



※Thank you for selecting this series solar charge controller, please read this specification before using the product.  
※Please keep this specification for the further reference.

## SK Series Solar Controller

### 1.PRODUCT INTRODUCTION

Thank you for choosing PWM shared positive electrode solar controller. The product is based on Pulse Width Modulation (PWM) charging mode with all-digital technology, LCD Screen and double USB ports design. Its fully automatic operation mode can be used in a wide range of applications. For example: Home power system, Traffic lights, Solar street lights, Garden lights system, etc. Please check the following notable features:

- To ensure the product life, international renowned brands (ST) component is used, high quality and low failure rates.
- With UL, VDE certificated terminals, the product is more secure and more reliable.
- 4-stage PWM charging mode: bulk, absorption, equalization, float.
- Sealed, Gel, Flood and User's default battery type for your choose
- LCD display operating data and working status dynamically
- Operation is more comfortable and convenient with user-friendly button settings.
- Various load control modes: Manual mode, light control mode, light and time control mode and double time periods mode.
- Battery voltage level detection is adjustable
- Charging and discharging parameters are adjustable
- Solar panels and battery anti-reverse protection function
- For battery, under-voltage protection, over-voltage protection, under-voltage recovery, over-voltage recovery
- Over-load protection
- Internal over-heat protection function
- Real-time power statistics function
- Battery temperature compensation function
- Time display function
- Communication function
- Full electronic protection function

### 2.PRODUCT APPEARANCE

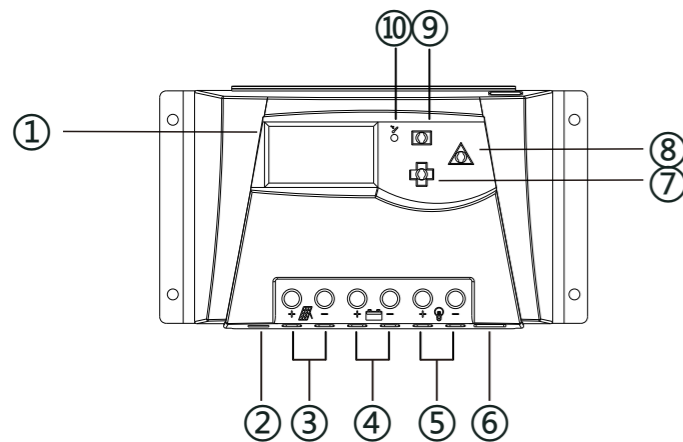


Photo 1 Appearance

① LCD	⑥ RJ45 Port ※
② Battery temperature sensor port ※	⑦ + Button
③ Terminals for PV array	⑧ ▲ Button
④ Terminals for battery	⑨ - Button
⑤ Terminals for load	⑩ Internal temperature sensor

※ 2 and 6 are optional function port

**Attention:** In the condition of no remote temperature sensor, controller defaults that internal temperature sensor manager battery to charge and discharge.

### 3.Wiring

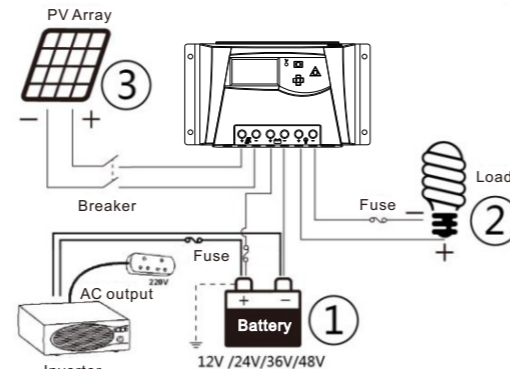


Photo 2 Connection diagram

#### Wiring sequence

##### ① Connect the battery

**Note:** Fuse must be installed on battery end. The proposed installation distance is no more than 50mm.

##### ② Connect the load

##### ③ Connect the PV array

##### ④ The controller is powered on

When connecting the battery, the system voltage is identified; observe whether the LCD is on. If working is abnormal or the display shows unusual, please refer to Chapter 6 for fault resolution.

**Attention:** This series of PWM is a common positive controller, PV array, battery and load of the positive pole can be grounded at the same time.

**Attention:** DO NOT connect load end of controller if you want to connect power inverter of other load with bigger starting current in the system. Please connect power inverter with battery directly.

### 4.Operation interface description

#### 4.1Button operation

Mode	Remark	
Load switch	Short press ▲ key to turn on/off switch when load mode is manual mode	
Fault resolution	Short press ▲ key	
Browsing mode	First class interface	Short press +/- key
	Secondary interface	Short press ▲ key
Setting mode	Long press ▲ key to access the secondary loop interface; Then short press ▲ key to browse secondary loop interface; Short press + or - key to set parameters and long press ▲ key to save parameters. No key operation for 20 seconds will exit secondary loop interface.	

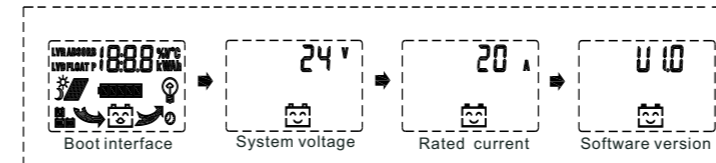
### 4.2 LCD interface



#### Status introduction

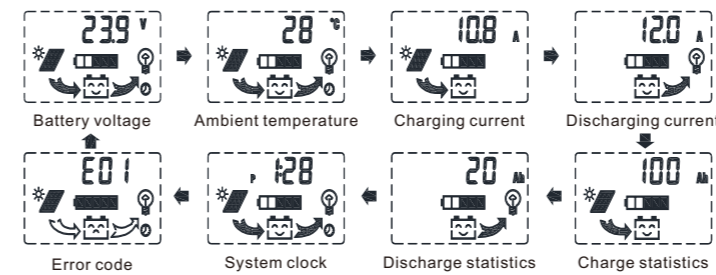
Name	Icon	Status
PV array		Day
		Night
		Discharging
Battery		Charging
		Battery electricity
Load		Battery type
		Load is powered on
		Load is powered off

### 4.3 Boot interface

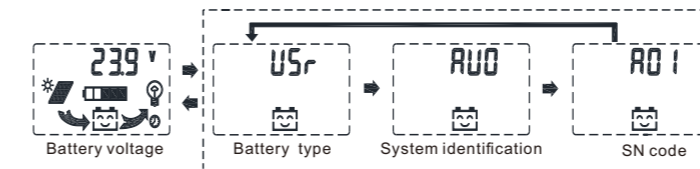


- (1) Boot interface: please check whether the LCD is normal when the system is powered on.
- (2) System voltage: voltage level of battery connected controller
- (3) Rated current: the rated charge and discharge current of controller
- (4) Software version

### The first class loop interface



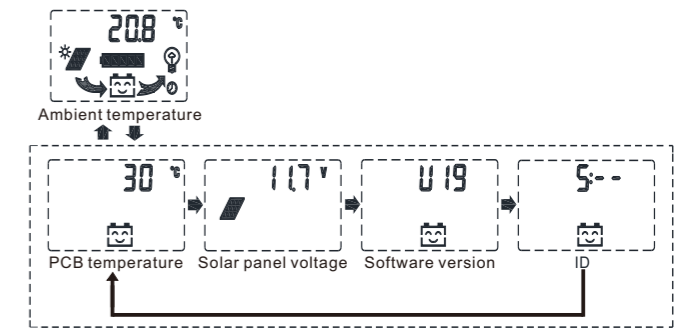
### The secondary loop interface under battery voltage interface



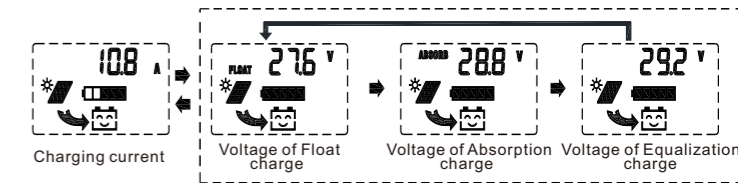
- (1) Battery type: four types of battery for the users: GEL, SLD, FLD, USR; And parameters can be modified and saved only you choose USR type of battery.
- (2) Battery voltage detection: Automatic identification, fixed 12V, fixed 24V, fixed 36V, fixed 48V.
- (3) Controller communication SN code: The value range is 1 to 99, the default is 1.  
(Applicable to controller with communication function)



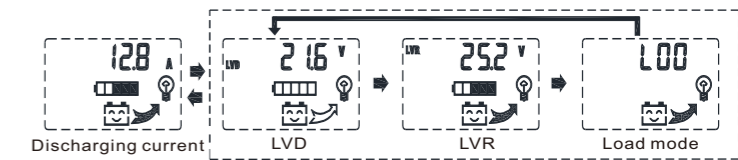
### The secondary loop interface under ambient temperature interface



### The secondary loop interface under charging current interface



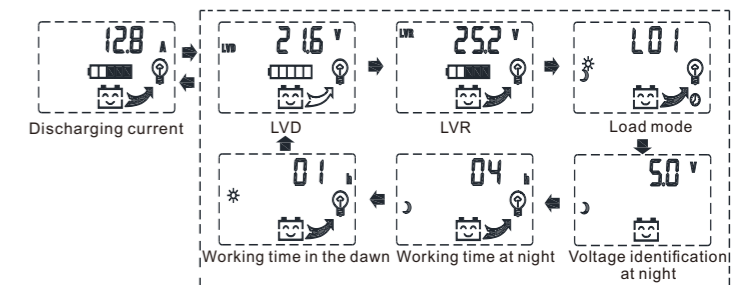
### The secondary loop interface under discharging current interface



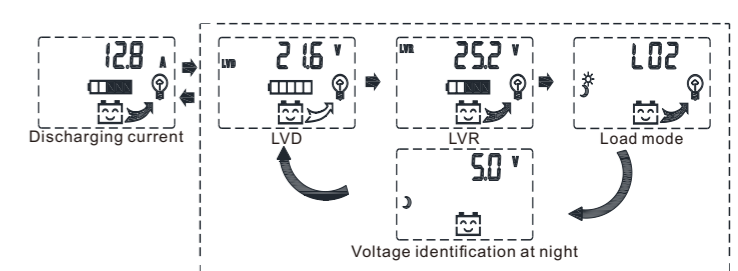
### Load Working Mode

CODE	Load Working Mode
L00	Regular mode (MODE 0)
L01	Light control and time control mode (MODE 1)
L02	Light control mode (MODE 2)
L03	Double time periods mode (MODE 3)

#### ① Mode1

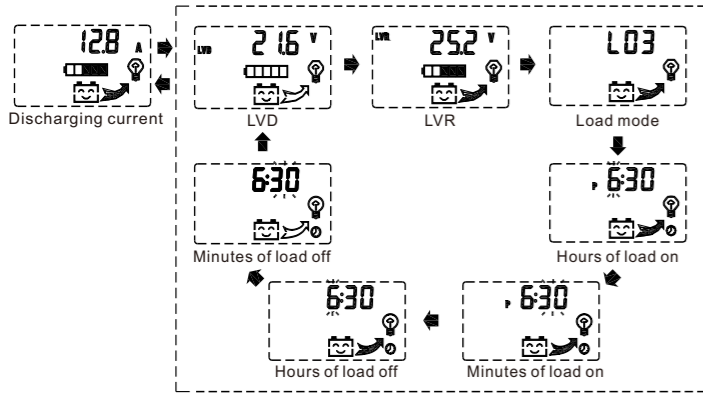


#### ② Mode2

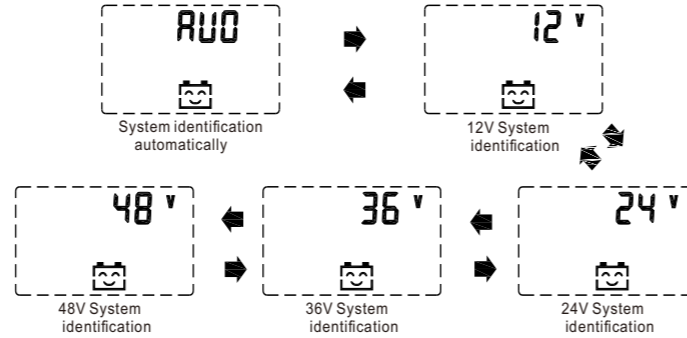




③ Mode3

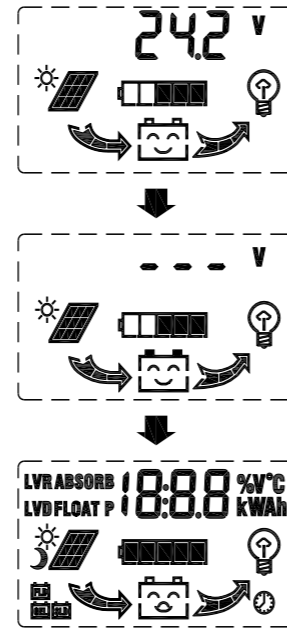


4.5 System Voltage Selection



4.6 Restore factory settings

Long press + and - key about 3s at the same time to access the restore factory settings in the main loop of the Battery Voltage interface



6. Fault Management

Error code	Cause	Correction
	No sign on the LCD when there is enough sunlight	Solar panel is disconnected Check if connection of solar input is right and contact is reliable.
	No sign on the LCD when connection is right	1. Battery voltage is less than 9V 2. Voltage of solar panel is less than battery voltage 1. Check battery voltage. Controller will start only when battery voltage is more than 9V 2. Voltage of solar panel must be more than battery voltage.
E01	Battery Over-discharge	Load output is turned off automatically and recovers when battery electricity is enough.
E02	Over-load	Reduce load or check load connection
E03	Over-voltage	Check battery voltage whether it's more than over-voltage point, and reconnect solar panel.
E05	Over temperature	Make the controller cool down and restart charging automatically.
E07	Charging current is too large	Check power of solar panel and reduce quantities of solar panel in parallel; Restart after 2 minutes..

7. Technical data

	30A(48V)	40A(48V)
Rated charge current	30A(48V)	40A(48V)
System rated voltage	12/24/36/48VDC Auto recognized	
Voltage range of battery	9V-64V	
Rated charging and discharging	30A	40A
Maximum input power	390W (12V) 1170W (36V) 780W (24V) 1560W (48V)	520W (12V) 1560W (36V) 1040W (24V) 2080W (48V)
Max open voltage of solar panel	100V	
Battery type	Maintenance-free lead-acid battery(default), GEL, lead-acid Flooded battery	
Equalized charging voltage	Maintenance-free lead-acid battery : 14.6V, GEL: No; Lead-acid Flooded battery: 14.8V	
Absorption charging voltage	Maintenance-free lead-acid battery : 14.4V, GEL: 14.2V ; Lead-acid Flooded battery: 14.6V	
Float charging voltage	Maintenance-free lead-acid battery, GEL, lead-acid Flooded battery : 13.8V	
LVR	Maintenance-free lead-acid battery, GEL, lead-acid Flooded battery : 12.6V	
LVD	Maintenance-free lead-acid battery, GEL, lead-acid Flooded battery : 10.8V	
Static loss	≤9.2mA/12V; ≤11.7mA/24V; ≤14.5mA/36V; ≤17mA/48V	
HVD	16V	
Duration of absorption charging	2hs	
Duration of equalized charging	2hs	
Light control voltage	5V	
Temperature compensation	-4mV/°C/2V(25°C)	
Charge loop voltage drop	≤ 0.29V	
Discharge loop voltage drop	≤0.16V	
LCD temperature	-20 ~ +70 °C	
Operating temperature	-20 ~ +55 °C (To run at full rated current continuously)	
Storage temperature	-30 ~ +80 °C	
Working humidity	≤90%, No condensation	
Protection class	IP30	
Grounded type	Positive grounded	
Dimension	196 x 111x 54mm	
Hole size for installation	184x80mm	
Aperture for installation	Φ5mm	
Terminal wiring	16mm <sup>2</sup> /12AWG	
Net weight	0.41KG	
Optional function	Remote communication, TTL, Standard Modbus protocol	
※The above parameters are 12V system at 25°C, two 24V systems, Three 36V systems, four 48V systems		

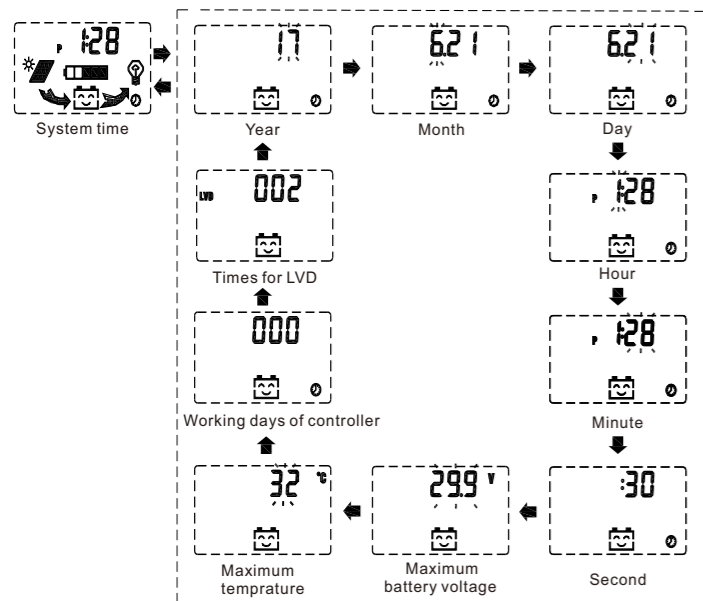
Subject to change without notice.

5. Protection Function

Protection	Condition	Status
Solar panels is reversed	Solar panel can be reserved if Battery is connected correctly	Controller isn't broken
Battery is reversed	Battery can be reserved if PV is unconnected	
Battery over-voltage	Battery voltage reaches the over-voltage point	Stop charging and discharging
Battery over-discharge	Battery voltage drops the under-voltage point	Stop discharging
Over-load	The load current is over the rated current	Turn off the output

Note: You can short press ▲ key to eliminate the error code.

The secondary loop interface under time interface



Error Indication

Status	Icon	Description
Battery under-voltage		Flash slowly
Battery over-voltage		Flash fast
Load Error		over-load, short circuit error, load icon flashes

4.4 Battery Type

Operation steps

