

Ръководство за потребителя на сгъваем соларен панел и контролер за зареждане 160W



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.

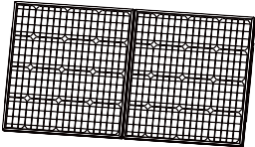
PART LIST

1 x 160 W Mono Crystalline Solar Panel with 12V/10A Charge Regulator.
(USB Version)

1 x 5 м удължителен кабел с щипки за батерията

1 x Здрава чанта

PART LIST

Serial No.	Description of parts	Quantity
1	Mono-crystalline solar panel. Folding type with angle adjustable support. With built-in 12V/10A Charger Regulator. 	1 SET
2	5M battery lead with connecting clamps.	1 PC
3	Heavy Duty Bag.	1 PC

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 the suitable angle.

Step 3:

Always face the front side of solar panels toward the sun.

Wipe down the panels with a microfiber cloth to remove any dust or debris.

▲ 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.

ABOUT THE REGULATOR

1. Safety Information

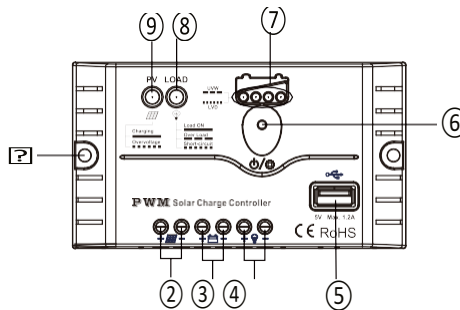
- Read all of the instructions in the manual before installation.
- DO NOT disassemble or attempt to repair the regulator.
- Disconnect the solar panel before installing or moving the regulator.
- Power connections must remain tight to avoid excessive heating from a loose connection.
- Only charge 12V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

2. Overview

The 12V/10A 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 situation
- The USB will provide power supply that can charge electronic equipment
- Battery type and load output can be set via button
- Extensive Electronic protection

3. Product Features



Характеристики на регулятора

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

4. Wiring

(1) Connect components to the charge regulator in the sequence as shown in Figure 1 and pay attention to the “+” and “-”. When disconnecting the system, the order will be reversed.

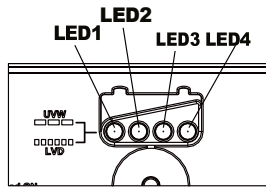
(2) After powering the regulator, check the Battery LED indicator on the regulator, it will be on solid green. Otherwise please refer to section 8. Always connect the battery first.

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	x	x	x	Under voltage
Fast Flashing	x	x	x	Over discharge
Battery LED indicator status during voltage is up				
○	○	x	x	12.8V<Ubat<13.4V
○	○	○	x	13.4V<Ubat<14.1V
○	○	○	○	14.1V<Ubat
Battery LED indicator status during voltage is down				
○	○	○	x	12.8V<Ubat<13.4V
○	○	x	x	12.4V<Ubat<12.8V
○	x	x	x	Ubat<12.4V

NOTE: ① "○" LED indicator ON; "x" LED indicator OFF.

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	Тип батерия
○	x	x	ЗАПЕЧАТАНИ/AGM
○	○	x	Гел
○	○	○	Наводнена (оловно-киселинна) (по подразбиране)

ЗАБЕЛЕЖКА: "○"LED индикаторът е включен "x"LED индикаторът е изключен

NOTE: "○"LED indicator ON "x"LED indicator OFF

7. Protection

• Battery Over Voltage Protection

When the battery voltage reaches to 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 to 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 happens. 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) happens. User has to clear short circuit, then press the button or repower 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

Проблем / Индикация	Възможни причини	Предложено решение
Не свети LED индикатор на регулатора	Изключване на слънчевия панел	Уверете се, че връзките на слънчевия панел и кабелите на батерията са правилни и стегнати
Не свети LED индикатор на регулатора	Може би напрежението на батерията по-малко от 8V	Измерете напрежението на батерията с мултицет. Мин. 8V може да стартира регулатора.
LED индикатор за състоянието на зареждане Бързо изгаряне на пелел	Пренапрежение на батерията	Проверете дали напрежението на батерията е по-високо от OVD и изключете слънчевия панел.
LED1 мига бързо	Прекалено разредена батерия	Когато напрежението на батерията се възстанови до или над точката LVR (ниско напрежение за повторно свързване), товарът ще се възстанови.
LED индикатор за състоянието на натоварване Бързо изгаряне на пелел	Късо съединение на товара	<input type="checkbox"/> Проверете внимателно свързването на товарите и отстранете повредата. 2 Натиснете бутона или рестартирайте регулатора.
LED индикаторът за състоянието на зареждане мига бавно	Претоварване	<input type="checkbox"/> Моля, намалете броя електрическите уреди. 2 Натиснете бутона или рестартирайте регулатора.
Индикаторът за презареждане свети	Батерията е напълно заредена	Регулаторът ще автоматично прекъсва веригата за зареждане, не са необходими други действия.

9. Technical Specifications

Тип	МонокристалниСлънчевиКлетки
PeakPower	160W
Номинално напрежение	12V
Напрежение@ПиковаМощност	18.0V
Current@PeakPower	8.88A
Напрежение на отворена верига	22.30V
Късо съединениеТок	9.19A
Максимално системно напрежение	100VDC
Бруто тегло	15,5 кг
Размери на панела	335 (Ш) x 759 (В) x 35 (Д) мм (отворено) 665 (Ш) x 759 (В) x 75 (Д) мм (затворено)

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	— —	14.8V
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	12.6V	12.6V	12.6V
Under Voltage Warning Reconnect Voltage	12.2V	12.2V	12.2V
Under Voltage Warning 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.

10. Disclaimer

This warranty does not apply under the following conditions:

- Damage from improper use or use in an unsuitable environment.
- User disassembly or attempted repair the regulator without permission.