POWERTECH 12V 130W Folding Solar Panel and Charge Controller User Manual

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USER MANUAL

Please ensure that you have read the product manual and instructions in full prior to use. Failure to do so may result in incorrect operation and therefore
impact on the products performance.

PART LIST

1 x 130W Mono Crystalline Solar Panel with 12V/1 OA Charge Regulator.
(USB Version)
1 x Sm Extension Lead with Anderson Connectors
1 x Anderson to Alligator Clips Lead
1 x Anderson to Eye Terminals Lead
1 x Heavy Duty Bag

INSTALLATION GUIDE

Step 1:
Locate a clear sunlit area free from overhanging branches or heavy shade.

Step 2:
Unfold the solar panels, adjust the two supports to a suitable angle.

Step 3:
Always face the front side of solar panels towards the sun. Wipe down the panels with a microfiber cloth to remove any dust or debris .

.A. Note:
To ensure maximum possible output we recommend that the solar panels are regularly re-aligned to follow the sun’s movement.
Wipe the solar panel with microfiber cloth for maximum efficiency.

Folding Solar Kit Specifications

Type	Mono Crystalline Solar Cells
Peak Power	130W(±5%) (65W each)
Rated Voltage	12V
Voltage@ Peak Power	17.6V
Current @ Peak Power	7.39A
Open Circuit Voltage	21.70V
Short Circuit Current	7.68A
Maximum system Voltage	1000V DC
Panel Dimensions	664(W) x 631 (H) x 75(D)mm (Folded) 1270(W) x 664(H) x 35(D)mm (Unfolded)

ABOUT THE REGULATOR

1. Safety Information

- Read all of the instructions in the manual before installation.
- DO NOT disassemble or attempt to repair the regulator.
- Disconnect the solar panel before installing or moving the regulator.
- Power connections must remain tight to avoid excessive heating from a loose connection.
- Only charge 12V batteries that comply with the parameters of regulator.
- Battery connection may be wired to one battery or a battery bank.

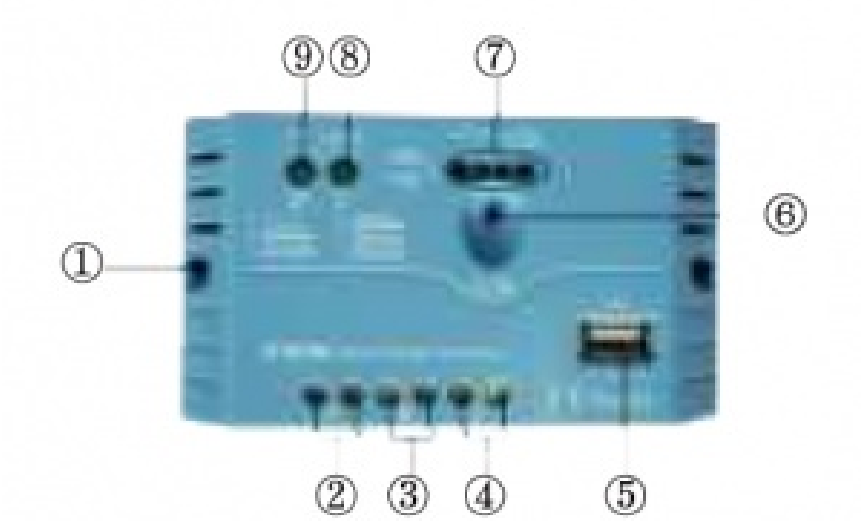
2. Overview

The 12V/1 0A regulator is a PWM charge regulator with USB output that uses the most advanced digital technique. Regulator features as follows:

- Support 3 charging options: AGM, Gel &Flooded lead acid battery

- Battery status LED indicator indicates battery condition
- The USB will provide power supply that can charge electronic equipment
- Battery type and load output can be set by pressing a button
- Extensive Electronic protection

3. Product Features



1	Mounting Hole <1>4.5
2	PV Terminals
3	Battery Terminals
4	Load Terminals
5	USB Output Port
6	Button
7	Battery status LED indicator
8	Load status LED indicator
9	Charging status LED indicator

4. Wiring

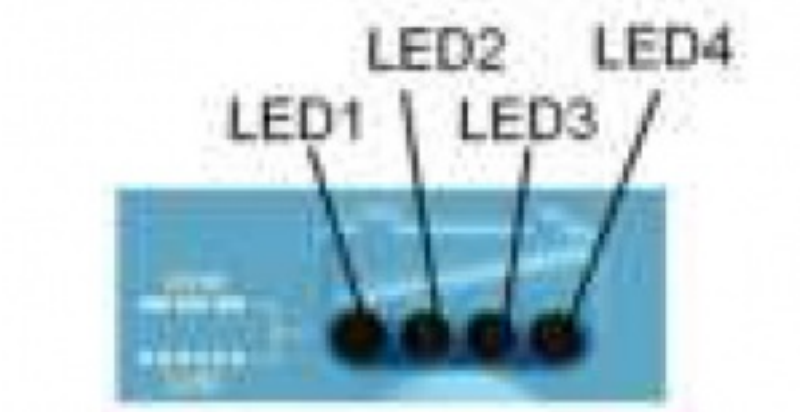
1. Before connecting solar charger kit with battery, please MAKE SURE the solar panel surfaces are covered or facing ground, since the correct connection sequence is Battery first, then Loads if any, Solar panels to be connected last.
2. After powering the regulator, check the Battery LED indicator on the regulator, to be solid green. Otherwise please refer to section 8.

5. LED Indicators

(1) Charging and load status indicator

Indicator	Color	Status	Instruction
Charging status LED indicator	Green	On Solid	Charging
	Green	OFF	No Charging
	Green	Fast Flashing	Battery Over Voltage
Load status LED indicator	Green	On Solid	Load ON
	Green	OFF	Load OFF
	Green	Slowly Flashing	Load over load
	Green	Fast Flashing	Load short circuit

2) Battery status indicator



LED1	LED2	LED3	LED4	Battery Status
Slowly Flashing	×	×	×	Under voltage
Fast Flashing	×	×	×	Over discharge
Battery LED indicator status during voltage is up				
○	○	×	×	12.8V<Ubat<13.4V
○	○	○	×	13.4V<Ubat<14.1V
○	○	○	○	14.1V<Ubat
Battery LED indicator status during voltage is down				
○	○	○	×	12.8V<Ubat<13.4V
○	○	×	×	12.4V<Ubat<12.8V
○	×	×	×	Ubat<12.4V

6. Setting Operation

(1)Load ON/OFF Setting
When the regulator is powered on, press the button to control the load output.
NOTE: The USB will output when the load is on.
(2)Battery Type Setting

Operation:

Step 1: Enter setting mode by pressing button for 5 seconds until the battery status LEDs are flashing.
Step 2: Select the desired mode by pressing button.
Step 3: The mode will be saved automatically without any operation for 5 seconds and LED will stop flashing.
Battery Type Indicator

LED1	LED2	LED3	Battery type
○	×	×	AGM/ Lead Acid (Default)
○	○	×	Gel
○	○	○	Flooded

NOTE: “o”LED indicator ON “x”LED indicator OFF

7. Protection

- Battery Over Voltage Protection When the battery voltage reaches the set point of Over Voltage Disconnect Voltage(OVD), the regulator will stop charging the battery to protect the battery from being over charged.
- Battery Over Discharge Protection When the battery voltage reaches the set point of Low Voltage Disconnect Voltage(LVD), the regulator will stop discharging the battery to protect the battery from being over discharged.
- Load Overload Protection Load will be switched off when 1.25 times rated current overload will occur . User has to reduce load appliance, then press the button or repower the regulator.
- Load Short Circuit Protection Load will be switched off when load short circuit (>3 times rated current) will occur . User has to clear short circuit, then press the button or restart the regulator.
- High Voltage Transients Protection The regulator is protected against small high voltage transients. In lightning prone areas, additional external suppression is recommended.

8. Troubleshooting

Faults	Possible reasons	Troubleshooting
LED Charging indicator turn off during daytime when sunshine falls on PV modules properly	PV array disconnection	Confirm that PV and battery wire connections are correct and tight
No LED indicator	Battery voltage maybe less than 8V	Measure battery voltage with the multi-meter.Min.8V can start up the regulator
Charging status LED indicator Fast flashing	Battery Over Voltage	Check if battery voltage is higher than OVD, and disconnect the PV
LED1 Fast flashing	Battery over discharged	When the battery voltage is restored to or above LVR point (low voltage reconnect voltage), the load will recover
Load status LED indicator slowly flashing	Load over load	①Please reduce the number of electric equipments. ②Press the button or repower the regulator
Load status LED indicator fast flashing	Load short circuit	①Check carefully loads connection,clear the fault ②Press the button or repower the regulator.

9.Technical Specifications – Charge Controller

Nominal system voltage	12VDC
Rated charge current	10A
Rated discharge current	10A
Battery input voltage range	8V~16V
Max. PV open circuit voltage	30V
Self-consumption	12V≤5mA
Charge Circuit Voltage Drop	≤0.13V
USB Output Port	5VDC/1.2A
Working environment temperature	-35°C~+55°C
Humidity	≤95% N.C.
Mounting hole size	Φ4.5

Battery Voltage Control Parameters Below parameters are in 12V system at 25 °C.

Battery Type	AGM	Gel	Flooded
Over Voltage Disconnect Voltage	16.0V	16.0V	16.0V
Charging Limit Voltage	15.0V	15.0V	15.0V
Over Voltage Reconnect Voltage	15.0V	15.0V	15.0V
Equalize Charging Voltage	14.6V	——	14.6V
Boost Charging Voltage	14.4V	14.2V	14.6V
Float Charging Voltage	13.8V	13.8V	13.8V
Boost Reconnect Charging Voltage	13.2V	13.2V	13.2V
Low Voltage Reconnect Voltage	11.6V	11.6V	11.6V
Under Voltage Waming Reconnect Voltage	12.2V	12.2V	12.2V
Under Voltage Waming Voltage	12.0V	12.0V	12.0V
Low Voltage Disconnect Voltage	11.1V	11.1V	11.1V
Discharging Limit Voltage	10.6V	10.6V	10.6V
Equalize Duration	120 min.	——	120 min.
Boost Duration	120 min.	120 min.	120 min.

Documents / Resources

	**POWERTECH 12V 130W Folding Solar Panel and Charge Controller** [pdf] User Manual 12V 130W Folding Solar Panel and Charge Controller, ZM9177