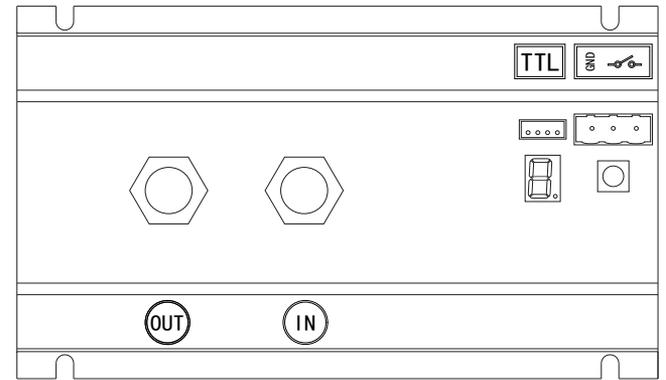


BP Series Battery Protector User Manual



Dear users:

Thank you for choosing our products!

Safety Instructions

-  1. The applicable voltage of some controller models exceeds the safety voltage of human body. Please read the manual carefully before operation and operate the controller only when the safety operation training is completed.
-  2. Since no part is required to be maintained or repaired inside the controller, please do not disassemble and repair the controller.
-  3. Please install the controller indoors to avoid exposure of components and keep water away from the controller.
-  4. Since the cooling fin will be very hot during operation, please mount the controller in a well-ventilated place.
-  5. Suitable fuse or circuit breaker is recommended to be equipped outside the controller.
-  6. Before installing and adjusting the wiring of the controller, be sure to disconnect the wiring of the photovoltaic array and the fuse or circuit breaker near the accumulator battery terminals.
-  7. After installation, check whether all wiring is tightly connected to avoid the danger of heat accumulation due to loose connection.

 **Warning: Indicating dangerous operation, and safety preparation is required before operating.**

 **Attention: Indicating destructive operation.**

 **Tips: Indicating suggestions and tips to the operator.**

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1. Product Introduction

1.1 Product overview

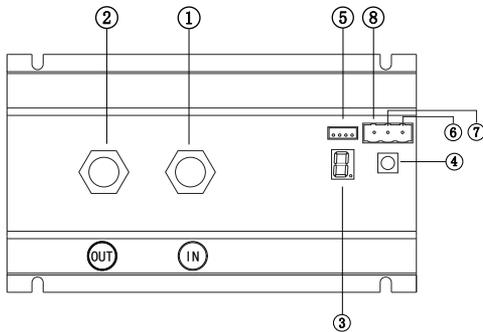
[Battery charge protector] is a device for real-time monitoring and protecting battery charging voltage, which can prevent the battery from over-charge.

[Battery discharge protector] is device for monitoring and protecting battery discharge voltage, which can prevent battery from over-discharge. When the battery voltage is too high, it can quickly cut off the power supply to prevent load equipment damaged.

1.2 Product features

- ◆ Charge protector and discharge protector are configurable
- ◆ It supports the system voltage setting
- ◆ It supports over-voltage and over-discharge protection level
- ◆ 1 digit 7-segment display for parameter
- ◆ TTL communication
- ◆ It supports APP monitoring via Bluetooth (optional)
- ◆ It is applied to common negative electrode system

1.3 Appearance and interface description



| No. | Name |
|-----|-----------------------------|
| ① | Protector input (+) |
| ② | Protector output (+) |
| ③ | 7-segment display |
| ④ | Button |
| ⑤ | TTL communication interface |
| ⑥ | Remote switch |
| ⑦ | Protector ground |
| ⑧ | Protector ground |

2. Technical Parameters

| Product model | BP4860N25 | BP4885N25 | BP48100N25 |
|-------------------------------------|---|---------------|---------------|
| Battery voltage | 12V/24V/36V/48V | | |
| Static power consumption | ≤50mA | | |
| Operating voltage range | 8V-70V | | |
| System withstand voltage | 250V | | |
| Rated current | 60A | 85A | 100A |
| Grounding mode | Connect to the system common ground(for the common negative electrode system) | | |
| High voltage protection | Select by button | | |
| High voltage recovery | | | |
| Low voltage protection | | | |
| Low voltage recovery | | | |
| Built-in Bluetooth | Optional | | |
| TTL communication | √ | | |
| Button | √ | | |
| 7-segment display | √ | | |
| Remote switch | √ | | |
| Protection grade | IP65, Glued | | |
| Certification Requirements | CE ROHS | | |
| Operating ambient temperature range | -35°C~65°C | | |
| Cooling mode | Natural heat dissipation | | |
| Dimension | 149*96,5*60mm | 166*96,5*60mm | 183*96,5*60mm |
| Weight | 850g | 950g | 1050g |

3. Parameter Setting

3.1 [A] Protector Mode

| Display | Setting range | Meaning |
|---------|---------------|---------------------|
| A | C (default) | Charge protector |
| | L | Discharge protector |

3.2 [U] System voltage

| Display | Setting range | Meaning |
|---------|---------------|--------------------------|
| U | 0. | Automatic identification |
| | 1. | 12V |
| | 2. | 24V |
| | 3. | 36V |
| | 4. (default) | 48V |

3.3 [P] Protection level

| Display | Setting range | Over-voltage protection | Over-voltage protection recovery | Over-discharge voltage | Over-discharge restoring voltage | Remarks |
|---------------------------|--------------------|-------------------------|------------------------------------|------------------------|----------------------------------|-------------|
| P | 0 | 15,0V | 14,0V | 10,7V | 12,2V | Customized |
| | 1(default) | 15,0V | 14,0V | 10,7V | 12,2V | Fixed value |
| | 2 | 15,5V | 13,8V | 10,9V | 12,4V | |
| | 3 | 16,0V | 13,6V | 11,1V | 12,6V | |
| | 4 | 16,5V | 13,4V | 11,3V | 12,8V | |
| 5 | 17,0V | 13,2V | 11,5V | 13,0V | | |
| Protection/recovery delay | Immediate response | 2s | 2s Configurable when customized | 2s | 2s | |

The parameters shown in the table are for the condition of 25°C/12V, and it should be multiplied by 2/3/4 for the battery systems with voltages of 24V/36V/48V.

[Charge protector]: Only over-voltage protection value is used up to.

[Discharge protector]: Both over-voltage protection value and over-discharge protection value are used up to.

[Customized mode]: After the number set to "0", the protection value and over-discharge delay time can be customized through communication.

[1-5]: Delays are fixed to 2 seconds for overvoltage recovery, over-discharge, and over-discharge recovery.

3.4. Remote switch

Connect: charging or discharging

Disconnect: stop charging and discharging

3.5 Restore to factory settings

Hold down the button for at least 20 seconds until the 7-segment display shows "8.", then release the button to restore to factory settings.

| Restore default items | Restore default | Default Function |
|-----------------------|-----------------|------------------|
| Protector type | C | Charge protector |
| System voltage | 4. | 48V |
| Protection level | 1 | Refer to "3.3 " |
| Operating Statistics | Data clearing | -- |

3.6 System indications

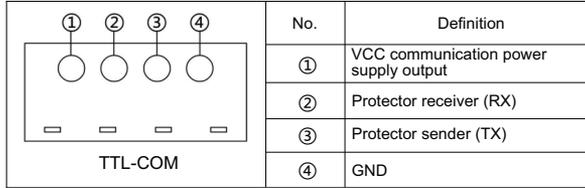
| Display | Meaning |
|---|--|
|  | Slow blinking (over-discharge: stop charging and discharging) |
|  | Fast blinking(over voltage: stop charging and discharging) |
|  | Fast blinking (over-temperature: stop charging and discharging) (The over-temperature of the system is 70°C, The system will recover when the temperature is below 65°C.) |
|  | Slow blinking (Remote switch is disconnect: stop charging or discharging) |
|  | The light turn on for 1s when the system is powered on and the first communication is connected. Constant blinking (the protector is working) |

4. Button Functions

| Button | Function |
|-------------|--|
| Short press | Parameter switching / Mode selection / Setting data increment; |
| Hold down | Hold down: Enter/Exit parameter setting |

5. Communication

- 1). Default baud rate 9,600bps, check bit: none, data bit: 8bit, stop bit: 1bit
- 2). Output specification of communication power supply: (12V±3V)/100mA



6. APP Software (Optional)

6.1. Real-time monitoring

| Type | APP interface display | Corresponding protector function |
|---------------------|-----------------------|----------------------------------|
| Charge protector | Solar panel voltage | Input voltage of protector |
| | Battery voltage | Output voltage of protector |
| Discharge protector | Battery voltage | Input voltage of protector |
| | Solar panel voltage | Output voltage of protector |



When the protector is working, the load status is "On";
When the protector is not working, the load status is "Off"

6.2. Historical data

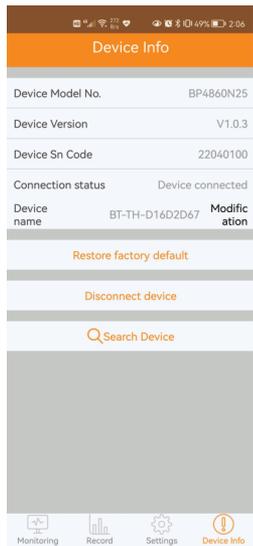
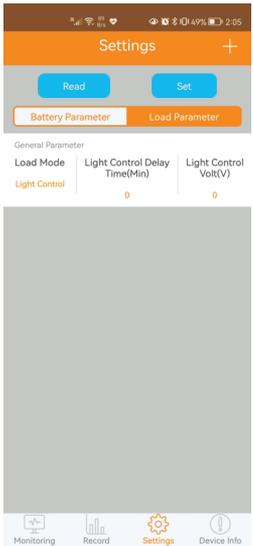
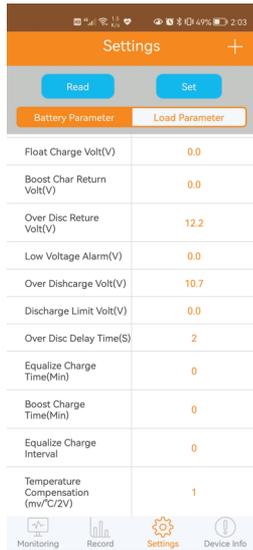
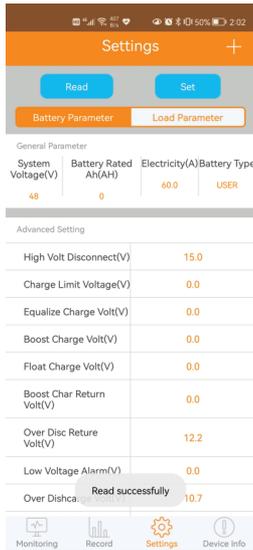
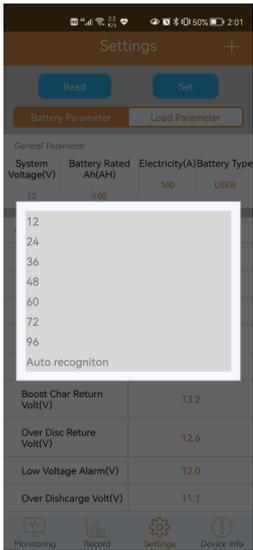


The lowest and highest battery voltage of the day can be displayed in real time;
The system operating days add one in every 24h;
Save the number of operating days, over-discharges, and over-voltages (fully charged times) simultaneously.

6.3 Parameter Setting

| APP interface | Corresponding protector function | Change the data range |
|--------------------------------------|----------------------------------|------------------------|
| Load operating mode | [C] Charge protector | Light control |
| | [L] Discharge protector | Light control+delay 1h |
| Temperature compensation factor | [P] Protection level selection | 0-5 0: customized |
| System voltage | [U] System voltage | 12/24/36/48/AUTO |
| Battery type | USE | USE Fixed |
| Over-voltage (V) | Over-voltage protection | 14,0V~17,0V |
| Over-discharge reconnect voltage (V) | Over-discharge reconnect voltage | 10,0V~15,0V |
| Over-discharge voltage (V) | Over-discharge voltage | 7,0V~13,0V |
| Over-discharge delay(s) | Over-discharge delay | 2~8S |

Note: Over-discharge reconnect voltage > over-discharge voltage. The over-voltage recovery value is 1V lower than the current setting value.



6.4. Equipment information

[Restore to factory defaults] -- Restore to the factory default setting
 [Disconnect Device] -- Disconnect the APP with the protector
 [Search Device] -- Search for the protector in the device list via Bluetooth

7. Product Dimensions

Product name: BP4860N25
 Product dimensions: 166*96,5*60mm
 Mounting dimension: 156,5*88,6mm
 Mounting hole diameter: ϕ 4,5mm

Product name: BP4885N25
 Product dimensions: 166*96,5*60mm
 Mounting dimension: 156,5*88,6mm
 Mounting hole diameter: ϕ 4,5mm

Product name: BP48100N25
 Product dimensions: 183*96,5*60mm
 Mounting dimension: 173,5*88,6mm
 Mounting hole diameter: ϕ 4,5mm

8. System Connection Diagram

8.1 Charge protector application

