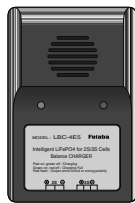


# Li-FePO4 battery charger LBC-4E5 Instruction Manual



Thank you for purchasing a LBC-4E5. This product is a battery charger designed for use only with the Li-FePO4 polymer battery. In order to get high performance of the product and use it safely, please read this instruction manual thoroughly before use.

## Safety Precautions

This instruction manual uses a variety of common symbols and icons for proper handling and usage of this product, and for avoiding potential hazards to yourself, the people around you, and your property. The meanings of these symbols and their significance are described below. Please understand them clearly before going on to main items.

### Meaning of Markings

For safety, please pay special attention to the items indicated by the following marks.

<b>⚠ DANGER</b>	Procedures which may have a high risk of death/serious injury to the user if not carried out properly.
<b>⚠ WARNING</b>	Procedures which may lead to dangerous conditions or cause death or serious injury to the user if not carried out properly, or procedures in which the probability of superficial injury or physical damage is high.
<b>⚠ CAUTION</b>	Procedures in which the possibility of serious injury to the user is small, but there is a danger of injury, or physical damage, if not carried out properly.
⊘ : Prohibited	Ⓜ : Mandatory

### ⚠ DANGER

If you ignore the following safety precautions, it may cause a fire, ignition, overheating, explosion, the leakage of electrolyte fluid or getting an electric shock.

- ⊘ This battery charger is designed for use only with the Li-FePO4 polymer battery. Do not attempt to charge any other types of dry cells or rechargeable batteries.
- ⊘ Do not attempt to charge a battery that is damaged, leaking the electrolyte fluid or wet.
- ⊘ Do not use the battery charger and AC adapter for improper purposes.
- ⊘ Never expose the battery charger and AC adapter to water or moisture. Do not use them when they are wet or your hands are wet. Do not use them in damp or humid conditions such as in a bathroom.
- ⊘ Never solder the battery charger and AC adapter or attempt to repair, deform, modify or disassemble them.
- ⊘ Do not use, charge or store the battery charger in places where it may be exposed to high temperatures. For example, do not leave it on the dashboard of a car under direct sunlight or place it near heating equipment.
- ⊘ Do not use the battery charger in places where heat may build up, such as under a cushion.
- ⊘ Never use the battery charger near flammable gas or combustible materials.
- Ⓜ Always insert the power plug completely and firmly into the outlet.
- Ⓜ Always use the AC adapter with the voltage specified in this instruction manual.

### ⚠ WARNING

- ⊘ Do not touch the battery charger, the AC adapter and the battery for long hours while charging. Extended contact with them could result in minor burns.
- ⊘ If the battery charger, the AC adapter or the battery is damaged when it falls to the ground or the floor, do not use it. To avoid electric shock or injury, never touch any internal parts of it which may be exposed.
- ⊘ If you notice any abnormalities such as overheating, smoking, a bad odor, the leakage of electrolyte fluid, discoloration or deformation of the equipment, unplug it immediately and stop using it. Continuing to use it under these conditions could result in a fire, ignition, overheating or explosion.
- Ⓜ Keep the battery out of reach of children. If children use the equipment, their parents or guardians should teach them the proper use of it to avoid electric shock or injury.

### ⚠ CAUTION

- ⊘ Do not place a heavy object on the battery charger and the AC adapter. Also, do not use or store them in places from which they might easily fall, such as on the TV set, to avoid damage or injury.
- ⊘ Do not store or use the equipment in places where it may be exposed to moisture or excessive dust. Be sure to remove dust from the power plug before plugging it in the outlet.
- ⊘ Do not charge the battery in an extremely cold or hot environment. The optimum environmental temperature range for charging the battery is between 10°C ~ 30°C. Outside this range, a decrease in battery performance may result.
- Ⓜ Keep the AC adapter unplugged from the outlet when the battery charger is not used.

## Procedures for Battery Charging

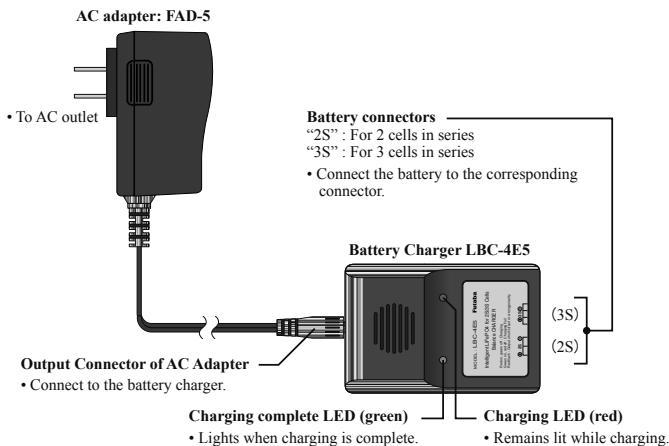
- Connect the charger and AC adapter and firmly insert the AC adapter into an AC outlet.  
\* Connect to the AC side before connecting the battery.  
\* The charger charging LED (red) and charging complete LED (green) will go off after about 1 second. This indicates that the charger is ready to charge.
- Connect the battery to the corresponding connector ("2S" or "3S") of the charger, while being careful of the polarity.

### ⚠ CAUTION

- ⊘ Do not simultaneously connect to the "2S" and "3S" outputs.
- Ⓜ Always check the battery polarity before connecting the battery.

- \* The charging LED (red) lights and charging begins.
- When the charging complete LED (green) lights, the battery is fully charged and charging is complete.  
\* The charging time when charging a battery that has been fully discharged is approximately 3 hours for the FR2F1800(1800mAh) Li-Fe battery for receiver. However, the charging time may be different depending on the charging conditions such as the ambient temperature and voltage variations among cells. In addition, when a battery that has not been used fully was charged, the charging time will be shorter than the above. Moreover, due to the characteristics of the charger, the remaining charge and the charging time are not proportional and the charging time may be somewhat longer.
  - After use, disconnect the AC adapter from the AC outlet.  
\* Do not reconnect a fully charged battery to the battery charger. The battery will be over-charged and deteriorate.

## Connection and LED Indication



## LED display (Normal operation)

Operation	LED (green)	LED (red)	State
Power not connected	Off	Off	No input
Power connected (battery not connected)	On for 1 sec, then off	On for 1 sec, then off	After going off, battery can be connected
Battery connection	Off	On	Charging
Battery connection (charging complete)	On	Off	Fully charged

## LED display (Abnormal)

LED display	Probable cause	Remedy
LED (red) flashing	Battery connected in reverse or shorted	Check the battery connection.
LED (red) does not come on when battery connected.	Battery voltage is 2.75V or less/cell (over-discharged)	Check the battery voltage.
LED (red) & LED (green) not on	Input side connection faulty	Check input side connection.
	Input power is incompatible.	Check the power (10~18V).

## Usage Precautions

### 【LiFe Battery】

LiFe battery will be damaged if it over-discharges.

When over-discharging is carried out and low voltage, it becomes impossible to charge. It is important to charge a battery periodically. (about every 3 months)

### 【Precautions in Handling the Battery】

The battery at the time of purchase:

Since the battery is not charged at the factory, please charge it before use. Also, whenever the battery has not been used for a long period of time, recharge it before use.

### Operating temperatures:

The further the temperature goes down, the more the operating time shortens. When you use the battery at low temperatures, it is recommended to have another charged battery as a backup.

### Carry and storage:

Do not leave the battery in the battery charger or the equipment when stored. Even when the power switch is off, a small amount of electricity continues to leak out of the battery and may lead to the decrease in battery performance. If you do not use the battery, store it in a cool and dry place with a temperature between 15°C and 25°C.

When you carry or store the battery, prevent the short-circuiting of the +/- terminals. Do not put any metallic objects including personal ornaments in a bag or drawer with the battery. This could cause a fire, overheating, explosion or the leakage of electrolyte fluid.

### Service life:

Battery performance degrades gradually after repeated charging and discharging. If the operating time of the battery decreases significantly, it may be the time to replace it with a new one.

### 【Precautions in Handling the Battery Charger】

#### Before use:

Please read the safety precautions thoroughly before use, and follow the instructions for operation.

#### Precautions for use:

The optimum ambient temperature for charging is between 10°C and 30°C. When the battery is hot, as is the case shortly after use, recharging may not be performed properly. Wait until the battery temperature goes down. The battery charger and the battery get warm during the charging. However, it is not a malfunction.

TV or radio reception may be interfered with during charging. However, this is not a malfunction, either. To avoid interference, move the battery charger away from the TV or radio.

#### How to care the battery charger:

Remove stains from the battery charger by wiping it with a dry and soft cloth. Do not use a wet cloth, alcohol, thinner, benzene or detergent.

### Specifications

(The specifications are subject to change without prior notice due to the technical development.)

<b>Rechargeable battery:</b> Li-FePO4 polymer battery/2S or 3S type <b>Operating temperature:</b> 0°C ~ +40°C (0°C ~ +30°C is recommended) <b>Storage temperature:</b> -20°C ~ +60°C <b>Battery Charger(LBC-4E5)</b> Input: DC10 ~ 18V (DC12 ~ 16V is recommended) Output: 8.4V(2S), 12.6V(3S) Output current: 1.1A Balance Voltage: 30mV Protection circuit: Reverse/Short	<b>Output connector:</b> 2S/3S (Do not simultaneously connect to the "2S" and "3S" outputs.) Dimensions: 23.5 x 53 x 81.5 mm (excluding protruding portions) Weight: 53g <b>AC Adapter (FAD-5)</b> Rated Input: AC 100 ~ 240V, 50/60 Hz, 500mA Rated Output: DC 15V, 1000mA
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- This product cannot be repaired because it is designed not to be disassembled for safety reasons.
- If you have questions about this product, please contact your Futaba dealer.

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