User's Manual

SAFETY INSTRUCTIONS

1.Make sure your battery has enough voltage for the controller to recognize the battery type before first installation.

2.The battery cable should be as short as possible to minimize loss.

3.The regulator is only suitable for lead acid batteries: OPEN,AGM, GEL it is not suited for nickel metal hydride, lithium ions or other batteries.

4.The charge regulator is only suitable for regulating solar modules.

Never connect another charging source to the charge regulator.

PRODUCT FEATURES

1.Build-in industrial micro controller.

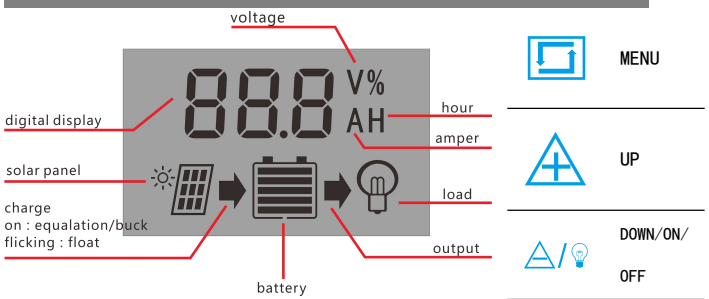
2.Big LCD display,all adjustable parameter.

3.Fully 4-stage PWM charge management.

4.Build-in short-circuit protection,open-circuit protection,reverse protection,over-load protection.

5.Dual mosfet Reverse current protection ,low heat production.

LCD DISPLAY/KEY



MENU: switch between different display, or to enter/exit setting by long press.

UP: press to increase value.

DOWN:presss to decrease value.

SYSTEM CONNECTION

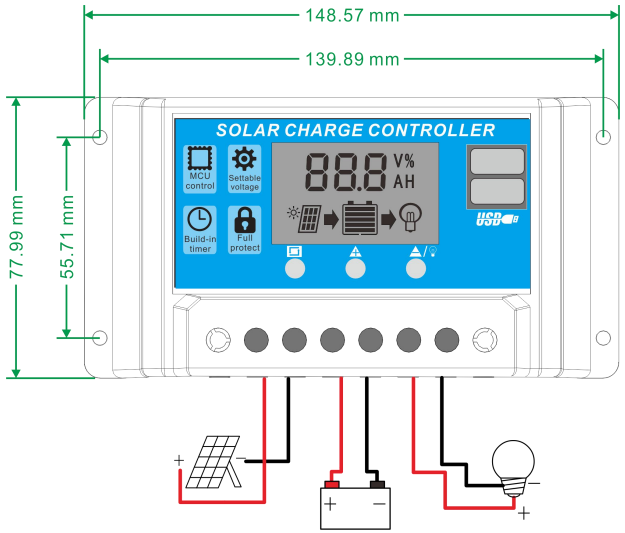
1.Connect the battery to the charge regulator - plus and minus.

2.Connect the photovoltaic module to the regulator - plus and minus.

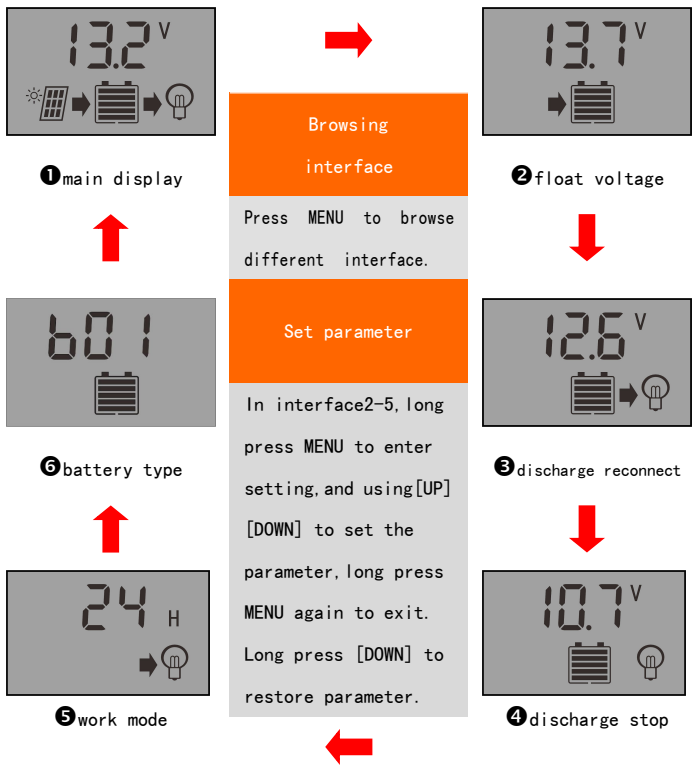
3. Connect the consumer to the charge regulator - plus and minus.

The reverse order applies when deinstalling!

An improper sequence order can damage the controller!



DISPLAY/SEETING



Attn:

1. press the [Down] button to ON/OFF load manully at main display.

2. the work mode is working as below:

[24H] load output 24hours

[1-23H] load on after sunset and closed after setting hours

[0H] Dusk to dawn

TROUBLE SHOOTING

Situation	Probable cause	Solution
Charge icon not on when sunny	Solar panel opened or reversed	Reconnect
Load icon off	Mode setting wrong	Set again
	Battery low	recharge
Load icon slow flashing	Over load	Reduce load watt
Load icon slow flashing	Short circuit protection	Auto reconnect
Power off	Battery too low/reverse	Check battery/connection

TECHNICAL PARAMETER

MODEL	KLD1210	KLD1220	KLD1230	KLD4820	KLD4830
Batt voltage	12V/24V auto			48V	
Charge current	10A	20A	30A	20A	30A
Discharge current	10A	20A	30A	20A	30A
Max Solar input	<50V			<80V	
Equalization	B01 sealed		B02 Gel		B03 flood
	14.4V		14.2V		14.6V
Float charge	13.7V(defaul,adjustable)				
Discharge stop	10.7V(defaul,adjustable)				
Discharge reconnect	12.6V(defaul,adjustable)				
USB output	5V/3A				
Self-consume	<10mA				
Operating temperature	-35~+60 ℃				
Size/Weight	150*78*35mm /150g				

*all red color voltage X2 ,X4 while using 24V /48V system.

*Product specifications are subject to change without prior notice.

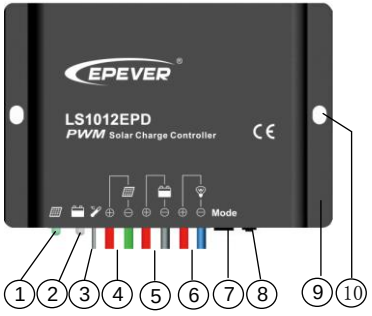
LS-EPD Series Solar Charge Controller

1. General Information

LS-EPD series solar charge controller adopts the most advanced digital technique and operates fully automatically. It is ideal for extreme environments with corrosion, dust, water etc and has various unique functions：

- Electronic protection: Over charging, over discharging, overload, short circuit and reverse protection of solar module
- High efficient Series PWM charging, increase the battery lifetime and improve the solar system performance
- Widely used, automatically recognize day/night
- Battery LED indicate battery status
- Industrial design, wide application range
- Digital tube menu, only one key solve all setting simply
- Intelligent timer function with 1～13 hours option
- IP67 protection

2. Features and Mounting



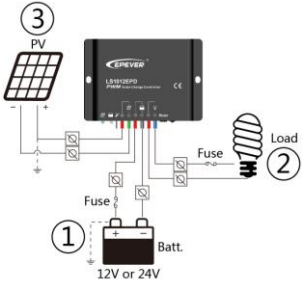


Figure1 Mounting

①	Charging Status LED indicator	⑥	Load Terminals
②	Battery Status LED indicator	⑦	Digital tube
③	Temperature Sensor	⑧	Key
④	Solar Module Terminals	⑨	Aluminum housing
⑤	Battery Terminals	⑩	Mounting hole Φ5

● Mounting

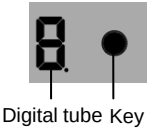
1) Connect components to the charge controller in the sequence as shown above picture and pay much attention to the "+" and "-". Always power the battery firstly.
2) After power the battery, check the battery indicator on the controller, it will be green. If it's not green, please refer to chapter 4.
3) The battery fuse should be installed as close to battery as possible. The suggested distance is within 150mm.

3. Indicators Description and Operation

1) Indicator Status Description

Charging Status LED indicator	Green	On Solid	Normal
	Green	Fast Flashing	Over voltage
Battery Status LED indicator	Green	On Solid	Normal
	Green	Slowly Flashing	Full
	Orange	On Solid	Under voltage
	Red	On Solid	Over discharged
Radix Point of Digital tube (Load indicator)	Red	On Solid	Load ON
	Red	Slowly Flashing	Over Load
	Red	Fast Flashing	Short Circuit

2) Operation



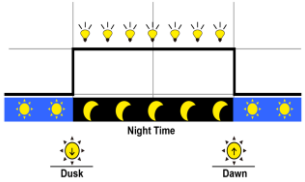
The digital tube display the load work mode, please refer to the correspondence table of Load Work Mode & LED digital tube value. Pressing the key to configure the parameter, please refer to the below configuration method:

1) After Powering on, disconnect the PV or connect the PV(Voltage<5V) , the light of the digital tube point go on; Connect the PV(Voltage>6V) ,the light of the digital tube point go off.
2)The key can be used to operate switching on/off the load (Manual control) or clearing the faults
3) Keeping pressing the button over 5S, It will go to the parameter in browsing mode which can cycle through the parameter item by clicking the button ,after the light of the digital tube point going on.
4) After the digital tube displaying the value what you want to configure, releasing the key and waiting 15S, Digital Tube stop flashing, then the configuration is successful.

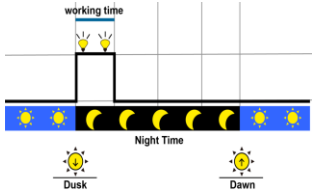
➢ **Load mode**

● Manual Control：Control the load via the button.

●Light ON/OFF



●Light ON + Timer



Note: In the mode of Light ON/OFF and Light ON/Timer, the Load is turned on after 10Min. delay.

● Test Mode (Default)：Test Mode is as same as Light Control Mode but no delay.

➢ **The correspondence table of Load Work Mode & LED digital tube value**

Value	Working mode	Value	Working mode
0	Light ON/OFF	8.	Light ON + 8 hours
1	Light ON + 1 hours	9.	Light ON + 9 hours
2	Light ON + 2hours	10.	Light ON + 10 hours
3	Light ON + 3hours	11.	Light ON + 11 hours
4	Light ON + 4 hours	12.	Light ON + 12 hours
5	Light ON + 5 hours	13.	Light ON + 13 hours
6	Light ON + 6 hours	14.	Manual Control
7	Light ON + 7 hours	15.	Test Mode

4. Troubleshooting

Faults	Possible reasons	Troubleshooting
Charging LED indicator off during daytime when sunshine falls on PV modules properly	PV array disconnection	Check that PV and battery wire connections are correct and tight
Charging Status LED indicator fast flashing	Battery voltage higher than over voltage disconnect voltage	1. Disconnect the solar array and measure the battery voltage whether is too high; 2. Change the controller; 3. Change the battery
Battery LED indicators red color and loads not working	Battery over discharged	The controller cut off the output automatically. LED indicator will return to green automatically when fully
The radix point of digital tube fast flashing and load not working	Short circuit	Clear short circuit. It is reactivated after delayed 10 seconds for the first time, If over 1 time，press the key to clear error and the controller will resume to work after 3s or restart the controller
The radix point of digital tube slowly flashing and load not working	Over load	Please reduce the number of electric equipments. When load power reaches 1.25-1.5 times, 1.5-2 times and 2 times more than nominal value, controller will automatically close loads in 60 seconds, 5 seconds and 1 second, respectively. Please press the key to clear error and the controller will resume to work after 3s or restart the controller

6. Technical Specifications

Item	LS1012EPD	LS1024EPD	LS2024EPD
Nominal system voltage	12VDC	12/24VDC Auto	12/24VDC Auto
Max. PV input voltage	30V	50V	50V
Rated current	10A	10A	20A
Equalize Voltage	14.8V(12V);29.6V(24V)		
Boost Voltage	14.4V(12V);28.8V(24V)		
Float Voltage	13.7V(12V);27.4V(24V)		
Low Voltage Reconnect Voltage	12.6V(12V);25.2V(24V)		
Low Voltage Disconnect Voltage	11.2V(12V);22.4V(24V)		
Self-consumption	12V：≤4.58mA；24V：≤6.01mA		
Temperature compensation coefficient	-5mV/℃/2V（25℃）		
Working temperature	-35℃～+55℃		
Enclosure	IP67		
Overall dimension	108.5mm×75mm×25.6mm		
Mounting dimension	100.5mm		
Mounting hole size	Φ5		
Power cable	PV/BAT/LOAD:4.0mm^2		PV/BAT/LOAD:6.0mm^2
Net weight	408g	410g	435g

Any changes without prior notice! Version number:V1.1