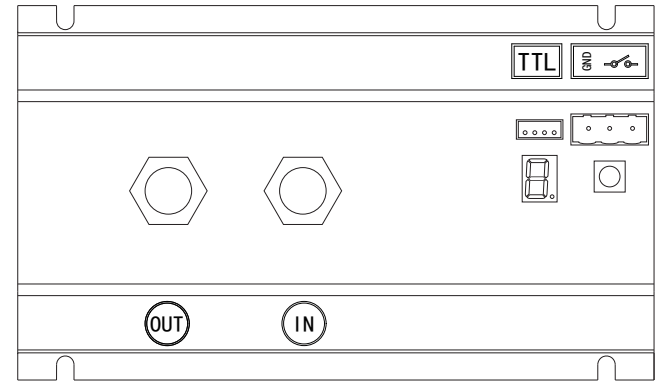









# BP Series Battery Protector User Manual




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

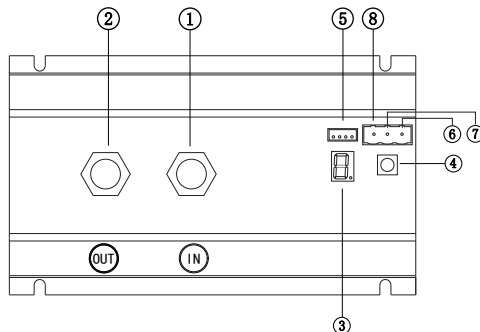
[Battery charge protector] is a device for real-time monitoring and protecting battery charging voltage, which can prevent the battery from over-charge.

[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	Remote switch
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	2s
Protection/recovery delay		Immediate response	2s	2s Configurable when customized	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

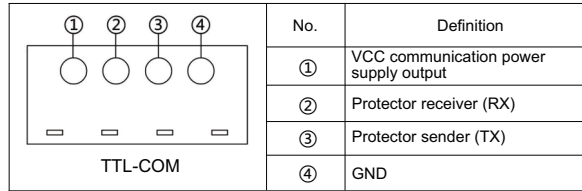
Display	Meaning
	Slow blinking (over-discharge: stop charging and discharging)
	Fast blinking(over voltage: stop charging and discharging)
	Fast blinking (over-temperature: stop charging and discharging) (The over-temperature of the system is 70°C, The system will recover when the temperature is below 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

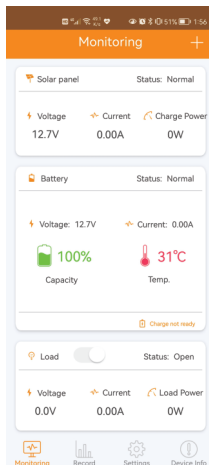
- 1). Default baud rate 9,600bps, check bit: none, data bit: 8bit, stop bit: 1bit
- 2). Output specification of communication power supply: (12V±3V)/100mA



## 6. APP Software (Optional)

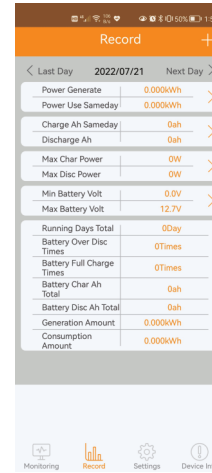
### 6.1. Real-time monitoring

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

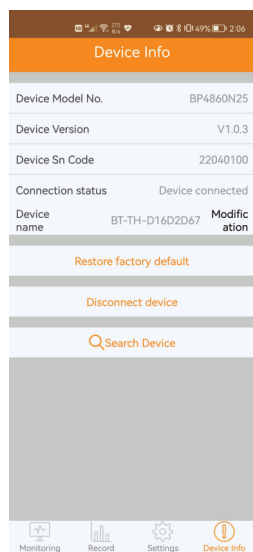
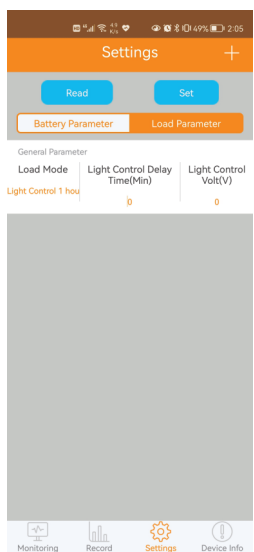
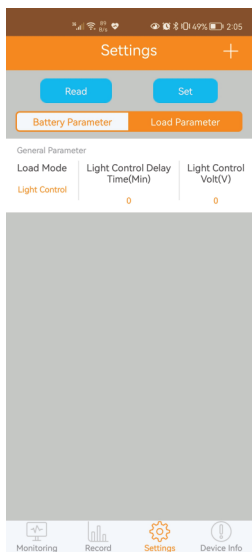
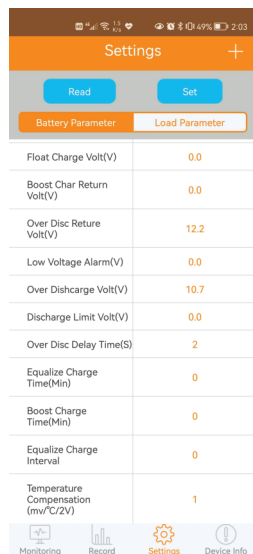
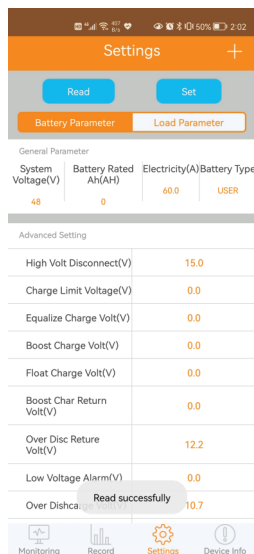
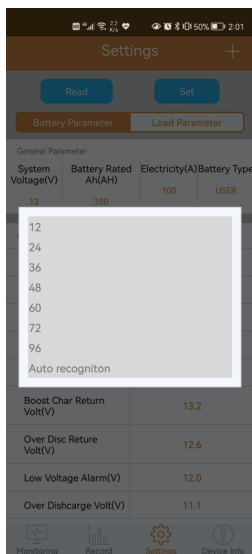


The lowest and highest battery voltage of the day can be displayed in real time;  
The system operating days add one in every 24h;  
Save the number of operating days, over-discharges, and over-voltages (fully charged times) simultaneously.

### 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:  $\phi 4,5$ mm

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

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

## 8. System Connection Diagram

### 8.1 Charge protector application

