User’s Manual

Safety Attentions

1.Get the tools and cables ready.Select the appropriate cable to enssure that the current density is less than <6A/ mm ²,which is conductive to reduce the cable voltage damage.
2.This controller will be heat when working.Please install the controller on the flat,well ventilated environment.
3.In the process of connecting wires,please connect the battery first (in order to ensure the correct identification of the battery voltage level) ,then connect the solar panel.After the controller completes the battery voltage lever indentification,manually close the load output of the controller and connect the controller finally.
4.In order to use security,please do not use solar panels that exceed the rated current of the solar controller; please do not connect the load over rated current ;please do not use AC/DC switching power supply instead of solar panel to connet the controller.

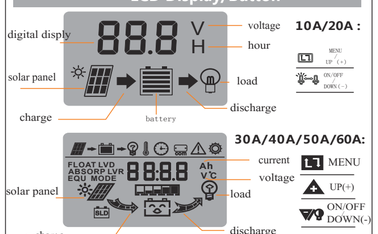
Product Features

- Simple button operation
- Adjustable charging and discharging control parameters
- Load overcurrent/short-circuit protection
- Various load mode
- 5V/2A USB (10A/20A/30A/40A)
- Support Lead-acid battery and lithium battery charging and discharging
- Inteligent 3-stage PWM charging mode
- Battery over discharge/overvoltage/low voltage protection
- Battery reverse discharge protection
- Solar panel/Battery reverse connect protection

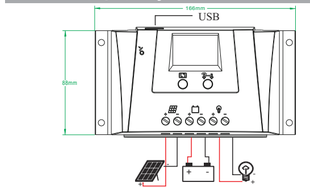
The following features apply to 30A/40A/50A/60A

- 12/24/36/48V full automatic indentification
- Voltage temperature compensation
- Remote monitoring and communication function
- Solar controllers can be work from the solar panel when the voltage of lithium battery is 0V
- LCD display screen with backlight function
- Reverse light control mode
- Accumulated amper hours

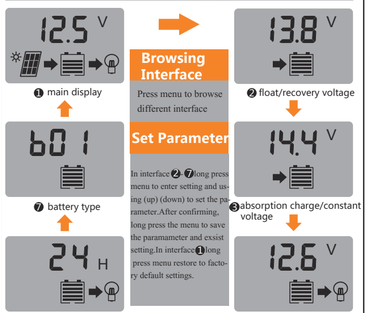
LCD Display/Button



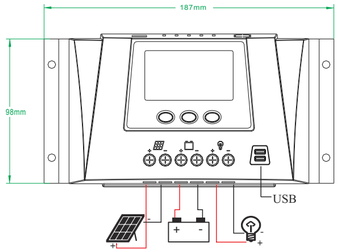
10A/20A System Connection



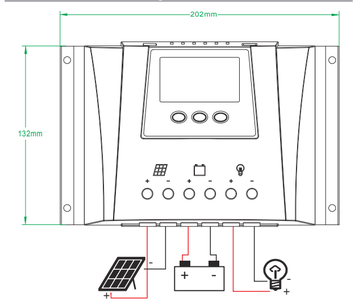
10A/20A Display/Setting



30A/40A System Connection



50A/60A System Connection

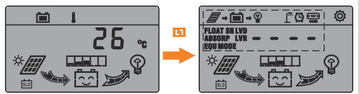


1.First,according to the diagram,connect the positive and negative electrodes of the battery to the controller,it will auto-indentify the battery voltage.
2.Then,connect the solar panles to the controller.
3.Finally, connect the positive and negative electrodes of the load to the controller. prevent reverse.
4.When using lithium battery with protective panel,set the voltage level to be a fixed value.Do not set the battery to be automatic indentification.In order to prevent the protection of the lithium battery board from the solar input after starting the controller to indentify the error voltage.
5.The open-circuit voltage of the solar panels must be smaller than the maxium allowable voltage required by the lithium battery to prevent battery damage from excessive voltage.
6.When using the lithium battery,the short-circuit current of solar panel should be less than 0.3C (Lithium battery capacity).

Note：
1.When using lithium battery in the environment below 0°C ,lithium battery should be work well at low temperature.
2.Solar controllers do not have the equalizing function for lithium battery.So,the lithium battery must build-involtage equalizing function.
3.Please strictly connect the controller in the right order,otherwise it may damage the controller.
4.When remove the cables,please in the reverse order.

Factory Default Settings

At main loop interface 2,long press Menu till the symbols in the dotted column starts flashing,the controlling parameters will recover to the default value.Controller will restart automatically to renew the controller data.



Various Working Modes For Load

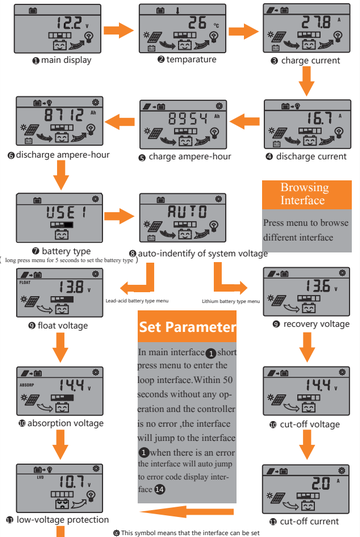
There are four control modes for load,(1)nomal control mode,(2)light control on and delayed off mode,(3)light control mode,(4)reverse light control mode.The delayed duration can be 1-24h.

Following are the working introduction for each mode:

Load mode	event		
	dark	setting time	dawn
24H nomal control mode	-	-	-
1~23H light control on and delayed off mode	Load on	Load off	Load off
0H light control mode	Load on	-	Load off
CH reverse light control mode	Load off	-	Load on

Note: 10A/20A do not have reverse light control mode

30A/40A/50A/60A Display/Setting



30A/40A/50A/60A Error Code and Solution

Error code	Cause	Solution
E01	Low voltage of battery,load off	Charge the battery or change a new battery.
E02	Overload,load off	Decrease the load,then use Minus button to turn on the load or the load will be automatically turn on after 2 minutes.
E03	Load short-circuit,load off	Remove the short-circuit load,use Minus button to turn on the load.
E04	Over-voltage of battery,load off	Check the connection of battery,and whether if the capacity of battery is too small,check if there is another charger connected with the battery.
E05	Solar panel over current,controller stop charging	Check whether the power of solar panel has been over power ,decrease the panels and then the controller can be start to charging automatically after 2 minutes.

Technology Parameters

Solar Input	Rated Current	10A/20A	30A	40A	50A	60A
	Input Voltage	⩽ 50V (12V/24V Auto)		⩽ 100V (12V/24V/36V/48V Auto)		

Charge management

Lead-acid batteries	3-stage charging(bulk charge, absorption charge, float charge)				
	Lead-acid batteries	Sealed	GEL	Flood	USE1
	Float voltage	13.8V	13.8V	13.8V	13.8V (9~15V/adjustable)
	Absorpion voltage	14.4V	14.0V	14.6V	14.4V (9~15V adjustable)
	Absorption time	2h			
	Absorpion recovery voltage	12.6V			
	Limited charge voltage	15.5V			
	Temperature compensation	-4mV/cell/ °C			
Lithium batteries	3-stage charging(bulk charge,constant-voltage charge,stop charge)				
	Lithium batteries	3.7-3	3.7-4	3.2-4	3.2-5	USE2
	Constant voltage	12.6V	16.8V	14.4V	18.0V	14.4V(9~17V adjustable)
	Cut-off charge current	2A(0.1A~30 A adjustable)				
	Recovery charge voltage	12.0V	16.0V	13.6V	17.0V	13.6V(9~17V adjustable)

Discharge Management

Batteries Type	Lead-acid batteries	Lithium Battery				
		3.7-3	3.7-4	3.2-4	3.2-5	USE1
Low-voltage protection	10.7V(9~15V adjustable)	9.9V	13.2V	11.2V	14.0V	11.2V(9~17V adjustable)
Low-voltage recovery	12.6V(9~15V adjustable)	11.1V	14.8V	12.8V	16.0V	12.8V(9~17V adjustable)
Over-voltage protection	16.0V	18.5V				
Over-voltage recovery	15.5V	18.0V				
USB power	5V USB ，the maxium output current is 2A					

Voltage Indentify Range Of Battery

System voltage	Lead-acid batteries	Lithium Battery				
		3.7-3	3.7-4	3.2-4	3.2-5	USE2
12V	⩽ 17V	⩽14.6V	⩽ 18.8V	⩽16.4V	⩽20V	⩽ 16.4V
24V	⩽ 30V	⩽26.2V	⩽ 34.6V	⩽29.8V	⩽37V	⩽29.8V
36V	⩽40.8V	⩽38.2V	⩽ 50.8V	⩽43.6V	⩽54.4V	⩽43.6V
48V	⩾40.8V	⩾ 38.2V	⩾ 50.8V	⩾ 43.6V	⩾ 54.4V	⩾ 43.6V

Others

Max wire size	6mm²(AWG #9) /16mm²(AWG #5) /25mm²(AWG #3)
Working temperature	-20 °C ~50 °C
Storage temperature	-30 °C ~70 °C
Working humidity	10%~90% ，no condensation
Dimension	10A/20A : 166*88*38mm 30A/40A : 187*98*50mm 50A/60A : 202*132*61mm
Weight	270g/370g/665g/730g
Waterproof	IP30

Note：Above parameters apply to system 12V as an example,if 24V/36V/48V system, the voltage parameter value should*2/*3/*4

Note：10A/20A controller without temperature compensation /backlight function,without cut-off current.

b'01：Sealed battery
b'02：Gel battery
b'03：Flood battery
b'04：Lithium battery custom type
b'00：Lead-acid battery custom type