Li Time

500A

PRODUCT MANUAL

Battery Monitor

www.litime.com

UNITED STATES

Register Warranty

www.litime.com

service@litime.com

IMPORTANT SAFETY INSTRUCTIONS

This manual contains important safety, installation, and operating instructions for the battery monitor. Please read all guidelines in the manual carefully to avoid incorrect connections that could cause the battery monitor to malfunction and/or create a fire hazard.

GENERAL

- **Read all the instructions** and cautions in the manual before the installation.
- There are no user-serviceable parts inside this product. **DO NOT** disassemble or attempt to repair the product.
- The product should not be exposed to sunlight or an environment with a lot of UV radiation for a long time during use or storage, otherwise it will shorten the service life of the monitor screen.

BATTERY SAFETY

- Carefully read battery manuals, and operate the battery under the battery manufacturer's guidance.
- To prevent the battery from being short-circuited, **NO** metal objects shall be placed near the battery, and **AVOID** direct contact between the positive (+) and negative (-) terminals of the battery.
- Be very careful when installing the lead-acid battery. Wear eye protection and have fresh water available in case there is contact with the battery acid.
- Keep the lead-acid battery away from fire sparks, as it may produce flammable gas.

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

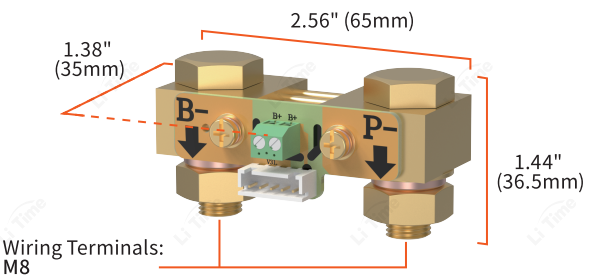
PRODUCT OVERVIEW

LITIME BATTERY MONITOR

Voltage Range	8V to 120V
Current Range	0A to 500A
Continuous Current	350A
Wiring Terminals	M8

Monitor Screen

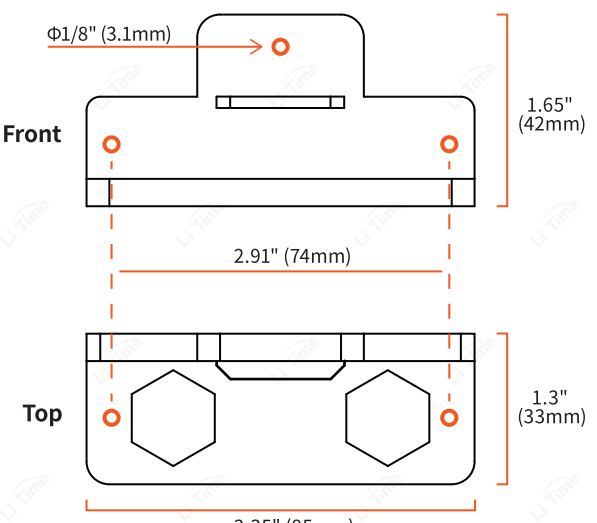
500A Shunt



ADDITIONAL COMPONENTS

Additional components are included in the package.

SHUNT HOLDER



20FT (6M) SHIELDED WIRE

20AWG 3FT (1M) POWER WIRE

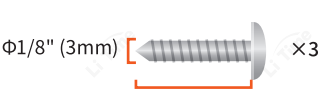
Wiring Terminal to Battery - M8

SCREWDRIVER

WRENCH

MOUNTING SCREWS*3

Mounting screws for fixed mounting of the shunt on the wood wall or drywall are provided.

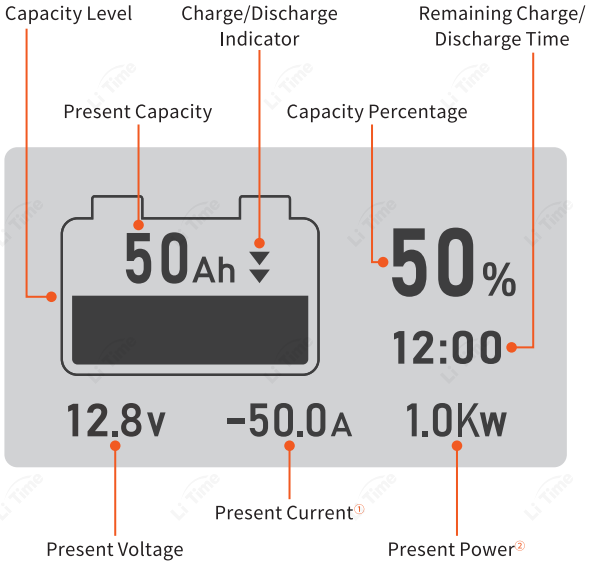


CONTENTS

LCD DISPLAY & OPERATION KEYS

MONITOR INTERFACE

LCD Display



① The present current indicates the charging current when it's positive and discharging when negative. When charging and discharging at the same time, it indicates the value of the difference between the charging and discharging current.
During the charging process, the monitor display exhibits a slow flash.

② The present power indicates the charging/discharging power. When charging and discharging at the same time, it indicates the value of the difference between the charging and discharging power.

Operation Keys

Key	Operation	Description
	Press and Hold	Turn on/off the backlight.
	Short Press	Increase backlight brightness.
	Press and Hold	Set the current capacity to full capacity.
	Short Press	Reduce backlight brightness.
	Press and Hold	Set the current capacity to zero capacity.
	Press and Hold	Enter the setting interface.

SETTING INTERFACE

Press and hold the "  " key to enter the setting interface.

LCD Display

Usable Capacity of the Battery	CAP: 0100.0Ah
Full Capacity Voltage	Full V: 000.0 V
Zero Capacity Voltage	Zero V: 000.0 V
Shutdown Voltage	PowOff: 000.0 V
Low-Capacity Alarm	Alarm: 000.0 Ah
Battery Attenuation Ratio	Atten: 0.000 %

CAP (Ah)
The default is 100Ah. Set according to the actual usable capacity of the battery pack before first use, otherwise the capacity percentage will not be displayed correctly.

Full V (V)
When the battery voltage is higher than the set value, the capacity will be automatically set to 100%. **Set it based on the battery (system) charge voltage**. For example, for a 12.8V $LiFePO_4$ battery, set it to **14.2V**.

Zero V (V)
When the battery voltage is lower than the set value, the capacity will be automatically set to 0%. **Set it based on the battery(system) low voltage disconnect voltage**. For example, for a 12.8V $LiFePO_4$ battery, set it to **10.8V**.
Note: When setting 10.8V for a 12.8V $LiFePO_4$ battery, there is about 1% of the battery capacity left reserved for screen power display and operation settings.

PowOff (V)
When the battery voltage is lower than the set value, the LCD backlight and display will be automatically turned off. For example, for a 12.8V $LiFePO_4$ battery, set it to **10V**.

Alarm (Ah)
When the battery capacity is lower than the set value, the capacity level and percentage on the LCD display will flash, and the buzzer will alarm every 10 seconds.

Atten (%)
After the battery completes a cycle (one complete charge and discharge is a cycle), the capacity value will automatically change according to this ratio (No need to set this value).

Operation Keys

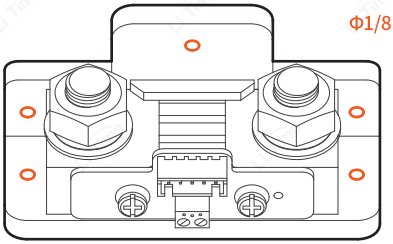
Key	Operation	Description
	Short Press	Exit settings / Exit set item
		Previous row / Setting value +1
		Next row / Setting value -1
		Enter to set item / Select plus or minus

INSTALLATION

MOUNTING

Shunt

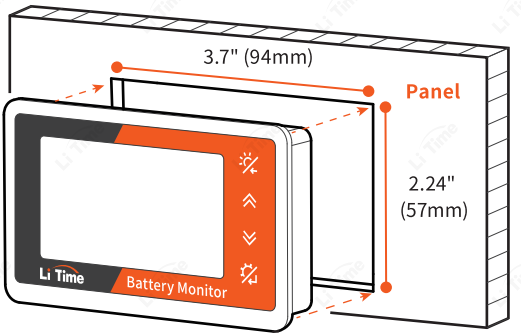
The shunt can be stably placed or mounted on a flat surface by the shunt holder. There're five Φ1/8" (3.1mm) holes for mounting purposes located in the holder that can be screwed onto the flat surface with the provided screws.



Monitor Screen

The monitor screen is simple to install as it's fixed by tabs.

Cut a 3.7"*2.24" (94mm*57mm) rectangular opening in the panel according to the dimensions. Then put the monitor screen into the opening, and make sure that the tabs are locked.



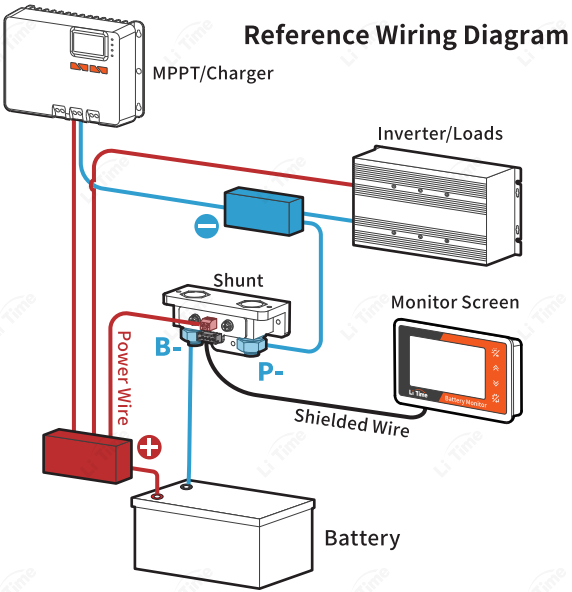
CONNECTION

Prepare for Setup Before Connection

Before connecting, fully charge the battery/battery system, test and record its resting voltage, and prepare for the setup after the connection is completed.

Basic Connection for Single Battery/ Series-only Battery Bank

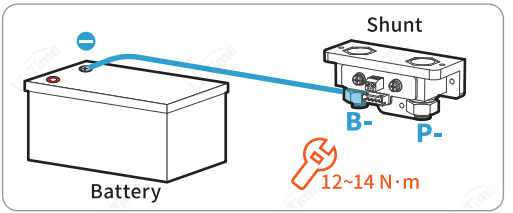
Refer to the following wiring diagram and wiring steps to complete the connection of a single battery or a series-only battery system.



Step 1

Connect the ⊖ terminal of the battery to the M8 bolt on the "B-" side of the shunt. Tighten the nut to the bolts under the 12~14 N·m setting.

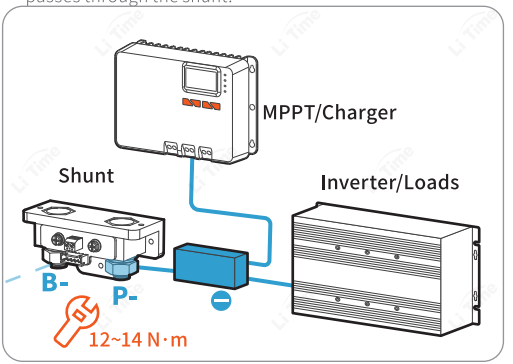
Note that there should be no other connections on this side (B-) of the shunt or on the ⊖ terminal of the battery. Any load or charger connected here will be excluded from the battery state of charge calculation.



Step 2

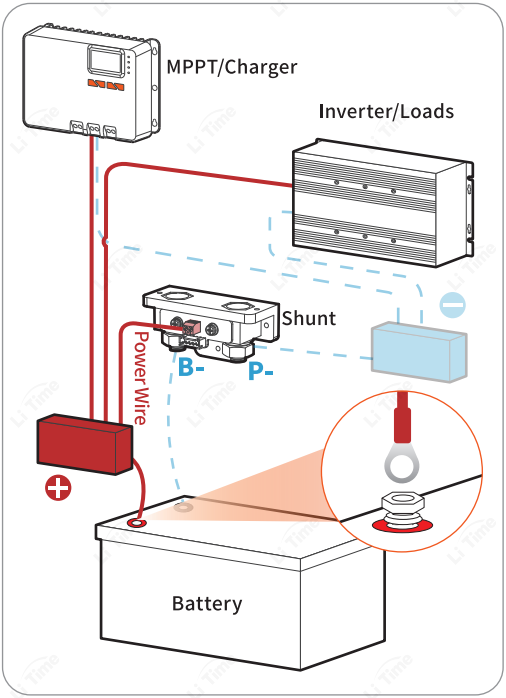
Connect the M8 bolt on the "P-" side of the shunt to the ⊖ bus bar. Tighten the nut to the bolts under the 12~14 N·m setting.
And then connect the ⊖ terminals of the electrical system to the ⊖ bus bar.

Make sure that the ⊖ of all DC loads, inverters, battery chargers, solar chargers, and other charge sources are connected "after" the shunt (not directly connected to the battery), and that all current flowing in/out the battery passes through the shunt.



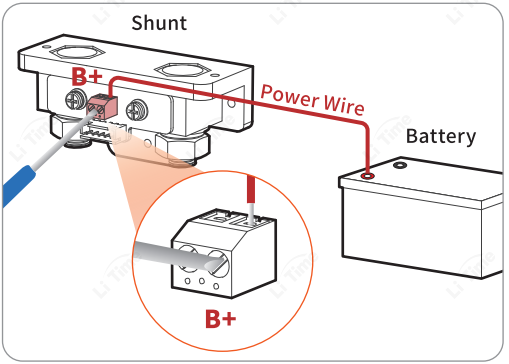
Step
3

Connect the below terminals to the positive bus bar.
① ⊕ terminal of the battery
② ⊕ terminals of the electrical system
③ M8 ring terminal of the power wire



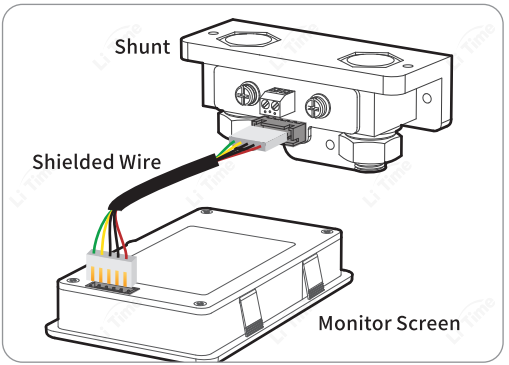
Step 4

Unscrew the "**B+**" terminal on the shunt with the screwdriver provided, connect the ferrule pin of the power wire to the "**B+**" terminal, and tighten it again.



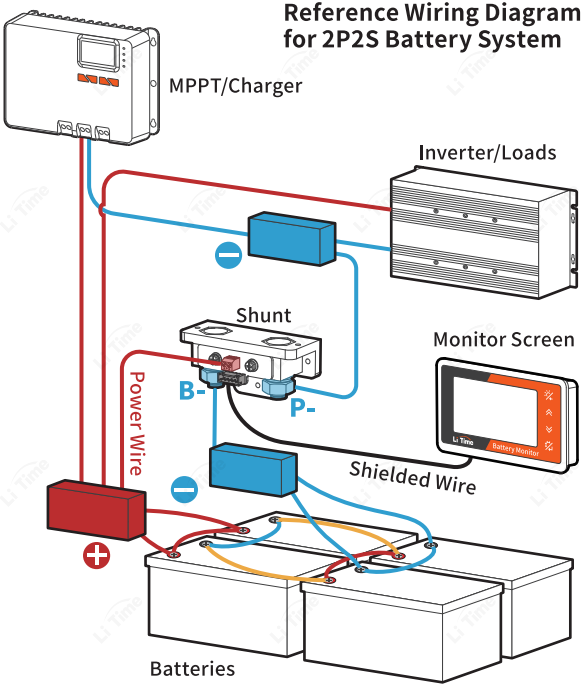
Step 5

Connect the shunt to the monitor screen by the shielded wire. And the LCD display should turn on assuming proper connection.



Connection for Parallel / Series & Parallel Battery Bank

If a parallel or series-parallel battery bank needs to be monitored, it is recommended to use two bus bars for the total positive and total negative output/input connections of the battery bank.



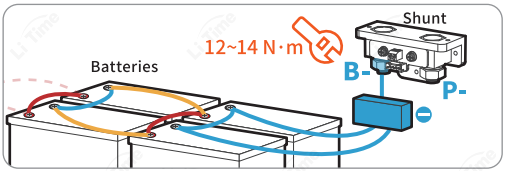
Step **1**

Complete the parallel/series-parallel connection between batteries (recommended to connect in parallel first and then in series).

Step **2**

Connect all ⊖ input/output terminals of the battery bank① to the ⊖ bus bar. Tighten the nut to the bolts under the 12~14 N·m setting.
And then connect the M8 bolt on the "**B-**" side of the shunt to the ⊖ bus bar.

⊖ Note that there should be no other connections on this side (B-) of the shunt or on the ⊖ battery terminal. Any load or charger connected here will be excluded from the battery state of charge calculation.

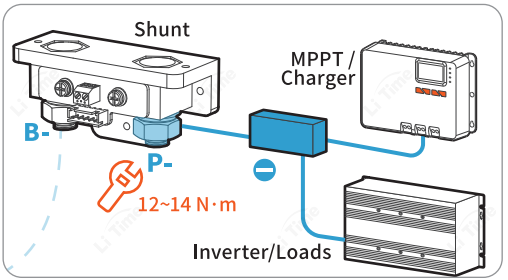


① The input/output terminals of the battery bank refer to the terminals that are not connected in series with other batteries in the battery bank.

Step **3**

Connect the M8 bolt on the "**P-**" side of the shunt to the ⊖ bus bar. Tighten the nut to the bolts under the 12~14 N·m setting.
And then connect the ⊖ terminals of the electrical system to the ⊖ bus bar.

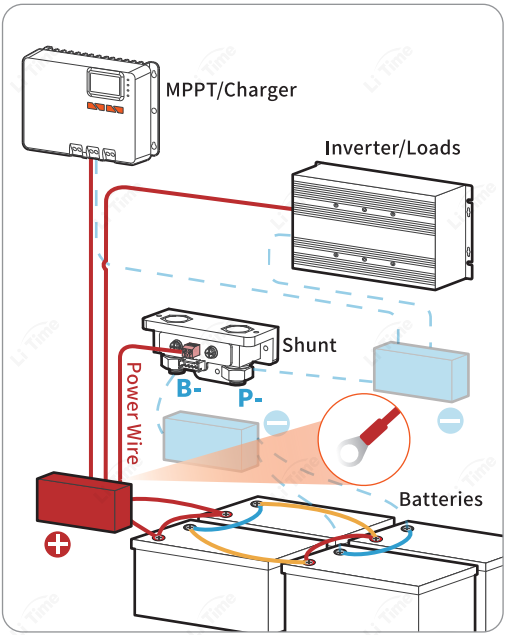
⊖ Make sure that the ⊖ of all DC loads, inverters, battery chargers, solar chargers, and other charge sources are connected "after" the shunt (not directly connected to the battery), and that all current flowing in/out the battery passes through the shunt.



Step
4

Connect the below terminals to the positive bus bar.

① All ⊕ input/output terminals of the battery bank
② ⊕ terminals of the electrical system
③ M8 ring terminal of the power wire



Step
5

Refer to Step 5 on Page 8 to finish the connection.

SETUP

After the monitor is correctly connected and the LCD display is normally on, follow the steps below to complete the monitor setup.

Step **1**

Press and hold the " " **key to enter the setting interface to set up the below parameters. Refer to Pages 2-3 for a detailed setting explanation and key operation.**

Required settings:

- **CAP** (Usable capacity of the battery/battery systems instructed in the battery product manual)
- **Full V** (The charge voltage of the battery/battery system)
  - ☆ For a 12.8V LiFePO4 battery, set it to **14.2V**.
- **Zero V** (The low voltage cutoff voltage of the battery/battery system)

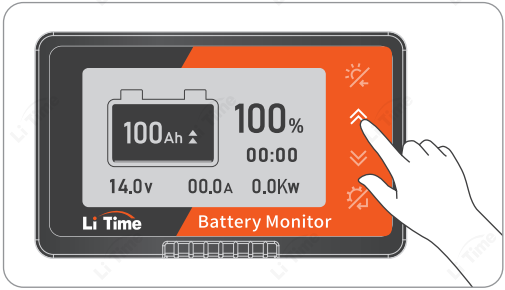
Optional settings:

PowOff (The shutdown voltage for LCD backlight and display)

Alarm (The low-capacity alarm for LCD display)

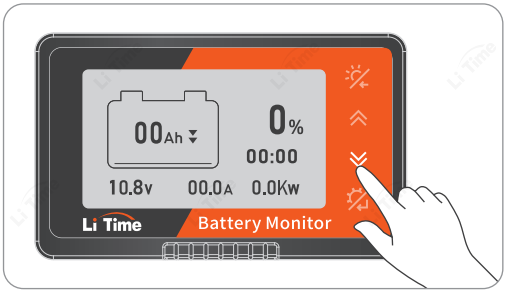
Step 2

Make sure the battery/battery system is fully charged. Press and hold the " ⏫ " key to set the current capacity to full capacity.



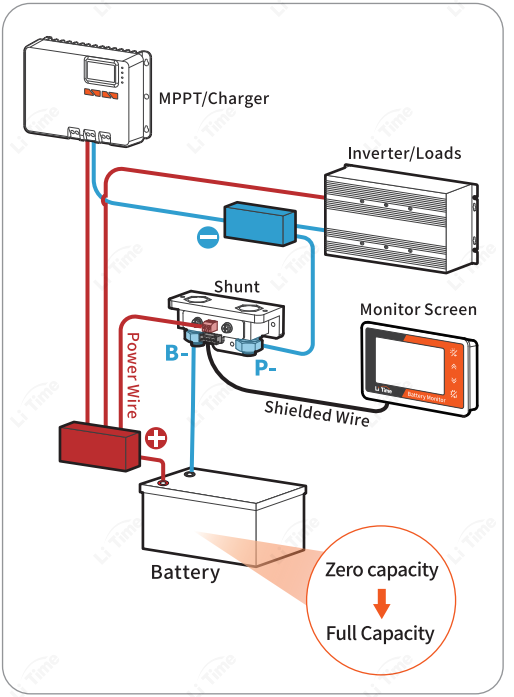
Step 3

Discharge the battery/battery system until it reaches the Zero Capacity Voltage. Press and hold " ⏬ " key to set the current capacity to zero capacity.



Step
4

Continue discharging the battery until both the battery and the monitor screen shut down. Then fully recharge the battery and verify the monitor data accuracy.



Now the setup is complete and your monitor is ready to go.

SPECIFICATIONS

Item		Parameter
Voltage Range		8V to 120V
Current Range		0A to 500A
Continuous Current		350A
Battery Capacity		0.1Ah to 9999Ah
Accuracy	Current	±1.0 %
	Voltage	±1.0 %
	Capacity	±1.0 %
Power Consumption	Working	10mA
	Standby	1.0mA
Operating Temperature Range		14°F to 140°F / -10°C to 60°C
Dimensions	Monitor Screen	3.94*2.4*0.71 inch / 100*61*18 mm
	Shunt	2.56*1.38*1.44 inch / 65*35*36.5 mm
Shunt Connection Bolts		M8
Shielded Wire		20ft (6m)
Power Wire		3ft (1m)

Li Time

www.litime.com

Shenzhen Litime Technology Co., Ltd