Newpowa
BE WISE GO SOLAR

Solar Charge Controller

PWM 12/24V 10A/20A

User Manual

Thank you for purchasing our solar charge controller!

This device is a PWM 12V/24V 10A/20A charge controller ideal for many applications. The flush mount design makes it perfect for solar power systems in RVS and boats. Please make sure to read through the following pages and make sure you are familar with the features and settings of the controller.

Description of tools and symbols

Marks & Tools	Item	Description
	High Voltage Danger Mark	High voltage might exist in the controller, and all operations ought to be made by electrical professions.
	Heating Caution	Keep distance from the controller, due to probable heating when it is working.
	EU WEEE Mark	Don't litter the controller as trash.
	Wire Stripper	For wire stripping.
	Multiply Meter	To check the positive/negative connection, and to check current or other electrical value.
	Anti-static Glove	To avoid controller damage caused by static electricity from human body.
	Electrical Tape	To tape the wiring joint for safety reason.
	Screwdriver	To fix the screws.

Controller Features

Thanks for using our product. This PWM solar charge controller is a typical device for solar charge regulation and discharge output control, with LCD screen display and extra 5V USB, mainly used in small size solar DC power system.

a) Most types of battery can be supported and selected, such as AGM (or other sealed type), GEL, Flooded, and Lithium battery (with various voltage settings), by key setting in the controller.

b) 12V/24V battery system auto recognition for lead-acid type battery or non-lithium type battery.

c) PWM 3-phases charging: equalize - boost - float (for Flooded, AGM, GEL lead-acid type battery).

d) LCD screen, displaying system working status and setting parameters.

e) User-friendly key press operation, simple and easier.

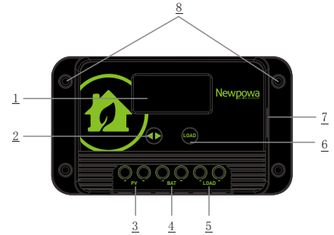
f) Extra 5V USB output, suitable for mobile DC charge.

g) Multiply output control mode selection: light control mode, light + time control mode, test & debug mode, manual mode, and always-on mode.

h) Industrial grade design, for better function under extreme environment conditions.

i) Full range of electrical protections, like anti-connection in PV and Battery wiring, load short circuit, battery over-discharge, system over voltage, and etc.

Controller Illustration

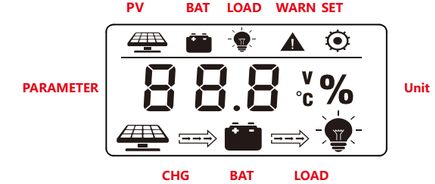


1	LCD Display	5	Load wiring terminal
2	Menu Key	6	Function Key
3	Solar input wiring terminal	7	USB Port
4	Battery wiring terminal	8	Installation holes

Wiring Sequences

Step 1: Connect the battery first, please choose cable accordingly.
Step 2: Connect the solar panel
Step 3: Connect the load wiring to the load (if necessary)

LCD Display Illustration



1.Display Section

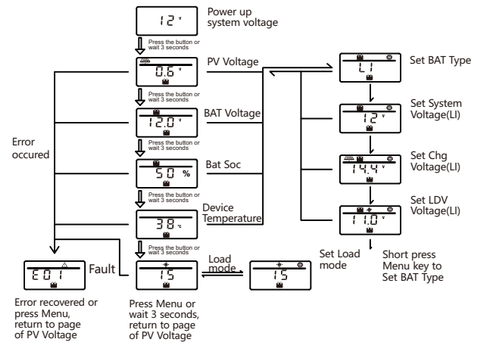
ITEM	DESCRIPTION	ICON
Status	Current system working status	
Parameter	Parameter value for selected item	88.8 V %
Selected Item	Current selected item	

2. Solar(PV), Battery & Charge Indications

ICON	ITEM	STATUS	INDICATION REMARK
	PV Indication	Steady ON	PV voltage higher than light control voltage
		OFF	PV voltage lower than light control voltage
		Flowing	Charging
		Fast blink ON	PV over voltage
	Battery Indication	Steady ON	Battery is OK
		OFF	Battery is abnormal
		Slow blink ON	Battery over discharge
		Fast blink ON	Battery over voltage
	Charging Indication	Flowing	Loading
		OFF	No Load

3.Operations

Main Level: System will automatically display the following information in order every 3 seconds.



Remarks:
*The page will enter to the next one if wait 3 seconds
*The system will automatically enter to the "error" page when there is an error detected. This page will stay still until the user operates in the controller to enter to the other pages.

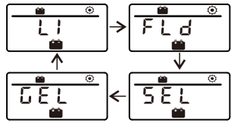
Button Setting Info

BUTTON	SETTING STATUS	PRESS	FUNCTION
	In Setting	Long press	Enter the non-setting page
		Short press	Enter the next setting page
	Main Level	Long press	Enter the setting page
		Short press	Enter the next non-setting page
	In Setting	Long press	No function
		Short press	To adjust parameter
	Main Level	Long press	Load short circuit protection recovery
		Short press	Load switch (in manual mode)

Remark: "In Setting" means the user is in the page for setting parameters.

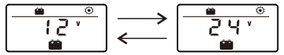
Battery Type & Parameter Settings

1.Battery Type Setting



ITEM	BATTERY TYPE	DESCRIPTION
FLD	Flooded battery	Battery system voltage auto recognition; parameters default set.
SEL	Sealed/AGM battery	
GEL	Gel battery	
LI	Lithium battery	System voltage, charge/discharge parameters adjustable

2.System Voltage (For Li battery only)



3.Charge Voltage Settings (For Li battery only)

4.Over-discharge Voltage Settings (For Li battery only)

5.Load Mode Settings

MODE NUMBER	DEFINITION	DESCRIPTION
0	Light switch control	The PV voltage turns on the load switch in time of light control delay
1~14	Light + Time control	The PV voltage turns on the load switch and shut it down in time of settings
15	Manual switch	Turn on/off the load by pressing the load button
16	Testing switch	Turn on the load immediately with no delay and then turn it off
17	Always on	The load keeps on until battery low voltage disconnect

Controller Error List & Recovery

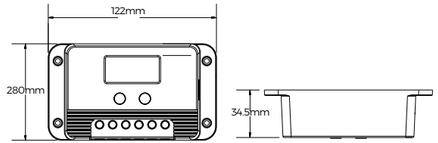
CODE	DRROR	ANALYSIS	RECOVER SOLUTION
E00	No error	——	——
E01	Over-discharged	The battery voltage has been discharged to a low level, load cuts off	Recover once the battery voltage return to the normal level. Load is allowed to turn on then.
E02	Battery over voltage	The battery voltage has exceeded the max level.	Recover once the battery voltage return to normal level.
E04	Load short circuit	The load gets short circuited.	Check the wiring and loading condition.
E07	Device over heating	The controller gets too hot in high temperature, the charge cuts off	Get the device cooler to decrease the temperature.
E10	PV over voltage	The PV input voltage is too high.	To decrease the input voltage.

Controller Specifications

* Remark "n" : when system voltage is 12V, n=1; when system voltage is 24V, n=2

ITEM	PARAMETERS			
Model No.	NPC-PHL10A		NPC-PHL20A	
System Voltage	12V/24VAuto(FLD/GEL/SLD),12V/24V(manual set for Li)			
No-load Loss	8ma(12V), 12ma (24V)			
Max PV Input Voltage	< 55V			
Rated Charge Current	10A		20A	
Max PV Input Power	170W/12V; 340W/24V		340W/12V; 680W/24V	
Battery Type Selection	FLD	SEL	GEL	LI
Equalize Charge Voltage	14.8V*n	14.6V*n	--	--
Boost Charge Voltage	14.6V*n	14.4V*n	14.2V*n	14.4V*n (adjustable)
Float Charge Voltage	13.8V*n			--
Boost Charge Recovery Volt	13.2V*n			--
Over Discharge Recovery Voltage	12.6V*n			12.6V*n (auto adjust to the over discharge voltage)
Over Discharge Voltage	11.1V*n			11.1V*n (adjustable)
Light Control Voltage	5V (12Vsystem) , 10V(24Vsystem)			
Light Control Delay Time	10s			
Load Modes	light control(dusk-to-dawn), light + time control, debug mode, manual control, steady-on mode.			
Operation Temperature	-25℃ ~ +65℃			
IP Protection	IP30			
Net Weight	180g		200g	
Communication	NA			
Display	LCD			
Operation Altitude	≤ 3000M			
Controller Size	122*70*34.5mm			

Product Dimension



Warranty terms: Limited Warranty

What is covered?
This limited warranty covers defects in materials and workmanship of this product.

What is not covered?
1.This limited warranty does not cover any damage caused by the owner modifying, misusing, attempting to repair the product or use of the product for anything other than normal consumer use as authorized in Newpowa's current product literature.
2.This limited warranty excludes warranties from certain parts, such as battery cells, cables and attachments.

How long does this coverage last?
The warranty lasts for two (2) years from the date of original purchase of this product. The sales receipt from the original customer, or other reasonable documentary proof is required in order to establish the start date of the warranty period.

Who is covered?
This limited warranty covers only the original purchaser of this product. The limited warranty is not transferrable to subsequent owners or purchasers of this product.

How to obtain services?
To obtain the benefit of this warranty, contact us immediately to determine a valid claim. You will need to ship the product complete, via prepaid transportation to Newpowa.

What Newpowa will do?
Newpowa shall be responsible if product fails to operate during the applicable warranty period due to defect in material or workmanship. If a valid claim is made during the applicable period, Newpowa, at its discretion, will either
1) Repair the item
2) Replace the item
3) Issue a refund for the item

What Newpowa will not do under this limited warranty?
This limited warranty does not cover any product loss during transit.

No other express warranty applies
This warranty is the sole and exclusive warranty. No employee, agent, dealer, or other individual is authorized to alter this warranty or make any other warranty on behalf of Newpowa.

Limitations of liability
Newpowa shall not be responsible for any incidental or consequential damages; such as fire, earthquakes, improper use by owner or third party.

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