Li Think

APP
Smart Bluetooth 5.0

Golf Cart
Battery

Charing
SELF
-HEATING

LOW TEMP CUT OFF
PROTECTION
(Charge/Discharge)

51.2V

LiFePO4 105Ah

Product Manual

400A BMS

www.lithink.com

Register Warranty

www.lithink.com

support@lithink.com

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$LiFePO_4$ Battery - Compliance Statement & Disclaimer

FCC STATEMENT

(FCC ID: 2BVX7LITHINK48VB)

Product Name: Li Think 48V105Ah Lifepo4 Battery

Model: LT-48-105-400-BT-LTP2-H-GF

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

RF Exposure Information This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

Disclaimer

- LIXIANG INTERNATIONAL (HONG KONG) ENERGY TECHNOLOGY CO., LIMITED SHALL NOT BE LIABLE FOR ANY DAMAGES CAUSED BY:
  Unauthorized use or disregard of this manual
- Consequential/accidental damage
  Improper repairs
  Actions of unqualified personnel
- THIS LIMITATION OF LIABILITY ALSO APPLIES TO:
  Use of non-original spare parts

  STRICTLY PROHIBITED:
  Unauthorized modifications or technical changes

※ Note: Applies only if battery incorporates wireless functionality.

Important Safety Information

DANGER

- **Risk of Fire, Explosion, or Burns:** DO NOT puncture, drop, crush, burn, penetrate, shake, or strike the battery. Keep the battery away from fire, heat sources, sparks, and hazardous chemicals. Never soak the battery in water.

- **Risk of Severe Electrical Shock:** The terminals of this battery are always live. Avoid exposed metal terminals or connectors. DO NOT short circuit the battery, place tools on the terminals, or touch them with bare hands.

- **hemical Hazard:** DO NOT open, dismantle, or modify the battery. If the casing is damaged, DO NOT touch the exposed electrolyte or powder. Uncovered electrolyte or powder that has contacted the skin or eyes MUST be flushed out with plenty of clean water immediately. Seek medical attention afterward.

WARNING

- **Installation Hazard:** Battery installation and maintenance must be performed by trained and certified technicians. Improper configuration or installation may damage the battery and other related equipment.

- **Personal Protection:** Always wear proper personal protective equipment (PPE), such as insulating gloves and safety goggles, when working on the battery.

- **Reverse Polarity Risk:** Please verify the polarity before connecting the wiring using a multimeter. Reverse polarity can and will destroy the battery and other electrical equipment.

- **California Proposition 65 Warning:** This product can expose you to chemicals including lead and lead compounds, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

CAUTION

- **Overheating Risk:** Place the battery in a well-ventilated area with sufficient heat dissipation to prevent overheating and damage.

- **System Protection:** Please use circuit breakers, fuses, or disconnects that have been properly sized by certified electricians or regional code authorities to protect all the electrical equipment in your system. While the battery has a built-in battery management system (BMS), it alone will not protect your system from severe electrical conditions.

NOTICE

- **Cable Sizing:** Size the battery cables and connectors appropriately. Use high-stranded copper connectors and heavy gauge cables to handle possible battery loads. Make sure to keep identical cable lengths.

- **Application Limit:** DO NOT use this deep cycle battery as a starting battery (e.g., for starting vehicles).

- **Proper Disposal:** DO NOT dispose of the battery as household waste. Please use recycling channels in accordance with local, state, and federal regulations.

If you have any questions or need any help, please feel free to contact us (and leave your contact phone number) at support@lithink.com, we will offer phone or email support in 12hrs.

$LiFePO_4$ Battery Installation

Preparation & Identification (Power OFF)

- Disconnect all loads and chargers
- Identify terminals: **Positive POS (+) Red / Negative NEG (-) Black**
- Prepare cables: **Color-coded O-terminals (red+/black-)**
- Clean contacts: **Wipe terminals with dry cloth**

Terminal Connection Sequence

- **Connect POS (+) first:**
  Place red O-terminal on stud → **ensure full surface contact**
  Hand-tighten M8 bolt (several turns)
- **Connect NEG (-) last:**
  Torque wrench to 12 N·m → tighten until audible "click"

Verification

- **Polarity check (MANDATORY):**
  Visually confirm **red cable → POS (+) / black cable → NEG (-)**
- **Security test:**
  Gently tug cables → **O-terminals must show zero movement**

Scenario-Specific Checks

Scenario	Critical Post-Installation Checks
RV Use	1. Battery securely fastened (no wobble) 2. +/- cables separately secured (no friction) 3. Battery compartment well-ventilated
Marine Use	1. Battery mounted high & dry 2. Apply thin anti-corrosion grease (copper-based) on studs 3. Monthly check terminals for green corrosion
Solar Use	1. Use $LiFePO_4$-compatible charge controller 2. Avoid direct sunlight on battery 3. Keep cables away from heat sources

24/7 Monitoring Via Lithink App

Download the Lithink APP and register your account.

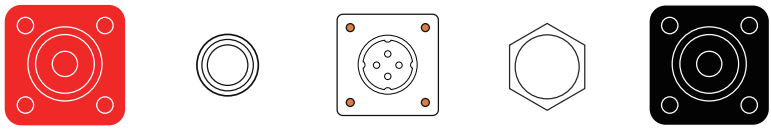
Download on the APP Store

GET IT ON Google Play

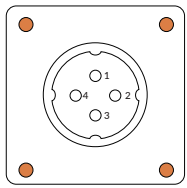
Pair the battery with the Lithink APP and effortlessly keep trackof the battery's real-time status.

Product Overview

51.2V 105Ah Battery



P+	P-
Output positive	Output negative
OFF/ON	RS485
Weak current switch	Communication port
VENT	Gas vent

Interface tool	Interface definition		
4 core aviation socket		①	RS485A
		②	RS485B
		③	P+
		④	P-

Parameter Name	Parameter Value
Cell Type	LiFePO4
Nominal Voltage	51.2V
Rated Capacity	105Ah
Energy	5376Wh
Internal Resistance	≤40mΩ
Cycle Life	≥4000 cycles
Battery Management System (BMS) Board	400A
Charge Method	CC/CV
Charge Voltage	58.4V

Recommend Charge Current	21A
Required Minimum Charge Current for Heating Function	10A
Max. Continuous Charge Current	105A
Max. Continuous Discharge Current	250A
Surge Discharge Current (30s)	600A
Max. Continuous Output Power	12800W
Dimension (inch)	19.68 * 12.51 * 9.60
Dimension (mm)	500 * 318 * 244
Housing Material	SPCC
Recommended Terminal Torque	12N·m
Protection Class	IP65
Charge Temperature Range	0°C to 50°C / 32°F to 122°F
Discharge Temperature Range	-20°C to 60°C / -4°F to 140°F
Storage Temperature Range (Less than 1 year)	-20°C to 25°C / -4°F to 77°F

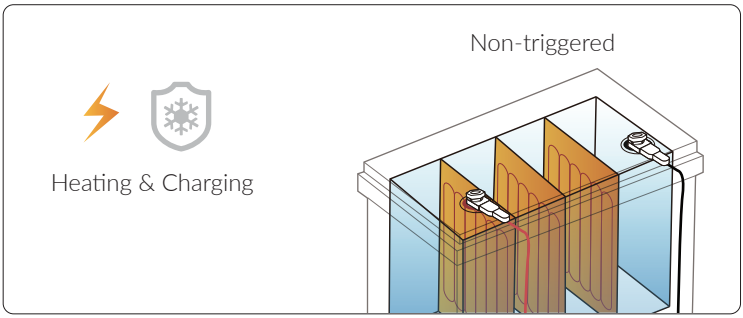
Storage Temperature Range (Less than 3 months)	-20°C to 40°C / -4°F to 104°F
Storage Temperature Range (Less than 7 days)	-20°C to 65°C / -4°F to 149°F
Heating Temperature	＞10°C/＞50°F
Approx. Heating Time @8A (From -10°C/14°F)	70-90 minutes
Approx. Heating Time @8A (From -20°C/-4°F)	100-150 minutes
Low Temperature Charging Protection	Yes
Stop Charging Temperature	0°C/32°F
Resume Charging Temperature	5°C/41°F
Battery Weight	42.9 kg / 94.5 lbs
Color	Black
Cell Weight	31.7kg/69.9 lbs
Number of Cells	16
Charging Time @ Recommended Current	21A@5h
Discharge Cut-off Voltage	43.2V
Self-discharge Rate	≤2%
Terminals	M8 * 14mm

Battery Self-Heating Function Workflow

Conditions & Responses

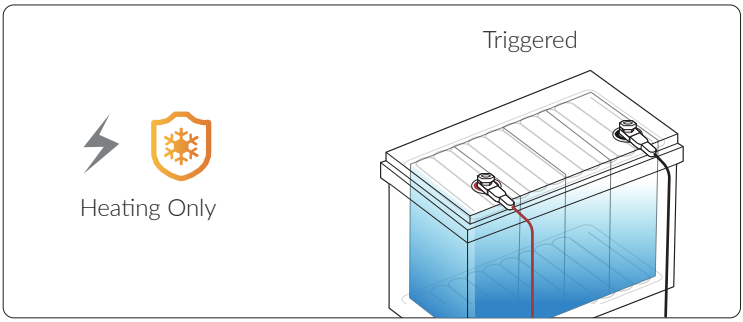
1.Normal Charging Mode (Battery Temperature > 0°C)

- **After connecting charger:**
  If temperature between **0°C ~ 5°C → Immediately initiates simultaneous heating & charging**
  When temperature **reaches ≥10°C → Heating stops automatically, charging continues**



2.Low-Temperature Protection Mode (Battery Temperature < 0°C)

- **After connecting charger:**
  System prioritizes **heating only** (no charging)
  When temperature **reaches ≥5°C → Activates simultaneous heating & charging**
  When temperature **reaches ≥10°C → Heating stops, charging continues**



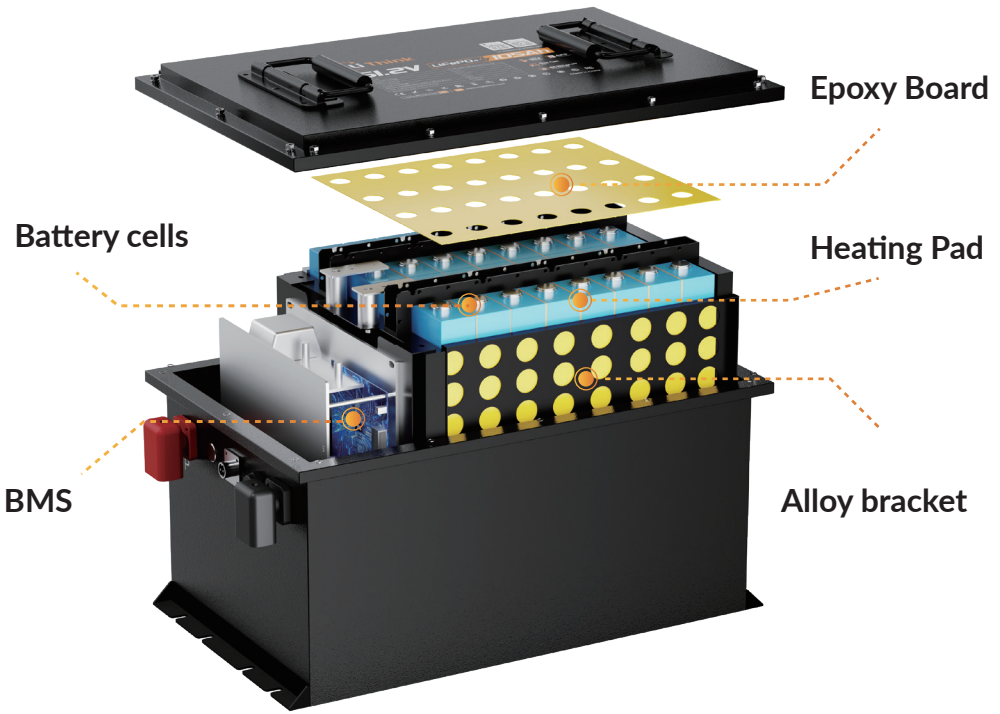
Heating Time Reference (Constant 8A Current)

Starting Temperature	Time to Reach 10°C
-10°C (14°F)	70-90 minutes
-20°C (-4°F)	100-150 minutes

Charging Preparation

- In extreme cold environments: Reserve additional 20% charging capacity
- Example: Target charge 100Ah → Requires ≥120Ah actual input

Internal structure



Things To Know Before Using

Terminal Security

- **Firmly tighten terminal bolts** to ensure secure connections. Loose terminals may cause **heat buildup,** leading to **battery damage or safety hazards.**
- Regularly inspect bolt tightness and retighten if necessary.

Usage Limitations

- **Not for Cranking Applications**
  This battery is engineered for **deep-cycle applications,** not high-crank currents required for engine starting. Use as a starter battery **reduces lifespan and performance.**

Long-Term Storage Protocol

- **Temperature:**
  Operational range: **-20°C to 60°C (-4°F to 140°F).**
  Ideal storage: **10°C to 35°C (50°F to 95°F).**
  Store in **fireproof containers** away from children.
  Extreme temperatures **degrade performance and longevity.**
- **State of Charge (SoC):**
  Maintain **50% SoC during storage.**
  Avoid full-charge (100%) or full-discharge (0%) states.
  If unused >3 months: **Recharge every 3 months.**

Maintenance Requirements

- **Regularly inspect** for wear, corrosion, or physical damage.
- Clean terminals with **baking soda-water solution** when corrosion occurs.
- **Ensure all connections remain tight.**

Charging Methods

Solar Panel

Recommended Charging Current: 21A（0.2C）

1200W	With effective daily sunlight of around 4.5 hours, a 1200W solar panel can fully charge the battery within one day.

LiFePO4 batteries Controller Settings

Charging	Charge / Bulk / Boost Voltage	58.2±0.2V
	Absorption Voltage	58.2±0.2V
	Over Voltage Disconnect	60V
	Over Voltage Reconnect	57.6V
	Tail Current	2A

Discharging	Low Voltage Disconnect	43.2V
	Low Voltage Reconnect	44.8V

Battery Charger

- **Recommendations:**
  Charging Voltage: 57.6V to 58.4V
  Disconnect the charger from the battery when it is fully charged.
- **Not recommended:**
  Using alligator clips to connect the charger or load to the battery. (the small contact area may cause the terminals to melt and damage the battery).

21A (0.2C)	The battery will reach a full charge in approximately 5 hours.

Alternator / Generator

The LiThink battery can be charged via an alternator or generator. Note: If the alternator/generator supports DC output, a DC-to-DC charger should be installed between the battery and the generator. If the alternator/generator supports AC output, refer to the "Battery Charger" section above and add a suitable battery charger between the battery and the generator.

21A (0.2C)	The battery will reach a full charge in approximately 5 hours.

Battery Capacity Estimation Guide

- For LiFePO4 batteries, the voltage shown during charging or discharging isn't the battery's true voltage. Once you finish charging or discharging and disconnect the battery from the power source, its voltage will gradually settle to the real value.

- Resting Voltage: Measure the voltage after disconnecting the battery from the charger and loads. Leave it undisturbed with no current flow for 3 hours.

SOC (%)	Voltage(V)
0	30 to 36
25	39 to 39.45
50	39.45 to 39.6
75	39.6 to 39.99
100	≥39.99

Recommended Cable Sizing

The values above comply with **NEC Table 310.15(B)(16)** for copper cables rated at **167°F** (75°C) and apply to ambient temperatures **≤ 86°F (30°C).** For cables longer than **6 feet (1,829 mm)** or in environments exceeding **86°F (30°C),** use **larger-gauge cables** to prevent **excessive voltage drop** caused by undersized cables.

PVC Copper Cable Size (AWG/mm(2))	Ampacity (A)
14 (2.08)	20
12 (3.31)	25
10 (5.25)	35
8 (8.36)	50
6 (13.3)	65
4 (21.1)	85
2 (33.6)	115
1 (42.4)	130
1/0 (53.5)	150
2/0 (67.4)	175
4/0 (107)	230
2 * 1/0 (107)	300
2 * 2/0 (134.8)	350

What To Do When The Battery Stops Working?

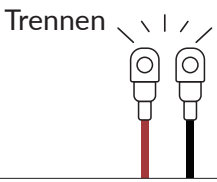
When the battery		
can't work	can't be charged	voltage < 36V
there's an 85% chance that the BMS has shut it off for protection. You can try the following ways to activate the battery.		

General Steps

If the BMS has cut off the battery for protection, follow these steps to activate it:

Step①

Disconnect all connections from the battery.



Step②

Leave the battery aside for 30 minutes. The battery will then automatically recover to a normal voltage (>40V) and can be used again after being fully charged.

If the battery still can't recover after the above steps, try activating it using one of the following two methods. Once activated (voltage > 30V) and fully charged via the normal charging method, it can be used normally again.

Method①

Use a charger with a lithium battery activation function to fully charge the battery.

charger with a lithium battery activation function

Activate & Fully Charge

Method②

Connect a controller that supports 48V LiFePO4 battery charging to charge the battery for 3 to 10 seconds in sunny daytime.

Controller
(supports 48V LiFePO4)

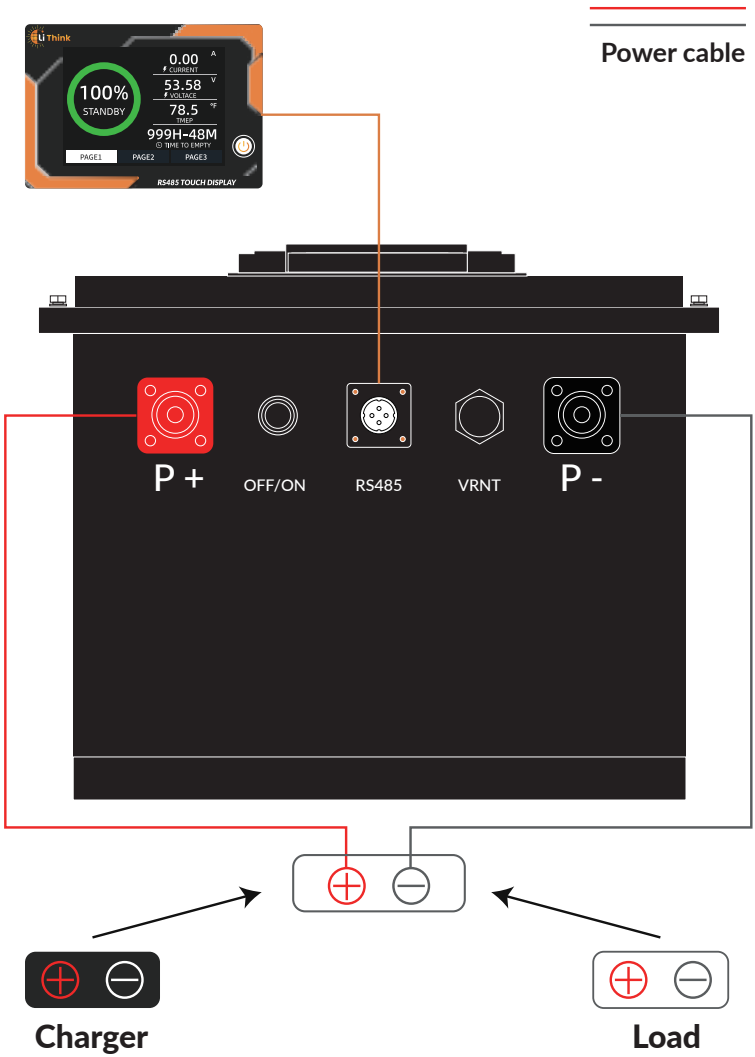
3~10s

Activate & Fully Charge

Battery Capacity Estimation Guide

A typical wiring layout is shown in Figure 3. Connect the charger and the load to the main output terminals of the battery. If an external display is used, connect it to the RS485 communication port only. Always confirm correct polarity before switching the battery on.

Typical electrical connection



Installation Guidelines

Before installation, place the battery on a flat, dry, and stable surface. Make sure the installation area is clean, well ventilated, and protected from direct heat, water, and corrosive materials.

- Turn the battery switch to OFF before making any connection.
- Secure the battery firmly using a suitable bracket, tray, or hold-down system.
- Connect the positive cable to P+ and the negative cable to P-.
- If applicable, connect the external display to the RS485 communication port.
- After confirming that all connections are correct and secure, switch the battery to ON and check that the system operates normally.

Important Installation Notes

- Do not reverse the positive and negative connections.
- Do not connect the charger or load to the RS485 port.
- Use insulated tools during installation.
- Make sure all terminals are tightened securely.
- Keep the vent area unobstructed.
- Prevent the battery from moving, tilting, or impacting other parts during vehicle operation.
- Keep the vent area unobstructed.
- Inspect all cables for damage before use.
- Recheck all connections after the first installation and initial operation.

Before Power-On Checklist

- Battery is securely mounted.
- Positive and negative cables are connected correctly.
- RS485 cable, if used, is connected properly.
- No loose terminals or exposed conductors are present.
- Vent area is clear and unobstructed.

Li energy, Think safety,
Secure every journey.

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