

Yaregelun XY-BT13L

Yaregelun XY-BT13L 30A Battery Charge/Discharge Module Instruction Manual

Model: XY-BT13L

1. INTRODUCTION

The Yaregelun XY-BT13L is a 30A fully automatic battery charge and discharge management module designed for bidirectional current detection. It integrates advanced protection features to safeguard your battery system. This manual provides essential information for the proper installation, operation, and maintenance of your XY-BT13L module.

2. SAFETY INFORMATION

Please read and understand all safety instructions before installing or operating the module. Failure to do so may result in damage to the device, battery, or personal injury.

- Ensure all power sources are disconnected before making any wiring connections.
- Verify correct polarity for all connections (positive to positive, negative to negative). Incorrect wiring can cause severe damage.
- Do not exceed the maximum current rating of 30A or the voltage range of 10-110V.
- Install the module in a well-ventilated area, away from flammable materials and moisture.
- This device is intended for use by qualified personnel or under their supervision.

3. PRODUCT OVERVIEW AND FEATURES

The XY-BT13L module offers comprehensive battery management with several key features:

- **Fully Automatic Charge and Discharge Management:** Prevents overcharging and under-voltage conditions.
- **Bidirectional Current Detection:** Monitors current flow in both charging and discharging directions.
- **Advanced Protection:** Includes overvoltage, undervoltage, overcurrent, low battery alarm, over-temperature protection, and delayed conduction.

- **UPS Uninterruptible Power Supply Mode:** Ensures continuous power during outages.
- **Precision Coulometer:** Provides accurate battery capacity measurement.
- **Automatic Calibration:** For battery capacity.
- **Serial Communication:** Supports standard Modbus protocol.

Operating mode description



Charging mode
When entering the charging state, the charging relay
When closed, the charging icon flashes, indicating the battery capacity
The icon will dynamically display charging
Charging mode button instructions: Press STOP briefly
Press the button, emergency stop; Long press the STOP button.

Force switch to discharge mode
Charging mode
operation interface

**Charging
mode icon**



Discharge mode
When entering the discharge state, the discharge relay
When closed, the discharge icon flashes and the battery capacity chart appears
The indicator will dynamically display the discharge
Discharge mode key instructions: Press STOP briefly
Press the button, emergency stop; Long press the STOP button.

Force switch to charging mode
Discharge mode
operation interface

Discharge mode icon



UPS uninterruptible power supply mode
The charging relay and the discharging relay are always the same
When it is turned on, the charger will charge the battery and
Supply power to the load; When the battery is fully charged, charge it
The electrical relay will not disconnect. When the charger is powered off
After that, the battery automatically supplies power to the load until it is charged
The pool power has been exhausted. When the charger is powered on,
Automatically charge the battery and supply power to the load.
Note: This mode must ensure the output of the charger
The power is greater than the charging power plus the load power.

The simultaneous flashing of the charging and discharging ICONS represents the UPS mode



Current description in UPS mode:
When the charger charges the battery and supplies power to the load, the current displayed is the charging current for the battery.
When the charger is disconnected (or the charger malfunctions), the charging icon will enter a rapid flashing mode to prompt charging
When an electrical appliance malfunctions, the battery will automatically supply power to the load, and the current displayed is the battery's discharge current.

How to turn on or off the UPS mode

Long press the SET button to enter the Settings. If the FUC parameter is set to UPS, the UPS mode will be activated.
Set it to other values to turn off the UPS mode
UPS uninterruptible power supply mode button instructions: Press the STOP button briefly for emergency stop.

Figure 1: Yaregelun XY-BT13L module highlighting its main features and capabilities, including precision coulometer, overcharge/overdischarge protection, and bidirectional current detection.

XY-BT11L

30A fully automatic battery charge and discharge management

Precision coulometer

The true capacity of the battery

Overcharge and overdischarge protection



- ✓ Overvoltage protection
- ✓ Under-voltage protection
- ✓ Overcurrent protection
- ✓ Low battery alarm
- ✓ Over-temperature protection
- ✓ Delayed conduction
- ✓ Strong guidance circuit
- ✓ UPS uninterruptible power supply mode

10A bidirectional current detection

Automatic calibration of battery capacity

The battery voltage is 10V-110V

Support the serial communication standard Modbus protocol

Figure 2: Detailed view of the module's internal components, showing the precision external clock crystal oscillator, 10A bidirectional current sampling chip, and the 48-pin powerful MCU controller.

4. SPECIFICATIONS

Parameter	Value
Product Model	XY-BT13L
Battery Voltage Range	10-110V
Adapter Input Voltage Range	10-110V
Maximum Current	30A
Voltage Accuracy	±0.5%+1 digit
Current Accuracy	±0.5%+3 digits
Current Resolution	0.01A
Voltage Resolution	0.01V
Operating Temperature	-10°C to 60°C
Package Dimensions	5.12 x 3.54 x 1.57 inches
Item Weight	4.9 ounces

5. SETUP AND INSTALLATION

Proper wiring is crucial for the safe and effective operation of the XY-BT13L module. Refer to the wiring diagram below for connections.

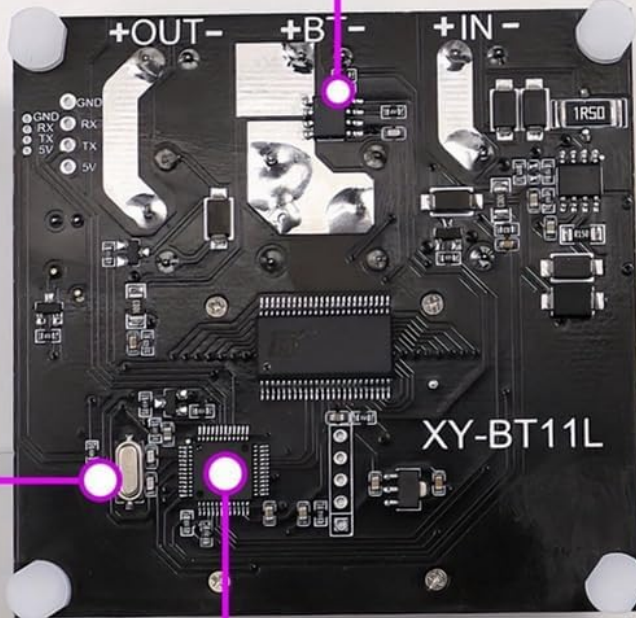
Details determine success or failure

precision external clock crystal oscillator

Ensure the accuracy of the time

Electricity consumption statistics are more accurate

10A precision bidirectional current sampling chip



The 48-pin powerful MCU controller operates at a 64M frequency, offering faster computing speed

Intelligent control

Seamless connection

Realize fully automatic charging and discharging management

Figure 3: Wiring diagram for the XY-BT13L module. Connect the charger, battery, and load according to the labels. Note the 10A charging relay switch, 10A discharge relay switch, buzzer, SET key, UP/DOWN buttons, STOP emergency stop button, and serial port communication interface.

5.1 Wiring Instructions

1. **Input Power (IN+/IN-):** Connect your charger or power adapter to these terminals. Ensure the voltage is within the 10-110V range.
2. **Battery Connection (BT+/BT-):** Connect your rechargeable battery to these terminals. Observe correct polarity.
3. **Load Connection (OUT+/OUT-):** Connect your electrical load to these terminals.
4. **K485X Module (Optional):** If using the K485X communication module, connect it to the serial port communication interface (GND, RX, TX) for Modbus protocol communication.
5. **Relay Switches:** The module features internal 10A charging and discharge relay switches. Ensure your current does not exceed this rating for direct control.

After all connections are made, double-check for any loose wires or incorrect polarity before applying power.

6. OPERATING MODES

The XY-BT13L module supports various operating modes for battery management. The display provides real-time information on voltage, current, and battery capacity.



Figure 4: Visual guide to the operating modes: Charging, Discharge, and UPS Uninterruptible Power Supply. The display icons and current readings indicate the active mode.

6.1 Charging Mode

- When entering the charging state, the charging relay closes.
- The charging icon flashes, indicating the battery capacity.
- The icon will dynamically display charging progress.
- **Charging mode button instructions:** Press the **STOP** button briefly to stop charging. Long press the **STOP** button to force switch to discharge mode.

6.2 Discharge Mode

- When entering the discharge state, the discharge relay closes.

- The discharge icon flashes, and the battery capacity chart appears.
- The indicator will dynamically display the discharge progress.
- **Discharge mode key instructions:** Press the **STOP** button briefly to stop discharging. Long press the **STOP** button to force switch to charging mode.

6.3 UPS Uninterruptible Power Supply Mode

In UPS mode, the charging relay and discharge relay are always in the same state. When the charger is connected, it charges the battery and supplies power to the load. When the battery is fully charged, the charge current cuts off, but the electrical relay does not disconnect. When the charger is powered off, or the pool power has been exhausted, the module automatically switches to supply power to the load from the battery.

- **Note:** This mode must ensure the output of the charger is greater than the charging power plus the load power.
- The simultaneous flashing of the charging and discharging icons represents the UPS mode.
- **Current description in UPS mode:** When the charger charges the battery and supplies power to the load, the current displayed is the charging current for the battery. When the charger is disconnected (or the charger malfunctions), the charging icon will enter a rapid flashing mode to prompt charging. When an electrical appliance malfunctions, the battery will automatically supply power to the load, and the current displayed is the battery's discharge current.

How to turn on or off the UPS mode:

Long press the **SET** button to enter the Settings. If the FUC parameter is set to UPS, the UPS mode will be activated. Set it to other values to turn off the UPS mode.

UPS uninterruptible power supply mode button instructions: Press the **STOP** button briefly for emergency stop.

7. MAINTENANCE

- Keep the module clean and free from dust and debris.
- Ensure proper ventilation around the module to prevent overheating.
- Regularly check all wiring connections for tightness and signs of corrosion.
- Avoid exposing the module to extreme temperatures or humidity.

8. TROUBLESHOOTING

If you encounter issues with your XY-BT13L module, consider the following common problems and solutions:

- **Module not powering on:** Check input voltage and polarity. Ensure connections are secure.
- **Battery not charging/discharging:** Verify battery connections and polarity. Check if the module is in the correct operating mode. Ensure the charger/load is functioning correctly.
- **Inaccurate readings:** Ensure all connections are tight. If issues persist, the module may require recalibration (refer to advanced settings if available, or contact support).
- **Overheating:** Ensure adequate ventilation. Reduce load if consistently overheating.
- **Unexpected mode changes:** Review button press sequences and settings, especially for UPS mode activation.

For persistent issues not covered here, please contact Yaregelun customer support.

9. WARRANTY AND SUPPORT

The Yaregelun XY-BT13L module is manufactured with quality and reliability in mind. For specific warranty details, please refer to the product packaging or contact your point of purchase. For technical support or inquiries, please reach out to Yaregelun customer service.