BougeRV

User Manual

MPPT NEGATIVE GROUND
SOLAR CHARGE CONTROLLER

Content

1. Safety Instructions

Please follow the safety instructions for operation, the damage caused by not following the safety instructions shall be borne by the individual.
⚠ **Please save these instructions**

General Safety Information

1. Read all of the instructions and cautions in the manual before installation.
2. There are no repairable parts for this controller,do not disassemble or attempt to repair the controller.
3. Keep the controller from the water.
4. Make sure all connections with controller are tight.
5. Please read the product installation steps to ensure all connections are correct.

Charge Controller Safety

1. NEVER connect the solar panel array to the controller without a battery. The battery must be connected first.
2. Ensure input voltage does not exceed 100 Voc to prevent permanent damage.
3. Ensure that the output current of the solar panel does not exceed the rated charging current of the controller.

Battery Safety

1. Do NOT let the positive (+) and negative (-) terminals of the battery touch each other.
2. Explosive battery gases may be present while charging. Be certain there is enough ventilation to release the gases.
3. Be careful when working with large lead-acid batteries. Wear goggles and have fresh water available in case there is contact with the battery acid.
4. Over-charging and excessive gas precipitation may damage the battery plates and activate material shedding on them. Too high of an equalizing charge or too long of one may cause damage. Please carefully review the specific requirements of the battery used in the system.

2. Technical After Services

BougeRV provides **1-on-1 Solar Solution and 18- month warranty**.
If you have any questions during use, please feel free to contact us:

✉ **service@bougerv.com**

📞 **1-408-656-8402**

🌐 **www.bougerv.com**

💬 **1-669-232-7427**
Whatsapp

If you could provide the following relevant information to our email
(**service@bougerv.com**) before contacting us; we can provide you
with technical support solutions faster.
(1) The connection method of the solar panels (series/parallel,
quantity, voltage, power).
(2) The voltage and battery type of the battery.
(3) The pictures or videos of the controller: battery voltage, battery
charging current, the output voltage of the solar panel.

3. Bluetooth module

Built-in Bluetooth communication function can monitor the operation data, fault status and adjust the operation parameters of the inverter in real time through mobile APP.

Download

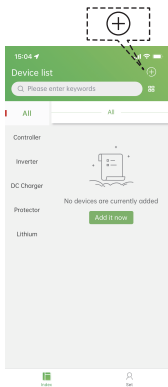Scan the QR code on the right to download the application;

IOS & Android

Solar APP

Pairing with You Phone

(1) Turn on the Bluetooth and GPS on your phone to enter the 'Index' interface 1.

(2) After clicking the '⊕', search for Bluetooth through "Add Device"to connect. (interface 2)

(3) Enter interface 3 after the connection is successful.

(1)

(2)
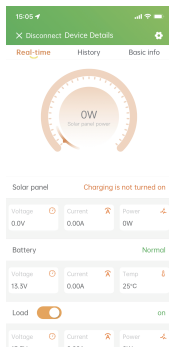
(3)

(4) Click the "History" to view the daily information of battery charge and discharge. (interface 4)

(5) Click the ' ⚙ ' to adjust the parameter. (interface 5)

(6) Click the ' **Badic info** ' Know the controller's serial number, software version, and check for updates. You could also perform factory reset operations in the interface. (interface 6)
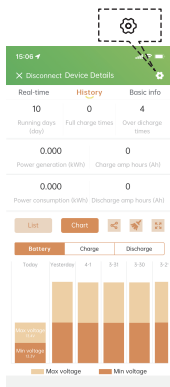
(4)
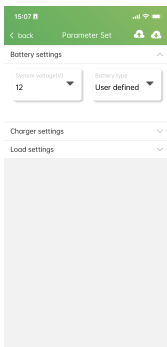
(5)
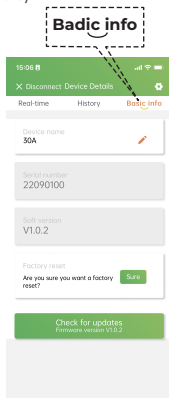
(6)

Device Information	User Setting
1. Client Language	Change for English or Chinese
2. User FeedBack	Share Your Advice
3. Help Center	Help to Connect
4. Term Convert	For °C / °F
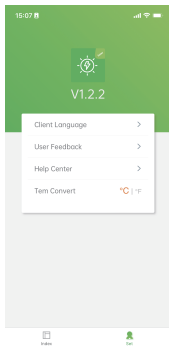
4. Identification Of Parts
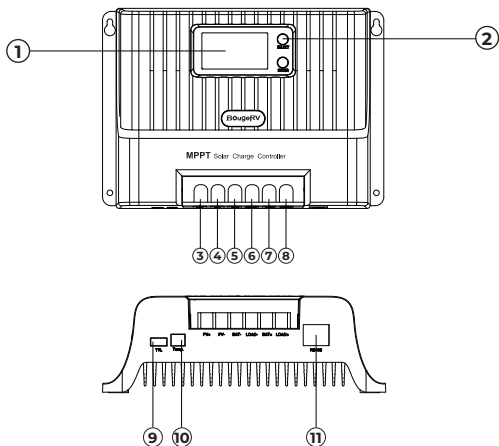
1. LCD Display Screen
2. Button
3. PV Positive Terminal
4. PV Negative Terminal
5. Battery Negative Terminal
6. Load Negative Terminal
7. Battery Positive Terminal
8. Load Positive Terminal
9. TTL communication interface
10. Temperature sensor interface
11. RS485/CAN communication interface

5. LCD Display Interface Overview
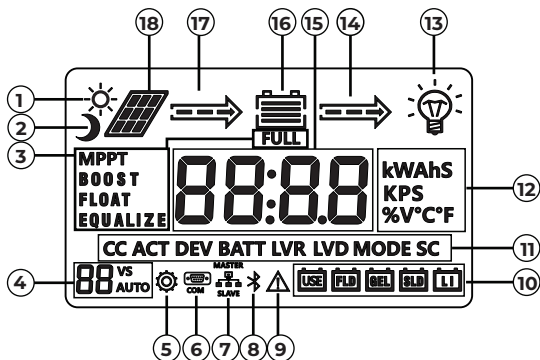
1. Daytime icon
2. Night icon
3. Charging stage
4. System voltage
5. Parameter setting
6. Communication icon
7. Parallel communication
8. Bluetooth icon
9. System alarms

10. Battery type
11. RS485/CAN communication interface
12. Unit symbol
13. Load icon
14. Discharging state
15. Voltage/current
16. Battery
17. Charging state
18. Solar panel

6. System Wiring
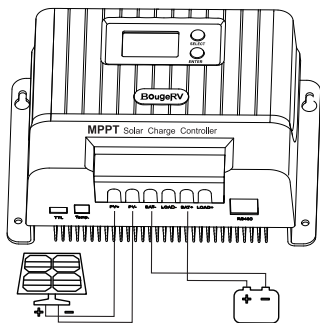
1. The positive and negative poles of the battery must be connected to the battery terminals of the controller first.
2. Finally, connect the positive and negative poles of the solar panel to the PV terminals of the controller.
3.Make sure that the Bluetooth of the mobile phone is turned on, and open the APP "**Solar APP**" to enter the setting interface.

7. Wiring Instructions
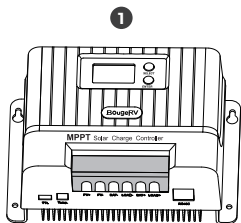
1.Remove the Plastic cover.(Pick up)
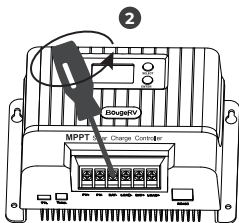
2.Unscrew the screws. (Counterclockwise)

3
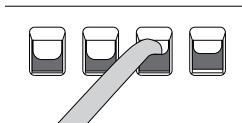
3. Plug the cable into the correct port.

4
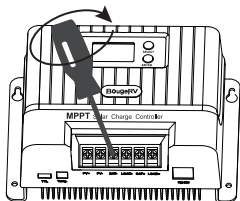
4. Tighten the screws. (Clockwise)

5
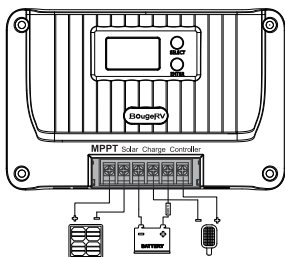
5. Check the wiring condition and put the Plastic cover back. Please strictly follow theabove sequence for conneion.

Note:
During the wiring process, the attached terminal block can be used for connection. After stripping the wire, put it into the terminal block and squeeze it with a crimping pliers.

8. LCD Display Interface

Main menu (voltage)   **Automatic loop playback every 10s**   **Main menu (current)**
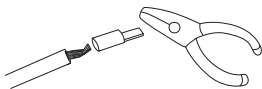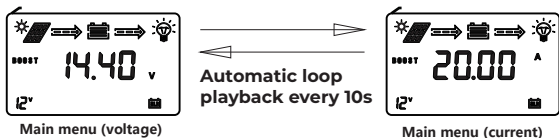
8-1. Key Operation

1. Single press the [**SELECT**] key to browse the view menu.

2. Long press [**ENTER**] for 3s on any interface to enter the parameter setting page.

8-2. View menu

single press the [**SELECT**]

Main menu (voltage)

BOOST 14.40 v

12°

Main menu (current)

BOOST 20.00 A

12°

Battery voltage

12.00 v

Charging current

20.00 A

PV voltage

17.00 v

PV current

10.00 A

Generated energy of the day

0000 kw·h

Charging ampere hours of the day

0000 k·Ah

Load Current

20.00 A

Discharge capacity of the day

0000 kw·h

Discharging ampere hours of the day

0000 k·Ah

Operating day

002d

Device temperature

25.0 ℃
DEV

Battery temperature

25.0 ℃
BATT

Load mode

15
MODE

System alarms

E0

9. Parameter setting menu

Note: If there is no key operation for 5s, it will automatically return to the main menu.

1. Long press the [**ENTER**] for 3s on any interface to enter the parameter setting page.

2. Single press the [**ENTER**] to adjust setting interface, when the parameter flashes, single press the [**SELECT**] to adjust the parameter.

3. After finishing the adjustment, single press the [**ENTER**] to confirm the parameter.

4. Single press the [**SELECT**] to jump to other setting interface.

Menu 1： Battery type setting

① SLD =Sealed lead acid battery

② GEL=GEL battery

③ FLD=Flooded lead acid battery

④ LI=Lithium iron phosphate battery/LiFePO4

⑤ USE=Custom lead acid battery

⑥ USE LI =Custom lithium battery

Setting method:

1. Single press the [**ENTER**] until the parameter flashes, press the [**SELECT**] to adjust the battery type setting.

2. After finishing the adjustment,press the the [**ENTER**] to confirm the parameter.

Menu 2： Equalizing charging voltage
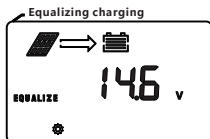
Adjust voltage range： 9-17V

Equalizing charging
EQUALIZE 14.6 v

Note:
1. If it is the system of 24V, relevant voltage points shall be automatically multiplied by 2.
2.The option can only be set when the battery type is "USE"
Setting method:
1. Single press the [**ENTER**] until the parameter flashes, press the [**SELECT**] to adjust the equalizing voltage.
2. After finishing the adjustment，single press the [**ENTER**] to confirm the parameter.

Menu 3： Boost charging voltage

Adjust voltage range： 9-17V

Note:
1. If it is the system of 24V, relevant voltage points shall be automatically multiplied by 2.
2. The option can only be set when the battery type is "USE" or "USE LI"
Setting method: Same as above.

Boost charging
BOOST 14.4 v

Menu 4： Floating charging voltage

Adjust voltage range： 9-17V

Note:
1. If it is the system of 24V, relevant voltage points shall be automatically multiplied by 2.
2. The option can only be set when the battery type is "USE" .
Setting method: Same as above.

Floating charging
FLOAT 13.8 v

Menu 5： Charging reconnect voltage

Adjust voltage range： 9-17V

Note:
1. If it is the system of 24V, relevant voltage points shall be automatically multiplied by 2.
2. The option can only be set when the battery type is "USE" or "USE LI".
Setting method: Same as above.

Charging reconnect voltage

BOOST 13.2 v

Menu 6： Over-discharge reconnect voltage

Adjust voltage range： 9-17V

Note:
1. If it is the system of 24V, relevant voltage points shall be automatically multiplied by 2.
2. The option can only be set when the battery type is "USE" or "USE LI".
Setting method: Same as above.

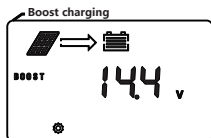Over-discharge reconnect voltage

12.6 v

LVR

Menu 7： Over-discharge voltage

Adjust voltage range： 9-17V

Note:
1. If it is the system of 24V, relevant voltage points shall be automatically multiplied by 2.
2. The option can only be set when the battery type is "USE" or "USE LI".
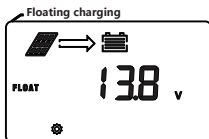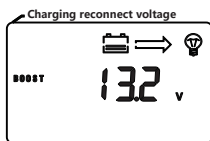**Setting method:** Same as above.

Over-discharge voltage

11.1 v

LVD
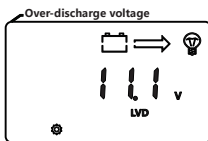
Menu 8: System voltage

1. 12V
2. 24V
3. Automatically identify voltage (only applicable to the lead-acid battery)
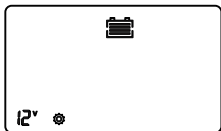
Default: Auto
Setting method:
1. Single press the [**ENTER**] until the parameter flashes, press the [**SELECT**] to adjust the system voltage.
2. After finishing the adjustment，single press the [**ENTER**] to confirm the parameter.
Note:
1. When the system voltage changes, the system voltage icon on the main page will flash, prompting the user to reboot for effective operation.
2. Switch to Menu 20，Single press [**ENTER**], 'F01' flashes; single press [**ENTER**] again, the controller will reboot.

Menu 9: Charging current
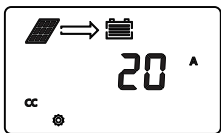
Adjust current range: 0——rated current（for example：the 60A controller，adjusting current range is 0-60A）
1. Set 0：No charging
2. Set 1——rated current：Limit charging current
Default: rated current
Setting method:
1. Single press the [**ENTER**] until the parameter flashes, press the [**SELECT**] to adjust the current.
2. After finishing the adjustment，single press the [**ENTER**] to confirm the parameter.
Note: The battery has a charging current limit, and the output current of the controller can be adjusted to charge the battery

Menu 10: Full-charging setting

1. Set 0: Turn off this feature
2. Set1-10: Select the appropriate current value between 1-10A
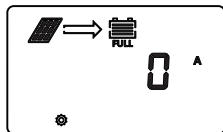
Default: 0
Setting method: Same as above.
Note:
1. Full-charging condition: When the constant voltage charging duration of lithium battery reaches the set duration or the lead-acid battery is in float charging after the equalizing charging or the boost charging is finished, and the charging current is less than the set current value, the system will stop charging after 1 minute, and the "FULL" icon will light up on the screen.
2. Charging recovery condition: The battery voltage is less than the boost charging reconnect voltage, the system will recover charging, and the "FULL" icon will light off on the screen.

Menu 11: Constant voltage output of lead acid battery
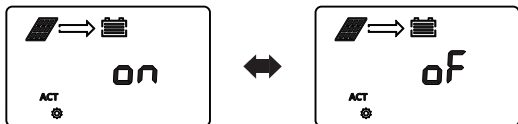
1. oF: The controller can not output without battery.
2. on: The controller can output without battery.

Default: oF
Setting method: Same as above
Note: When the lead-acid battery cannot work due to over-discharge, this function can be turned on, and the controller can activate the lead-acid battery with constant voltage outputLead Acid Battery Activation.

Menu 12：**Light control voltage**

Adjust voltage range: 5-11V
Default: 5V
Light control on: The solar panel voltage is less than the Adjusting voltage.
Setting method: Same as above
Note: If it is the system of 24V, relevant voltage points shall be automatically multiplied by 2.

Menu 13：**Light control delay**

Adjust voltage range: 60-3600s
Default：60s
Light control on：The solar panel voltage is less than the Adjusting voltage.
Setting method: Same as above
Note: Minimum duration required to meet the light control on or off condition.

Menu 14：**Load mode**

LCD screen number	Load mode	Description
0	Pure light control	When the solar panel voltage is less than the Light control ON voltage with aduration is more than the light control delay, turn on the load; When the solar panel voltage is greater than the light control OFF voltage with a duration is greater than the light control delay, turn off the load.
1~14	Light control + time control 1-14 h	After the duration during which the solar panel voltage is less than the light control ON voltage is greater than the light control delay, turn on the load. After the load A has been operating for the set time, turn off the load. After the duration during which the solar panel voltage is greater than the light control OFF voltage is greater than the light control delay, turn off the load (light control prevails).
15	Manual mode **(default)**	Single press [**ENTER**] key to turn on/off the load (not affected by light control)

LCD screen number	Load mode	Description
16	Debug-ging mode	When the solar panel voltage is less than the light control ON voltage, turn on the load immediately. When the solar panel voltage is greater than the light control OFF voltage, turn off the load immediately.
17	Normal on mode	The load is always on(In case of battery over-voltage, battery over-discharge, load short-circuit,overload,battery over-temperature, or battery low-temperature, the load will turn off the output)

Menu 15: Load short-circuit protection switch
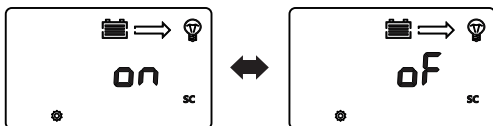
1. on: open load short-circuit protection
2. oF: close load short-circuit protection

Default: on
Note: Some inductive loads or capacitive loads will produce high current at the moment of start-up,which will easily trigger load short-circuit protection, resulting in failure to turn on the load. This function can be disabled when the system cannot be started (Note: After this function is disabled,short circuit at load side of the controller is prohibited!)

Menu 16: Over-discharge delay

Adjust time range: 1-60s
Default: 5s
Setting method: Same as above
Note: 1. After the battery voltage is lower than the over-discharge voltage, the controller turns off the delay time for the load.
2. Only the type of custom battery can be set.
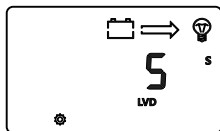
Menu 17: Display the current controller temperature
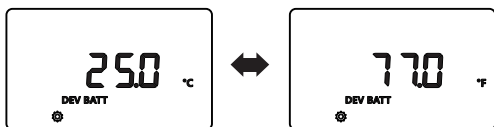
1. °C
2. °F
Default: °C
Setting method:
1. Single press the [**ENTER**] until the parameter flashes, press the [**SELECT**] to adjust the parameter.
2. After finishing the adjustment，single press the [**ENTER**] to confirm the parameter.

Menu 18: RS485 communication baud rate

Adjust range: 1200~115200bps
Default: 9600bps
Setting method: Same as above
Note: The RS485 communication baud rate can be modified according to actual needs.
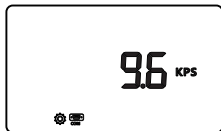
Menu 19: Equipment address

Adjust range: 1-247
Default: 1
Setting method: Same as above
Note: The device communication address can be modified according to actual needs.

Menu 20：System restart

Setting method: Single press [**ENTER**], 'F01' flashes; single press [**ENTER**] again, the controller will reboot.

F01

Menu 21：Factory reset

Setting method: Single press [**ENTER**], 'F02' flashes; single press [**ENTER**] again.

F02

Menu 22：Historical data cleaning

Setting method: method：Single press [**ENTER**], 'F03' flashes; Single press [**ENTER**] again.

F03

10. Error Code

Error code	Cause of failure	Solution
E0	Normal system	No action
E1	Battery over-discharge	Turn off load output, after the battery voltage rises to the over -discharge reconnect voltage, relieve over-discharge to restore load output.
E2	Battery over-voltage	Stop charging, check and find out the cause of high battery voltage. The charging will be automatically restored after the battery voltage is lowered.
E3	Battery under-voltage warning	Battery voltage below the under-voltage warning threshold,warning only
E4	Load short-circuited	Turn off load output, after the battery voltage rises to the over -discharge reconnect voltage, relieve over-discharge to restore load output.
E5	Load over-current	Turn off load output, and perform delay protection by a multiple of rated current
E6	Over-temperature protection of device	When the internal temperature is higher than the set temperature, start the constant temperature control; Charging is prohibited when the temperature is higher than 75°C, and charging is resumed when the temperature is lower than 75°C.
E7	Battery over-temperature protection	Charging will be stopped when the battery temperature is above 65°C, and automatically resumed when it is below 60°C.
E10	Solar panel over-voltage	Charging is stopped, and then automatically resumed when the solar panel voltage is below the safety limit
E15	Lead acid battery is not connected	In lead-acid battery mode, the battery is damaged or not connected.
E16	Battery high temperature discharging protection	Load output will be turned off when the battery temperature is above 75°C and resumed when it is below 70°C.
E17	Battery low temperature discharging protection	Load output will be turned off when the battery temperature is below -35°C and resumed when it is above -30°C.
E18	Overcharge protection	Charging is stopped and then resumed 10s after the battery voltage is lowered
E19	Battery low temperature charging protection	Charging will be stopped when the battery temperature is below -35°C and when it is above -30°C
E30	Charging and discharging disabled by system setting	Off by default (set relevant registers by protocol)
E31	Charging and discharging disabled by system setting	After the abnormal conditions are removed, the equipment will recover automatically

11. Base Specification

Model	BJ2420	BJ2430	BJ2440	BJ2460
System voltage	12V/24V			
Rated charging current	20A	30A	40A	60A
Battery Type	SLD/GEL/FLD/LI/USE/USE LI, SLD as default			
Maximum input of PV system	300W/12V 600W/24V	450W/12V 900W/24V	600W/12V 1200W/24V	900W/12V 1800W/24V
Maximum PV input voltage	60V (55V protection, 50V recovery)	100V (95V protection, 90V recovery)		
MPPT operating voltage range	(Battery voltage +2V)~45V	(Battery voltage +2V)~72V		
MPPT tracking efficiency	>99%			
Charging conversion efficiency	>95%			
Rated load current	10A	20A		
Load operating mode	Light control, light control + time control, manual mode (default), debugging mode, normally open			
No-load loss	≤10mA			
Charging current setting	√			
Full-charging setting	√			
Constant voltage output setting	√			
Charging temperature compensation of lead-acid battery	√			
Temperature unit setting	√			
Overload/ Short-circuit protection	√			

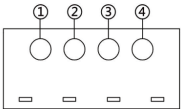| Model	BJ2420	BJ2430	BJ2440	BJ2460
Battery operating voltage range	8V-32V			
TTL communication	Baud rate: 9,600 bps			
RS485 communication	RJ45 interface, with power output 5V/200 mA,The baud rate is 9,600 bps by default, adjustable.			
Bluetooth communication	built-in bluetooth			
CAN communication	RJ45 interface, optional (RV-C protocol)			
Historical data	Save the last 200 days of historical data			
Protection function	PV overvoltage protection, PV reverse connection protection, PV short_x0002_circuit protection, night reverse charging protection, input power limit protection, over-temperature protection, load short-circuit protection, overload protection, battery over-voltage/over-discharge protection,battery reverse connection protection, battery end short circuit protection.			
Grounding type	Grounding of common negative electrode			
Operating ambient temperature range	-31°F~149°F （-35℃~65℃)			
Protection grade	IP34			
Cooling mode	Natural heat dissipation			
Dimension	181*118*61.7mm	187*133*72mm	228*160*72mm	261*186*82mm
Weight	650g	1200g	1750g	2400g

12. Battery Charge Parameter

Battery parameters

Battery Type / Setting/Voltage	Sealed Lead-Acid SLD	Gel lead-acid battery GEL	Flooded lead-acid battery FLD	Lithium battery LI	Custom lead acid battery USE	Custom lithium battery USE LI
Overvoltage disconnect voltage①	16.0V	16.0V	16.0V	16.0V	Boost voltage +2V	Boost voltage +2V
Equalizing voltage①	14.6V	--	14.8V	--	9~17V	--
Boost voltage①	14.4V	14.2V	14.6V	14.4V	9~17V	9~17V
Float charge voltage①	13.8V	13.8V	13.8V	--	9~17V	--
Boost charging reconnect voltage①	13.2V	13.2V	13.2V	13.2V	9~17V	9~17V
Over-discharge restoring voltage①	12.6V	12.6V	12.6V	12.6V	9~17V	9~17V
Under-voltage alarming voltage①	12.0V	12.0V	12.0V	12.0V	9~17V	9~17V
Over-discharge voltage①	11.1V	11.1V	11.1V	11.1V	9~17V	9~17V
Over-discharge cutoff voltage①	10.6V	10.6V	10.6V	10.6V	9~17V	9~17V
Over-discharge delay	5s	5s	5s	5s	5s	5s
Equalizing charging interval	30 days	--	30 days	--	30 days	--
Equalizing charging duration	120 min	--	120 min	--	120 min	--
Boost charging duration	120 min	120 min	120 min	--	120 min	--
Temperature compensation factor mV/℃/2V	-3	-3	-3	--	-3	--

Note:
① The above values are the parameters at 25°C/12V; if it is the system of 24V, relevant voltage points shall beautomatically multiplied by 2.

13. TTL communication

1) Default baud rate: 9,600 bps; check bit: none; data bit: 8 bit; stop bit: 1 bit
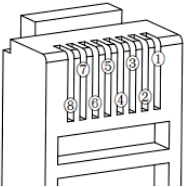2) Communication power supply output specification: (8.5V±1V)/: 100mA

	S/N	Definition
① ② ③ ④	①	VCC: communication power supply output
TTL-COM	②	RX: controller data receiving end
	③	TX: controller data transmitting end
	④	GND

14. RS485

1) RS485 communication:
Default baud rate: 9,600 bps; parity bit: none; data bit: 8 bit; stop bit: 1 bit Interface type: RJ45, communication power supply output specification: 5V/200mA
2) RJ45 interface communication line sequence definition:

S/N	Definition
①	Positive terminal
②	D+
③	D-
④	Power ground/signal ground
⑤	NC
⑥	NC
⑦	CAN_H
⑧	CAN_L

Note: NC represents an empty pin, which means that the pin is not connected.

15. CAN communication(Optional)

1) CAN communication: support RV-C protocol

16. Common problems and solutions

Phenomenon	Troubleshooting
LCD screen does not light up	Check whether the battery and solar panel are properly connected and whether the LCD connection cable has a poor connection
There is voltage in the solar panel, there is no voltage output from the battery side, and code E1/E15 is displayed	The battery is not detected at the lead-acid battery end, there is no voltage output from both ends of the battery. Connect the battery to return to normal or turn on the lead-acid battery activation switch
12V/24V normal voltage battery is connected, the battery icon on the LCD screen flashes slowly, and code E1 is displayed	Check the battery system voltage, or set it to automatically identify and reboot the controller
The system voltage 12V/24V icon on the screen flashes	Set system voltage change, prompting the user to reboot the system for the change to take effect
The controller fails to charge	Check whether there is wrong wiring, whether the solar panel voltage exceeds the rated value, whether the battery is over-voltage, whether the LCD screen displays any error code of internal over-temperature, external overtemperature,external lithium battery low temperature, or lead-acid battery open-circuit, and whether it displays E7/E10, etc.
Charging power does not reach the rated value	Perform system current limiting and thermostatic control; Check to see if the system has reset charging current
Other problems or exceptions difficult to resolve	Try to reboot (F01) or reset controller (F02), and reset relevant parameters again as per system configurations. Be careful
Fail to start some loads	Try enabling the load short-circuit function after checking that the wiring is correct
The screen displays "full", and charging stops	Charging stops as the charging cut-off current conditions are met. When the voltage is below the boost charging reconnect voltage, the charging will be automatically resumed
There is a system alarm code	See "12. System alarms" for details

17. Charging

17-1: Charging of lead-acid battery

Select such battery types as SLD/FLD/GEL/USE, and select the appropriate system voltage.

As shown in **Fig. 17-1**, the charging stages of lead-acid battery are: **MPPT charging**, constant voltage charging (equalizing/boost/floating charging), and current-limiting charging.The constant voltage charging is divided into three stages: equalizing charging, boost charging and floating charging:[MPPT charging] When the battery voltage has not reached the target constant voltage value, the controller will perform MPPT charging. When the battery voltage reaches the constant voltage value, it will automatically exit MPPT charging and switch to constant voltage charging (equalizing/boosting/floating charging).

[Equalizing charging] Regular equalizing charging is good for some batteries. Equalizing charging is mainly to make the charging voltage of battery higher than the standard supplementary voltage, besides, it can vaporize the battery electrolyte to balance the battery voltage and complete relevant chemical reaction. Equalizing charging and boosting charging are not repeated during one full charging to avoid excessive gas evolution or overheating of the battery.

Notes:
1) Since the equalizing charging of floored lead-acid battery produces explosive gas, the battery compartment must be well ventilated.
2) Although the equalizing charging elevates the battery voltage, it may damage the level of sensitive DC loads, therefore, it is necessary to verify that the allowable input voltage of all loads in the system is greater than the set battery voltage value in equalizing charging.
3) Excessive charging and excessive gas evolution may damage the battery plate and cause the active substances on the battery plate to fall off.Besides, excessive high equalizing charging voltage or excessive long equalizing charging duration may damage the battery. Please set relevant parameters according to the specifications of the battery used in the system.

[Boost charging] The duration of boost charging is 2 h (default). When the duration reaches the set value, the system will switch to floating charging.

[Floating charging] Floating charging is the last constant voltage charging stage in the charging cycle of lead-acid battery. The controller keeps the charging voltage constant at the floating charging voltage. At this stage, the battery is charged with a very weak current to ensure that the battery is in full-charging. When the battery voltage is as low as the reconnect voltage of boost charging, the system will exit the floating charging stage and re-enter the next charging cycle.

17-2: Charging of lithium battery

Select such battery types as LI/USE LI, and select the system voltage from 12V/24V.
As shown in **Fig. 17-2**, the charging stages of lithium battery are: MPPT charging/boost charging/current-limiting charging.

[MPPT charging] When the battery voltage does not reach the target constant voltage value, the controller conducts MPPT charging to charge the battery with maximum solar power, when reaches, it automatically switches to boost charging.

[Boost charging] In the boost charging stage of lithium battery, when the battery voltage is lower than the boost charging voltage, the system conducts MPPT charging or current-limiting charging, when reaches, it switches to boost charging.

Fig. 17-1 Charging curve of lead acid battery

Fig. 17-2 Charging curve of lithium battery
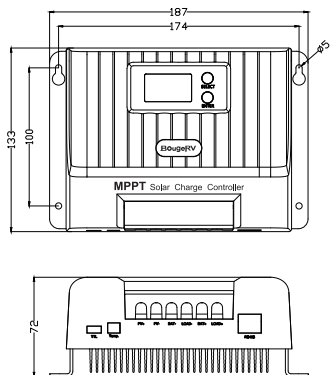
27
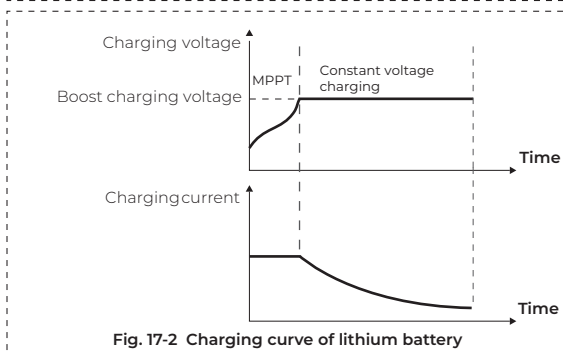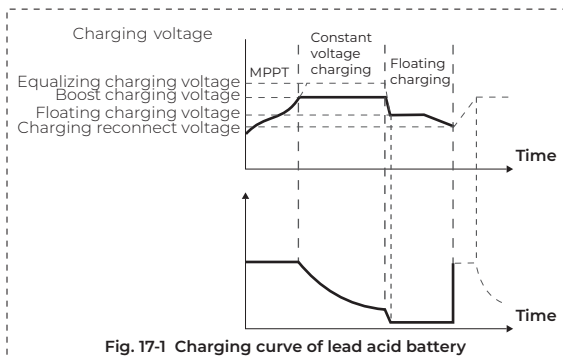
18. Product Dimensions

BJ2420
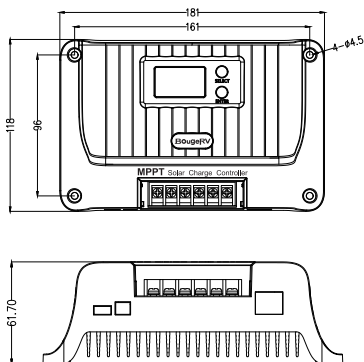
Model: BJ2420
Product dimension: 181*118*61.7mm
Mounting hole spacing: 161*96mm
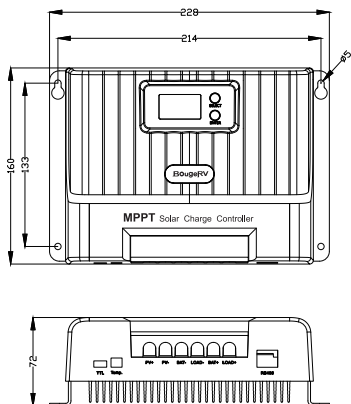Fixed hole position: φ4.5mm

BJ2430

Model: BJ2430
Product dimension: 187*133*72mm
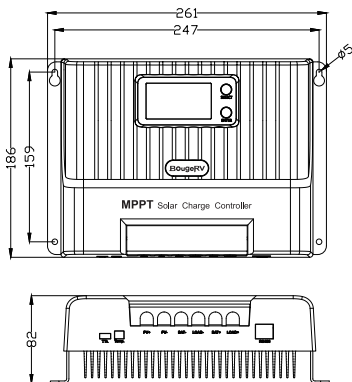Mounting hole spacing: 174*100mm
Fixed hole position: φ5mm

BJ2440

Model: BJ2440
Product dimension: 228*160*72mm
Mounting hole spacing: 214*133mm
Fixed hole position: φ5mm

BJ2460

Model: BJ2460
Product dimension: 261*186*82mm
Mounting hole spacing: 247*159mm
Fixed hole position: φ5mm

Make the journey