

# LiFePO4 Battery - Precautions and Usage



## Preamble:

Thank you for choosing Hytronik. We are committed to providing high-quality emergency lighting products, designed with integrated LiFePO<sub>4</sub> batteries to ensure reliable emergency performance. To maintain battery safety, ensure proper operation of emergency devices, and provide a smooth user experience, the following precautions and usage instructions apply to all Hytronik emergency products equipped with LiFePO<sub>4</sub> batteries.

## 1. Installation & Commissioning Guide

### 1.1 Battery Replacement Procedure

- Disconnect the main power supply.
- Ensure the battery is at ambient temperature before removal.
- Disconnect the battery wiring; avoid short circuits.
- Install the new battery and ensure correct polarity.
- Power on and verify normal charging/discharging.
- Charge the battery continuously for 24 hours before use.
- Perform a discharge test to verify the required emergency lighting duration.

### 1.2 Wiring Requirements

- Use 20AWG JST-SM-2P connector (red +, black -, cable length:  $150 \pm 5$ mm).
- Secure terminals with appropriate torque; do not overtighten.
- Ensure correct polarity before connection.
- Clean terminals with a dry cloth if oxidized or dirty.

### 1.3 Battery-Powered Bluetooth Standby

(Only applicable to Bluetooth Emergency Drivers)

To support emergency system logging and monitoring, Bluetooth-enabled emergency drivers are designed to allow the battery to directly power the Bluetooth module when mains power is not present.

During this state, the Bluetooth module typically draws ~20mA from the battery.

Please take this standby consumption into account when assessing battery life in long-term mains-disconnected scenarios.

### 1.4 Installation Warning for Unstable Mains Supply

(Important for on-site building installations)

During building installations, mains supply may not be available on a continuous 24-hour basis. If the battery is connected under such conditions, it may lead to uncontrolled and excessive charge/discharge cycles, which significantly shorten the design life of the battery.



To prevent premature battery wear, ensure the battery remains disconnected until a stable 24-hour mains power supply is available. Please refer to the corresponding emergency driver datasheets for behavior under intermittent power supply.

This warning must be clearly communicated to the installation staff and electricians to ensure proper commissioning practices on-site.

## 2. Common Failures & Troubleshooting

Symptom	Possible Cause	Solution
Voltage < 4.0V	Deep discharge	Do not charge. Isolate and contact technical support.
Low capacity	Long idle or degradation	Perform 3 – 5 charge/discharge cycles to recover.
Unstable voltage or failure to charge/discharge	Excessive internal resistance or poor contact	Measure IR. If beyond spec, contact supplier.

## 3. Safety Warnings & Precautions

### 3.1 Battery Usage Guidelines

This battery pack includes built-in protection features: overcharge, over-discharge, overcurrent, and temperature protection. The following instructions must be strictly followed:

- Do not charge above 7.2V or discharge below 5.0V.
- Do not exceed 1.5A charging or 3A discharging current.
- Do not connect battery packs in series or in parallel.
- Do not immerse in water, pierce, strike, drop, or disassemble.
- Do not reverse polarity or short-circuit the terminals.
- Use only certified LiFePO4-compatible chargers with CCCV charging mode.
- Charge the battery within 12 hours after use. If the voltage is <4.0V, do not charge — store separately and consult technical support.
- If a short circuit occurs, the protection circuit disconnects the output, which may falsely indicate battery failure. Output will automatically recover after the fault is removed.



- If battery voltage exceeds 7.3V, both the battery and the emergency driver will cut off bilateral connection to prevent overcharge risks.

### 3.2 Operating Conditions

Item	Range
Charging Temp.	0° C ~ 50° C (optimal: 25° C)
Discharging Temp.	-20° C ~ 60° C
Short-term Extremes	-40° C ~ +85° C
Operating Humidity	0% ~ 95% RH (non-condensing)
Recommended Storage Temp.	22° C ~ 28° C
Recommended Storage Humidity	45% ~ 85% RH

**Note:**

1. Under temperatures above 55° C, battery cycling should not exceed 80 cycles.
2. Charging is automatically disabled when the temperature is below 5° C or above 55° C. However, discharging remains active to support emergency lighting.

### 3.3 Maintenance & Storage Guidelines

- Disconnect battery wires if storing for longer than 3 months.
- Keep battery SoC between 20% ~ 85% during storage.
- Store in a clean, dry, ventilated environment, away from heat sources or corrosive materials.
- Perform a charge / discharge cycle every 2 months (monthly if communication-enabled). Maintain voltage between 6.66V ~ 6.8V.
- SOC calibration: charge fully and discharge to low-voltage cut-off.
- Use shallow charge / discharge (10%~95% of rated capacity) to prolong cycle life.
- Cycle life:  $\geq 2000$  cycles at 0.2C, 25° C, with  $\geq 80\%$  capacity retention.
- Do not clean the battery with volatile or corrosive solvents.
- End - of - life batteries must be recycled in compliance with local regulations.



### 3.4 Maintenance & Storage Guidelines

It is essential to avoid conditions that may lead to deep discharge of LiFePO4 batteries. Leaving the battery in a discharged state for prolonged periods can result in irreversible capacity loss and failure.

The following practices must be avoided:

- Storage of rechargeable batteries for more than 6 to 12 months without recharging.
- Shipment or storage of fully assembled emergency luminaires with the battery connected to the emergency driver.
- Prolonged mains interruption (longer than two weeks) after system installation while the battery remains connected. Always ensure that batteries are periodically recharged and disconnected during extended storage, transport, or periods of power unavailability.

**\*Note:**

Battery specifications and usage may vary slightly depending on the design of each model. Please refer to the corresponding datasheet for accurate information.

BPC83: <https://hytronik.com/product/bpc83>

BPC84: <https://hytronik.com/product/bpc84>

BPC85: <https://hytronik.com/product/bpc85>

It is important to review the correct datasheet before use.



## HYTRONIK INTERNATIONAL

### **Hytronik UK:**

Unit 3 Tallow Way, Fairhills Industrial Estate, Irlam, Manchester, M44 6RJ, United Kingdom  
E-mail: [info@hytronik.com](mailto:info@hytronik.com)

### **Hytronik DACH:**

Heinrich-Hertz-Straße 15 / 65582 Diez. Germany  
E-mail: [support\\_dach@hytronik.com](mailto:support_dach@hytronik.com)

### **Hytronik Iberia & Latam:**

Carrer del Moro Zeid, 11, Piso 3, Ciutat Vella, 46001 Valencia  
E-mail: [support\\_dach@hytronik.com](mailto:support_dach@hytronik.com)

### **Hytronik SVK & CZE:**

Techlum s.r.o (Slovakia, Slovenia) Staré Grunty 7A 841 04 Bratislava  
E-mail: [info@techlum.sk](mailto:info@techlum.sk)

### **Hytronik Asia:**

Pude Industrial Park, Dushi Village, Pingtan Town, Huiyang District, Huizhou City 516259  
E-mail: [info@hytronik.com](mailto:info@hytronik.com)

