheet before use. Check to determine how many cells it contains or its nominal rated voltage. The chart at right is a quick reference for determining this information.

Voltage Chart		
Number of Cells	LiPo Nominal Voltage	LiFe Nominal Voltage
1S	3.7 V	3.3 V
2S	7.4 V	6.6 V
3S	11.1 V	9.9 V
4S	14.8 V	13.2 V

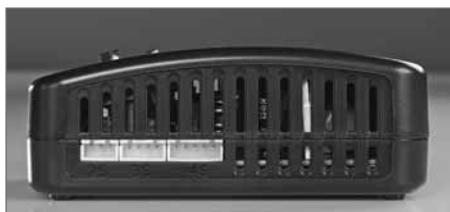
STARTING CHARGE

1. Insert the AC power cord into the charger.
2. Insert the AC cord into a wall socket (100 – 240V). All LEDs will light for 1 second and the charge status LED will flash green which indicates the charger is ready to charge.
3. Select the battery type LiPo/LiFe by the toggle switch.
4. Select the proper charging current 1A/2A/3A by the toggle switch.
5. Connect the battery main charge lead to the battery socket which is in the front side of the charger. Connect the battery balance wire to the balance port, which is in the right side of the charger.
6. The charger will start charging. The charge status LED and the cell status LED will glow constant red. If the battery pack is 2-cell, cell 1 and cell 2 LEDs will glow constant red. If the battery pack is 3-cell, cell 1, cell 2, and cell 3 will glow constant and so on.
7. During the charging process, when the charge LED glows constant red, the charger is charging in constant current mode. When the charge LED glows constant orange, the charger is in constant voltage mode.
8. When the cell LED is flashing, the cell is discharging for balancing.
9. When the battery is fully charged, the charge status LED will glow constant green.
10. Unplug the battery from the charger and charger status LED will flash green which indicates the charger is ready to charge another battery.

LED ACTIVITY

LED	Indication	Definition
CHARGE STATUS LED	LED blinking green	The charger is ready to charge.
	LED glows red	The charger is charging in CC mode.
	LED glows constant orange	The charger is charging in CV mode.
	LED glows constant green	The charging process is finished.
CELL STATUS LED	LED glows constant red	The cell is charging.
	LED flashes red	The cell is discharging.
ERROR CODES <i>If there is an error, the charge status LED and one of the cell LEDs will blink in sequence. Unplug the power cord and disconnect battery.</i>	Charge LED + Cell 1 LED	Voltage difference among cells is too large (>300mV).
	Charge LED + Cell 2 LED	Wrong connection.
	Charge LED + Cell 3 LED	Over current protection.
	Charge LED + Cell 4 LED	Reverse polarity.

HEAT VENTILATION



Vents built into the case allow hot air to escape to help keep the electronic circuitry cool. This helps to maintain accurate operation and maximize the lifespan of the charger itself.

OPTIONAL ACCESSORIES

DTXC2220

Charge Lead Banana Plugs to Standard



DTXC2222

Charge Lead Banana Plugs to Traxxas®



DTXC2223

Charge Lead Banana Plugs to Mini Plug



1-YEAR LIMITED WARRANTY - *U.S.A. and CANADA ONLY

Duratrax warrants this product to be free from defects in materials and workmanship for a period of one (1) year from the date of purchase. During that period, Duratrax will, at its option, repair or replace without service charge any product deemed defective due to those causes. You will be required to provide proof of purchase (invoice or receipt). This warranty does not cover damage caused by abuse, misuse, alteration or accident. If there is damage stemming from these causes within the stated warranty period, Duratrax will, at its option, repair or replace it for a service charge not greater than 50% of its then current retail list price. Be sure to include your daytime telephone number in case we need to contact you about your repair. This warranty gives you specific rights. You may also have other rights, which vary from state to state.

For service on your Duratrax product, warranty or non-warranty, send it post-paid and insured to:

For service on your Duratrax product if purchased in the **U.S.A. or Canada**, send it postpaid and insured to:

HOBBY SERVICES

3002 N. Apollo Dr., Suite 1

Champaign, IL 61822

Tel: (217) 398-0007 (9:00am - 5:00pm CST, M-F)

E-mail: hobbyservices@hobbico.com

For service on your Duratrax product if purchased in the **European Union**, send it postpaid and insured to:

Service Abteilung Revell GmbH

Henschelstrasse 20-30

32257 Bünde Germany

Tel: 01805 110111 (nur für Deutschland)

Email: Hobbico-Service@Revell.de

*For warranty and service information if purchased outside the USA or Canada, see the additional warranty information insert (if applicable) or ask your retailer for more information.



Conforms to FCC part 15B standards.