

# Intelligent Solar Charge Controller

## *USER'S MANUAL*



Please read this manual carefully before you use this product.

## 1. PRODUCT INTRODUCTION

This solar charge controller is the highlight in the range. Use of the latest charging technologies combined with state of charge determination enable optimal battery maintenance and module power monitoring for up to 2880 Wp of connected power. A large display informs the user about all operating modes with the aid of symbols. The state of charge is represented visually in the form of a tank display. Data such as voltage, current and state of charge can also be displayed digitally as figures on the display.

- ▶ Integrated data logger energy meter
- ▶ Automatic detection of voltage
- ▶ PWM charge control
- ▶ Multistage charging technology
- ▶ Automatic load re-connection
- ▶ Temperature compensation
- ▶ Overcharge protection
- ▶ Deep discharge protection
- ▶ Reverse polarity protection
- ▶ Short circuit protection of load
- ▶ Reverse current protection at night
- ▶ Load disconnection on battery over voltage

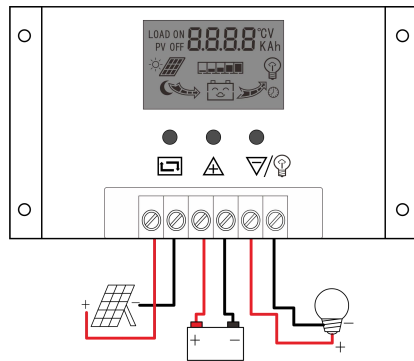
## 2. INSTALLATION

- Only install the regulator near the battery on a suitable surface. This surface should be solid, stable, even, dry and nonflammable.
- The battery cable should be as short as possible and have a suitable cable diameter size to minimize loss, e.g. 4 mm<sup>2</sup> at 20 A and 2 m length.
- If the solar battery will be operated under a large temperature range (winter/summer) the external temperature sensor should be used. A temperature compensated final charge voltage will extend the batteries lifetime and uses the optimum charge capacity.
- Do not install the controller to direct sunlight.
- To ensure the air convection on each side keep a distance of 10 cm to the regulator. The temperature at the installation site may never fall below or exceed the maximal permitted ambient temperature.

Connect the individual components to the symbols provided.  
Observe the following connection sequence during commissioning:

1. Connect the battery to the charge regulator - plus and minus
2. Connect the photo-voltaic module to the charge regulator - plus and minus
3. Connect the consumer to the charge regulator - plus and minus

The reverse order applies when de-installing!



**!** PLEASE OBSERVE THAT THE  
AUTOMATIC ADJUSTMENT TO 12V/24V  
SYSTEMS DOES NOT FUNCTION  
PROPERLY,IF THIS SEQUENCE ORDER IS  
NOT FOLLOWED!

**!** AN IMPROPER SEQUENCE ORDER CAN  
DAMAGE THE BATTERY!

## 3. OPERATION

### 3.1 Description of LCD graphic symbol

	: Stop power output to the load		: Battery stops charging
	: Power output is normal but there is no current		: Buck charging
	: Power output is normal and there is a load current		: Float charging
	: Load		: System is working good
	: Solar Panel		: System is not working good
	: Load sensor control		: Battery capacity
	: Load time control		: Battery

### 3.2 Description of Button function



- ① Button for Switching display windows
- ② to enter/exit the setting (long press for 5 seconds)



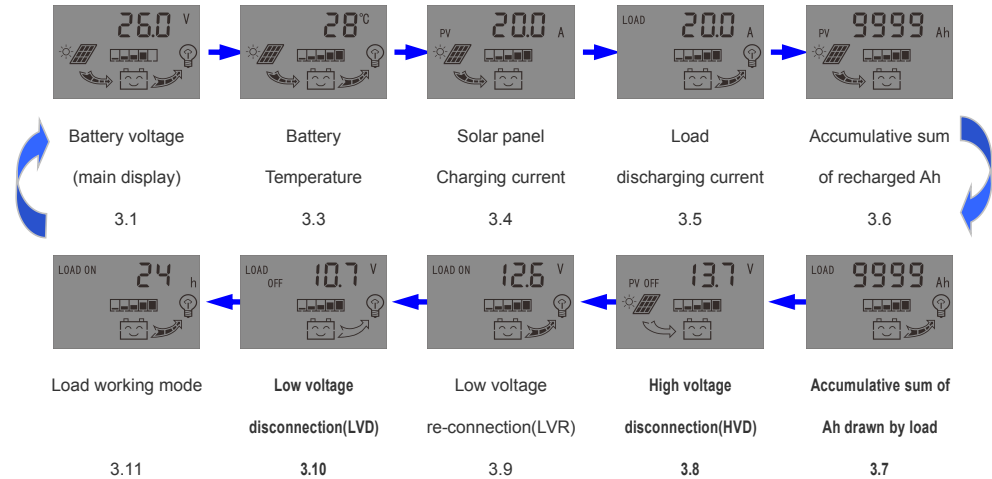
- ① Adjustment of parameters plus button
- ② restore factory setting in each parameter(long press for 5 seconds)



- ① Adjustment of parameters mins button
- ② click this button to switch the load in main display window

### 3.3 View and set the parameters

The controller will auto display the “battery voltage” main display after correct power on. This is the main display window. Use the button to switch between different display windows. If the parameter can be set, long press the button (>5 seconds, numbers start flashing) to enter the setting, then press the or to select the setting, after that, long press the button again to exit the setting (numbers stop flashing)



#### Parameters Screen rolling

\* some models don't provide LCD parameter screen 3.3~3.7.

### 3.1 Battery voltage(main display)

As shown on the right,it displays the battery voltage measured by the controller.Also,it displays the charge and discharge status,battery capacity.



### 3.2 The load ON/OFF control

In the main display window,click the bottom ▼/💡 to ON/OFF the load.the button don't have such feature in other interface.



### 3.3 Environment temperature

As shown on the right,it displays the ambient temperature of the controller,also its used for temperature compensation on HVD function.

The sensor must be plug in before using the controller.



### 3.4 Solar panel charging current

As shown on the right,it displays the charging current from the solar panel.




### 3.5 Load discharging current

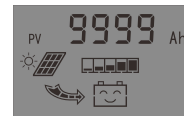
As shown on the right,it displays the discharging current drawn by load.



### 3.6 Accumulative sum of recharged Ah


As shown on the right,it displays the Accumulative sum of recharged Ah from solar panel.

press the button  for 5 seconds to reset the meter to 0. Even when battery is disconnected the value remains. When 9999Ah are reached,it will switch back to 0 Ah.



### 3.7 Accumulative sum of recharged Ah





As shown on the right,it displays the Accumulative sum of Ah drawn by load.

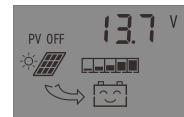
press the button  for 5 seconds to reset the meter to 0. Even when battery is disconnected the value remains. When 9999Ah are reached,it will switch back to 0 Ah.







### 3.8 High voltage disconnection(HVD)

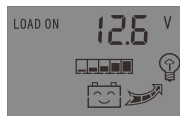
As shown on the right,it displays the values of HVD.when battery voltage reaches HVD voltage,the controller will start PWM control to keep the battery voltage at same level.

long press the button  (>5 seconds,numbers start flashing) to enter the setting,then press the  or  to select the setting,after that,long press the button  again to exit the setting(numbers stop flashing)







### 3.9 Low voltage re-connection(LVR)

As shown on the right,it displays the values for the LVR voltage.Under the LVD protection in the controller,when battery voltage is restored to higher voltage than LVR voltage,the controller will re-connect the load circuit.long press the button  (>5 seconds,numbers start flashing) to enter the setting,then press the  or  to select the setting,after that,long press the button  again to exit the setting(numbers stop flashing)







1-23h - Light control with time control mode. Load will turn on after dusk and turn off according to the timer setting.

0h - light control mode,load will turn on after dusk and turn on before dawn.

long press the button  (>5 seconds,numbers start flashing) to enter the setting,then press the  or  to select the setting,after that,long press the button  again to exit the setting(numbers stop flashing)

### 3.10 Low voltage disconnection(LVD)

In the main display window,it displays the values for low LVD voltage. When the battery voltage is lower than this voltage,the controller will disconnect the load circuit to prevent battery over-discharge.

long press the button  (>5 seconds,numbers start flashing) to enter the setting,then press the  or  to select the setting,after that,long press the button  again to exit the setting(numbers stop flashing)



### 3.11 Load working mode

As shown on the right,it displays the load working mode. Different values represent different load working mode.

24h - normal mode,there is always output unless the battery voltage is too low.




## 4. TROUBLE SHOOTING

### LVD Protection and Treatment

Screen display as shown in the figure that the battery drops below the LVD protection voltage. The controller has entered the LCD protection state, load circuit has been disconnected. Use the solar panels recharge the battery or charger when the battery voltage reaches LVR voltage, the controller will resume on the load power supply, into the normal working state.




### Over load Protection and Treatment

Screen display (see the figure) and flashing expressed load loop circuit current sustained 60seconds than 1.5times rated current, the controller has entered into overload protection state. After reduce the load, press the button  to restore power to the load.



### Short Circuit Protection and Treatment

Screen display (see the figure on the right) and flashing expressed there is short circuit on the load loop circuit. The controller has enter into Short Circuit Protection state Check the load if there is damage or not, if there is cable short circuit or not, after trouble shooting short press  the button for restoration.



## 5.LEGAL GUARANTEE

In accordance with statutory regulations, there is a 1-year legal guarantee on this product for the customer.

The seller will remove all manufacturing and material faults that occur in the product during the legal guarantee period and affect the correct functioning of the product. Natural wear and tear does not constitute a malfunction. Legal guarantee does not apply if the fault can be attributed to third parties, unprofessional installation or commissioning, incorrect or negligent handling, improper transport, excessive loading, use of improper equipment, faulty construction work, unsuitable construction location or improper operation or use. Legal guarantee claims shall only be accepted if notification of the fault is provided immediately after it is discovered. Legal guarantee claims are to be directed to the seller.

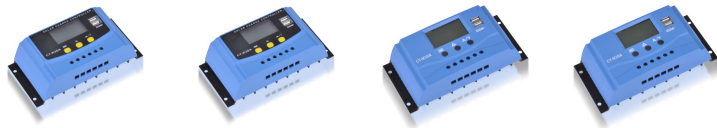
The seller must be informed before legal guarantee claims are processed. For processing a legal guarantee claim an exact fault description and the invoice / delivery note must be provided.

The seller can choose to fulfill the legal guarantee either by repair or replacement. If the product can neither be repaired nor replaced, or if this does not occur within a suitable period in spite of the specification of an extension period in writing by the customer, the reduction in value caused by the fault shall be replaced, or, if this is not sufficient taking the interests of the end customer into consideration, the contract is canceled.

Any further claims against the seller based on this legal guarantee obligation, in particular claims for damages due to lost profit, loss-of-use or indirect damages are excluded,unless liability is obligatory by law.

## 6. TECHNICAL DATASHEET

Model



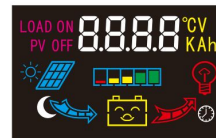
Type	A	B	C	D	
Max	20A/30A	50A/60A	30A	50A/60A	
Size	90x188x48mm	110x170x55mm	130x188x62mm	130x188x62mm	
weight	360g	300g	590g	570g	

\*all models offers "12V/24V auto adapt" or "48V only" system voltage.

\*all model type offers an optional USB 5V charger for phone/pad.

\*some models don't provide LCD parameter screen 3.3~3.7.

\*all models offers colorful LCD screen, please contact us for further details.



### General Electronic Character

Rated voltage	12V/24V Auto or 48V only
Max solar voltage	<50V (for 12v/24v controller) <100V (for 48v controller)
Float charging voltage	13.7V/27.4V/54.8V
Low voltage disconnect	10.7V/21.4V/42.8V
Low voltage reconnect	12.6V/25.2V/50.4V
Standby loss	<30mA
Charging mode	PWM
Temp compensation	-4mV/Cell/°C
Operating condition	-20°C~+60°C

\*Product specifications are subject to change without prior notice.