Bioenno Power SC-122430NE MPPT Series User Manual

12V/24V MPPT SOLAR CHARGE CONTROLLER FOR LFP

THIS CONTROLLER IS FACTORY SET FOR LITHIUM IRON PHOSPHATE BATTERIES

Model	ML2420	
Battery Voltage	12V	24V
Max. Solar Power	260W	520W
Solar Vmp	17V~75V	36V~75V
Max. Solar Voc	100V	
Max. Charging Current	20A	
Max. Load Power	240W	480W

OVERVIEW

Thank you for choosing the Bioenno Power SC-122430NE Series MPPT Maximum Power Point Tracking Solar Charge Controller. Your product comes in 30A Maximum Load Current and is designed to be used with Lithium Iron Phosphate (also commonly known as LiFePO4 or LFP) batteries and can be additionally set for AGM and SLA. The controller uses our proprietary CC/CV Constant Current/ Constant Voltage circuitry in conjunction with MPPT circuitry to ensure maximum compatibility and performance with the Bioenno Power battery. Your Solar Charge Controller comes equipped with an LCD display with a visual presentation of usage status for your solar system. This state-of-the-art unit boasting cutting edge performance parameters, flexibility and modular capabilities with high aftermarket compatibility with most batteries and panels represents the cutting edge for fixed installation applications.

SPECIFICATIONS

Rated Voltage: 12V/24V

Maximum Solar Recharge Current (Charge Current to Battery!): 30A

Maximum Direct Load Current (LOAD Port Only!): 20A

Input Voltage Range: 75V*

Load Disconnect: 9.9V/11.2V/13.2V/14V (Depending on voltage of system)

Efficiency: ≤98% (In optimum conditions)

Operation Temperature: -31°F to 113°F (-35°C to 45°C)

Dimensions: 9.37 in. x 6.81 in. x 2.87 in. (238 mm x 173 mm x 73 mm)

Weight: 4.41 lbs. (2 kg)

*Note: This solar charge controller can accept any voltage under 75V but it will not boost the voltage if the panel voltage is less than the battery voltage. Make sure your panel voltage is higher than your battery voltage for optimum performance.
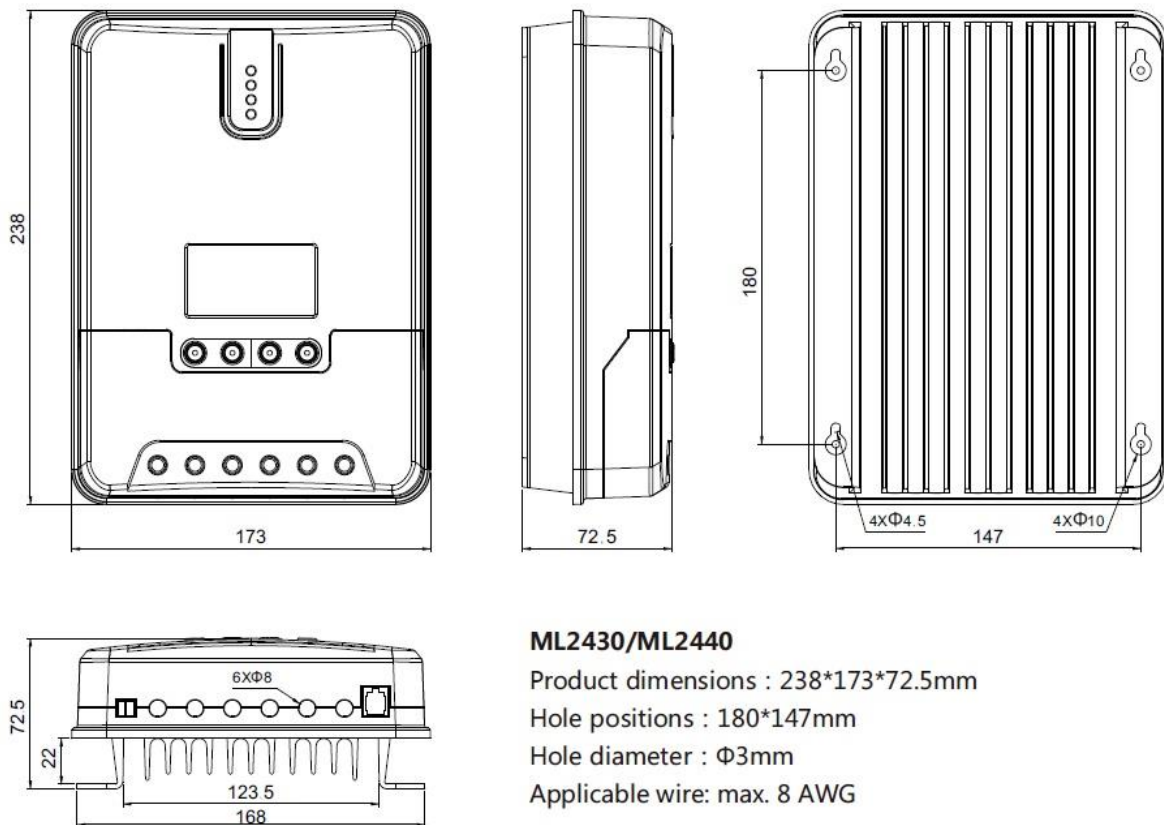
ML2430/ML2440
Product dimensions : 238*173*72.5mm
Hole positions : 180*147mm
Hole diameter : Φ3mm
Applicable wire: max. 8 AWG

RS232

No.	Definition
①	Transmitting terminal TX
②	Receiving terminal RX
③	Power supply grounding /Signal grounding
④	Power supply grounding /Signal grounding
⑤	Power supply positive
⑥	Power supply positive
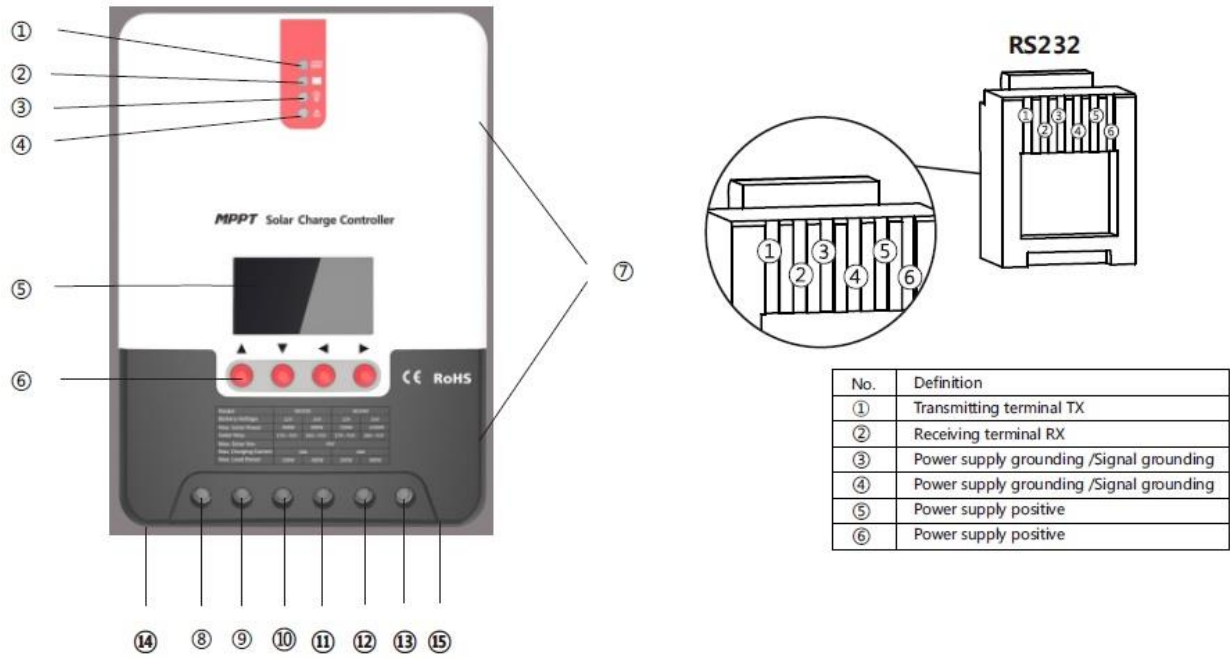
Fig. 1-1 Product appearance and interfaces

No.	Item	No.	Item
①	Charging indicator	⑩	Battery "+" interface
②	Battery indicator	⑪	Battery "-" interface
③	Load indicator	⑫	Load "+" interface
④	Abnormality indicator	⑬	Load "-" interface
⑤	LCD screen	⑭	External temperature sampling interface
⑥	Operating keys	⑮	RS232 communication interface
⑦	Installation hole		
⑧	Solar panel "+" interface		
⑨	Solar panel "-" interface		

OPERATION: PROCEDURE ORDER/CABLE ATTACHMENT

1) Make sure the total rated current of the Solar Panel Array and Load are less than the rated current of your Solar Charge Controller – in this case your maximum current is 30A
2) Make sure the polarity of the wiring from your Solar Panel Array, Battery and Load are correctly matched to prevent the risk of a short circuit which may damage unprotected devices
3) Mount you Solar Charge Controller to your selected surface and fasten it securely using screws
4) Check whether the Battery voltage and Solar Panel Array voltage is within the requested range
5) Loosen the screw terminals on your Solar Charge Controller – there are 6 screw terminals total from left to right in this order: Solar Panel Positive, Solar Panel Negative, Battery Positive, Battery Negative, Load Positive and Load Negative
6) Connect the Battery's input to your Solar Controller using the two screw terminals in the middle marked with the Battery pictogram, you may need an adapter – attach the wiring securely but do not over-torque your Solar Charge Controller's terminals
7) Connect your Load to your Battery's output using the Battery as the buffer between the Solar Panel Array and the Load (we DO NOT recommend using the Load Terminals for most uses) – attach the wiring securely but do not over-torque your Solar Charge Controller's terminals
8) Connect the Solar Panel Array to the Solar Panel Input on your Solar Charge Controller using the two screw terminals on the left marked with the Solar Panel pictogram – attach the wiring securely but do not over-torque your Solar Charge Controller's terminals
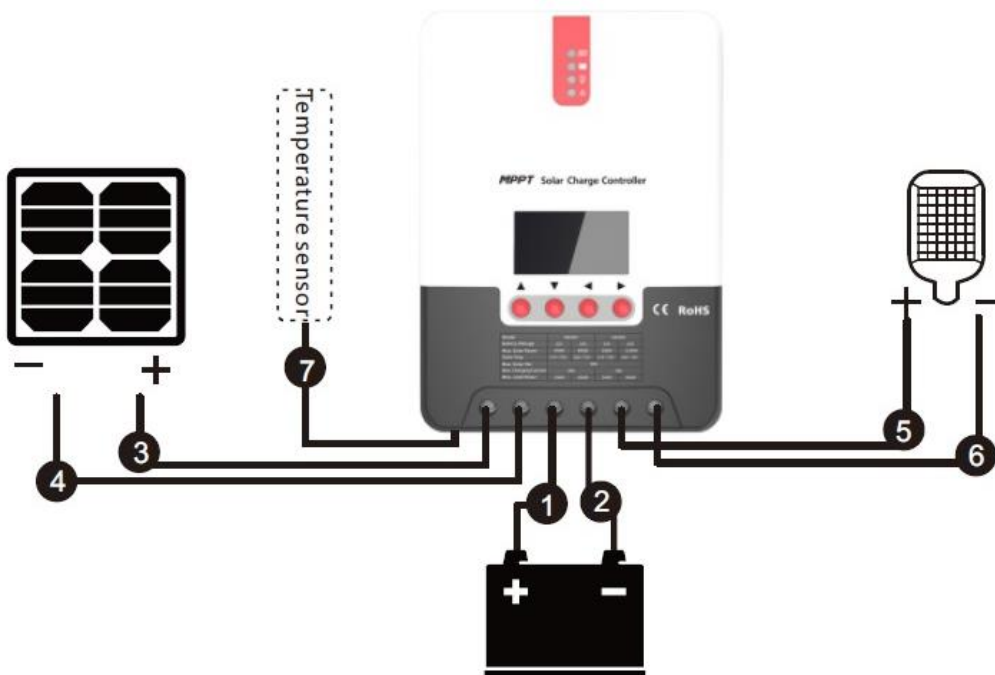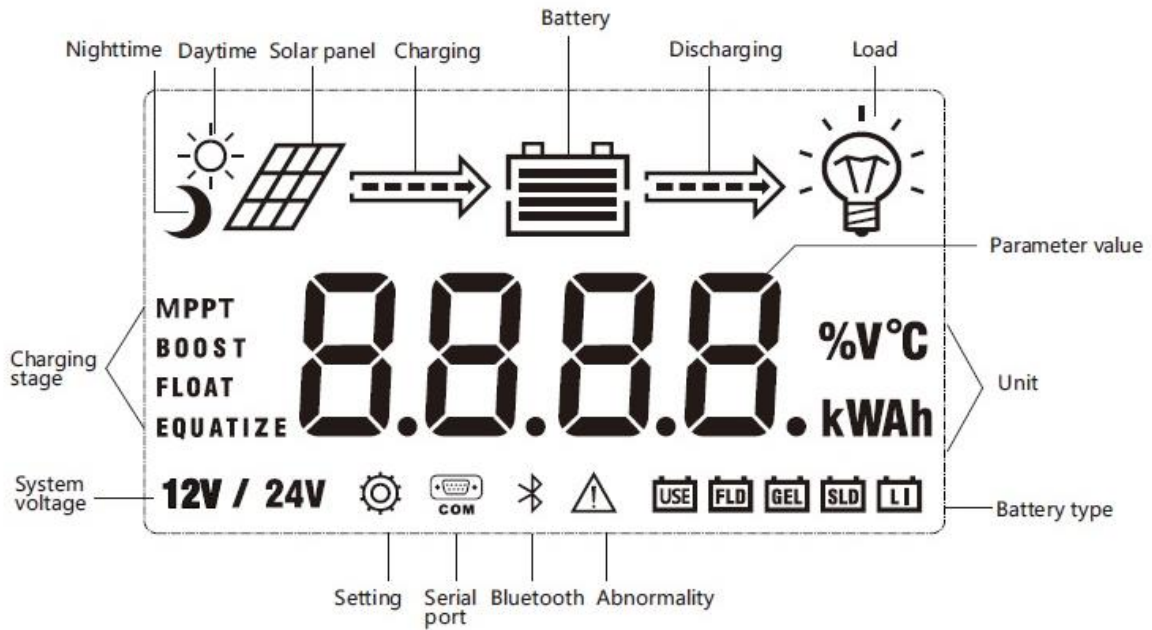
MOUNTING
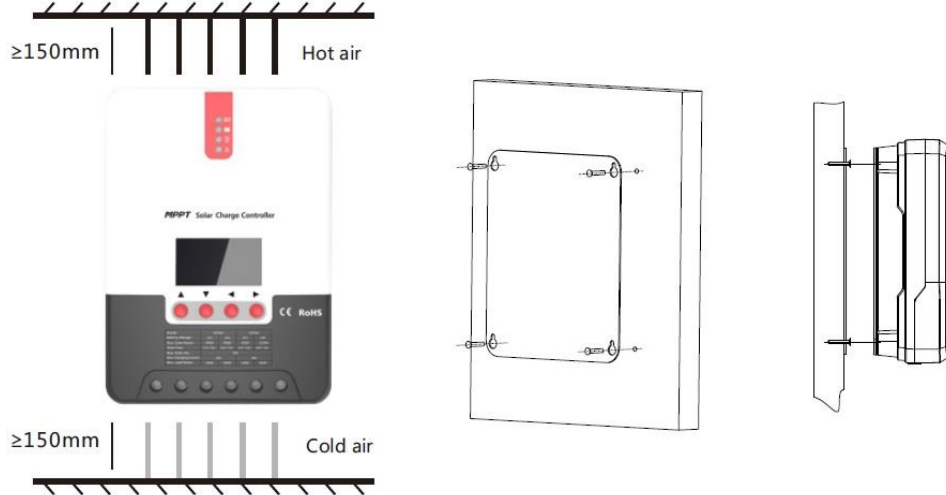
DISPLAY/NAVIGATION

▲	Up	Page up; increase the parameter value in setting
▼	Down	Page down; decrease the parameter value in setting
◄	Return	Return to previous menu (exit without saving)
►	Set	Enter into sub-menu; set/ save Turn on/ off loads (in manual mode)
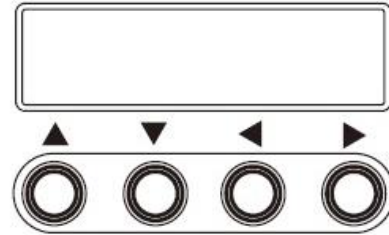
INDICATOR/DISPLAY

○ ▦	▦	PV array indicator	Indicating the controller's current charging mode.
○ ▪	▪	BAT indicator	Indicating the battery's current state.
○ 💡	💡	LOAD indicator	Indicating the loads' On/ Off and state.
○ ⚠	⚠	ERROR indicator	Indicating whether the controller is functioning normally.

➢ PV array indicator:

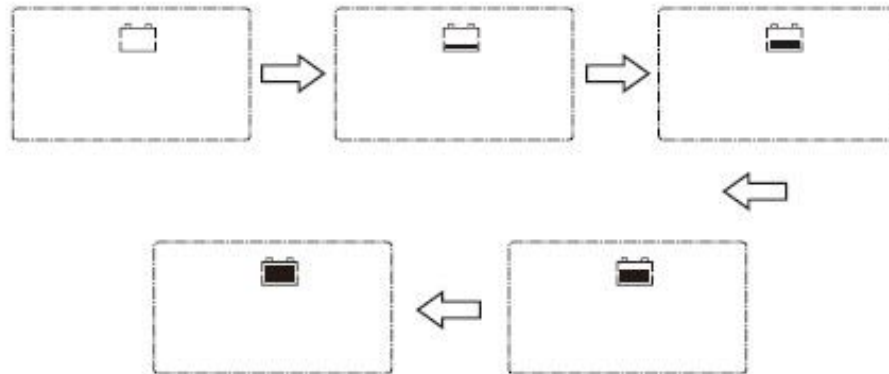| No.	Graph	Indicator state	Charging state
①	⎍⎍⎍ BULK	Steady on	MPPT charging
②	⊓⊓⊓ ACCEPTANCE	Slow flashing (a cycle of 2s with on and off each lasting for 1s)	Boost charging
③	⊓⊓⊓ FLOAT	Single flashing (a cycle of 2s with on and off lasting respectively for 0.1s and 1.9s)	Floating charging
④	⊓⊓⊓⊓⊓⊓ EQUALIZE	Quick flashing (a cycle of 0.2s with on and off each lasting for 0.1s)	Equalizing charging
⑤	⊓⊓ ⊓⊓ ⊓⊓ CURRENT-LIMITED	Double flashing (a cycle of 2s with on for 0.1s, off for 0.1s, on again for 0.1s, and off again for 1.7s)	Current-limited charging
⑥		Off	No charging

➢ BAT indicator:

Indicator state	Battery state
Steady on	Normal battery voltage
Slow flashing (a cycle of 2s with on and off each lasting for 1s)	Battery over-discharged
Quick flashing (a cycle of 0.2s with on and off each lasting for 0.1s)	Battery over-voltage

➢ LOAD indicator:

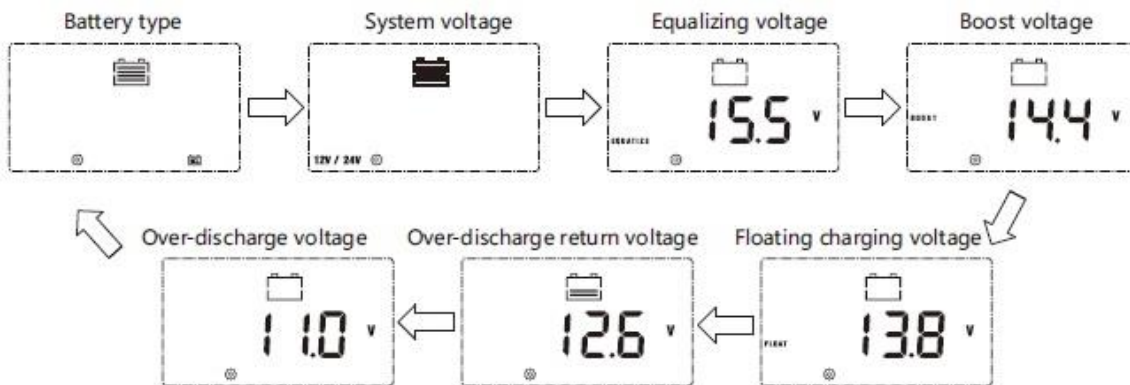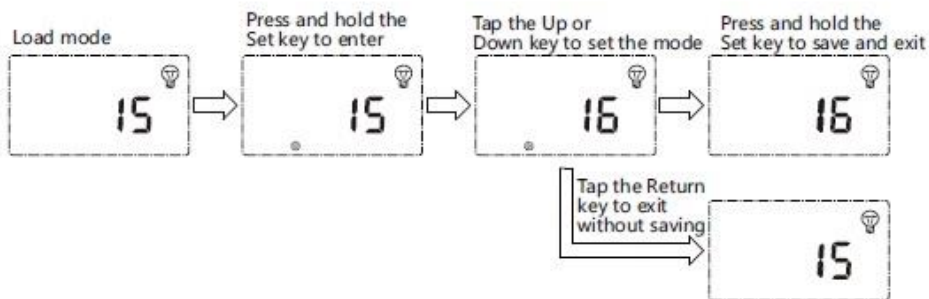| Indicator state	Load state
Off	Load turned off
Quick flashing (a cycle of 0.2s with on and off each lasting for 0.1s)	Load overloaded/ short-circuited
Steady on	Load functioning normally

Startup interface

Main interface

Main monitoring page

Component voltage

Charging current

Battery voltage

Battery capacity

Abnormality code

E0

Load current

Charging capacity

Load mode

Device temperature

Discharging capacity
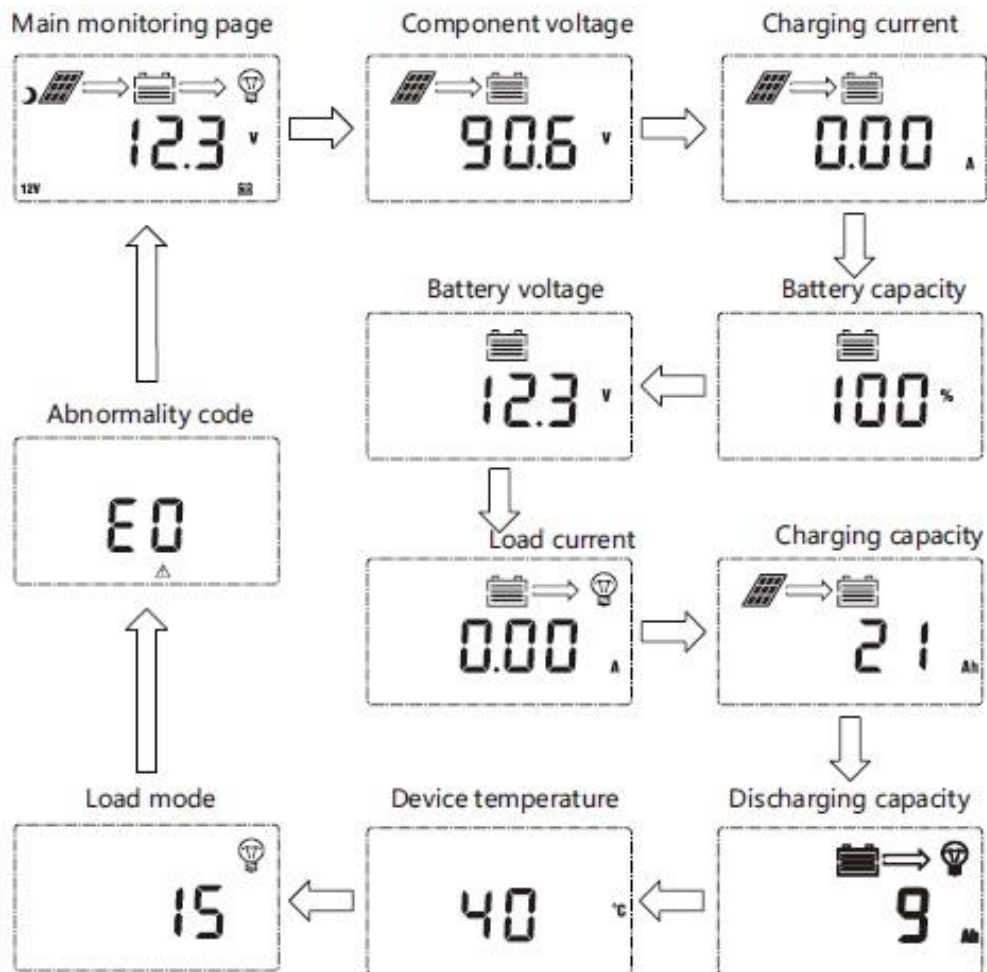
MODES

No.	Mode	Descriptions
0	Sole light control (nighttime on and daytime off)	When no sunlight is present, the solar panel voltage is lower than the light control on voltage, and after a time delay, the controller will switch on the load; when sunlight emerges, the solar panel voltage will become higher than the light control off voltage, and after a time delay, the controller will switch off the load.
1~14	Light control + time control 1 to 14 hours	When no sunlight is present, the solar panel voltage is lower than the light control on voltage, and after a time delay, the controller will switch on the load. The load will be switched off after working for a preset period of time.
15	Manual mode	In this mode, the user can switch the load on or off by the keys, no matter whether it's day or night. This mode is designed for some specially purposed loads, and also used in the debugging process.
16	Debugging mode	Used for system debugging. With light signals, the load is shut off; without light signals, the load is switched on. This mode enables fast check of the correctness of system installation during installation debugging.
17	Normal on mode	The energized load keeps outputting, and this mode is suitable for loads which need 24-hour power supply.

Load mode

Press and hold the Set key to enter

Tap the Up or Down key to set the mode

Press and hold the Set key to save and exit

15 ⇨ 15 ⇨ 16 ⇨ 16

Tap the Return key to exit without saving

⇨ 15

Battery type ⇨ System voltage ⇨ Equalizing voltage ⇨ Boost voltage

12V / 24V

15.5 v ⇨ 14.4 v

Over-discharge voltage ⇐ Over-discharge return voltage ⇐ Floating charging voltage

11.0 v ⇐ 12.6 v ⇐ 13.8 v

ERROR CODES

No.	Error display	Description	LED indicationk
1	EO	No abnormality	ERROR indicator off
2	E1	Battery over-discharge	BAT indicator flashing slowly ERROR indicator steady on
3	E2	System over-voltage	BAT indicator flashing quickly ERROR indicator steady on
4	E3	Battery under-voltage warning	ERROR indicator steady on
5	E4	Load short circuit	LOAD indicator flashing quickly ERROR indicator steady on
6	E5	Load overloaded	LOAD indicator flashing quickly ERROR indicator steady on
7	E6	Over-temperature inside controller	ERROR indicator steady on
9	E8	Photovoltaic component overloaded	ERROR indicator steady on
11	E10	Photovoltaic component over-voltage	ERROR indicator steady on
12	E13	Photovoltaic component reversely connected	ERROR indicator steady on

REFERENCE TABLES

		Parameter setting cross-reference table		
No.	**Displayed item**	**Description**	**Parameter range**	**Default setting**
1	TYPE OF BAT	Battery type	User/flooded/Sealed/Gel/Li	Sealed
2	VOLT OF SYS	System voltage	12V/24V	AUTO
3	EQUALIZ CHG	Equalizing charging voltage	9.0~17.0V	14.6V
4	BOOST CHG	Boost charging voltage	9.0~17.0V	14.4V
5	FLOAT CHG	Floating charging voltage	9.0~17.0V	13.8V
6	LOW VOL RECT	Over-discharge recovery voltage	9.0~17.0V	12.6V
7	LOW VOL DISC	Over-discharge voltage	9.0~17.0V	11.0V

	Parameters cross-reference table for different types of batteries				
Voltage to set / Battery type	**Sealed lead-acid battery**	**Gel lead-acid battery**	**Open lead-acid battery**	**Li battery**	**User (self-customized)**
Over-voltage cut-off voltage	16.0V	16.0V	16.0V	——	9~17V
Equalizing voltage	14.6V	——	14.8V	——	9~17V
Boost voltage	14.4V	14.2V	14.6V	14.4V	9~17V
Floating charging voltage	13.8V	13.8V	13.8V	——	9~17V
Boost return voltage	13.2V	13.2V	13.2V	——	9~17V
Low-voltage cut-off return voltage	12.6V	12.6V	12.6V	12.6V	9~17V
Under-voltage warning voltage	12.0V	12.0V	12.0V	——	9~17V
Low-voltage cut-off voltage	11.1V	11.1V	11.1V	11.1V	9~17V
Discharging limit voltage	10.6V	10.6V	10.6V	——	9~17V
Over-discharge time delay	5s	5s	5s	——	1~30s
Equalizing charging duration	120 minutes	——	120 minutes	——	0~600 minutes
Equalizing charging interval	30 days	0 days	30 days	——	0~250D (0 means the equalizing charging function is disabled)
Boost charging duration	120 minutes	120 minutes	120minutes	——	10~600 minutes

Contact Us

Mail: **Bioenno Power**
          3657 W. McFadden Ave.
          Santa Ana, California 92704

E-mail: **sale@bioennopower.com**
Phone: **+1 888 336-7864**