



# SOLAR PRO

Making Your **DREAMS** Come True **24/7**



## EASTMAN SOLAR PRO SERIES

### User manual

SOLAR PRO 850VA, 1000VA, 1400VA & 2000VA

# About This Manual

## PURPOSE

This manual describes the assembly, installation, operation and troubleshooting of this unit. Please read this manual carefully before installations and operations. Keep this manual for future reference.

## Do's and Don'ts



1. Check the battery polarity & connect the product accordingly:
  - Connect black wire to the -ve terminal of the battery.
  - Connect red wire to the +ve terminal of the battery.
2. First connect the battery to the product. Only after that connect the product with solar & mains.
3. Ensure no reptiles like Mouse, lizards in the PCU room.
4. Heavy power load should be bypassed from product connection. Fit all connections tightly.
5. Check the solar polarity, recommended Number of solar panels and measure Voc then connect to the product accordingly.
6. Connect solar Pink wire with (PV+) and Blue wire with (PV-) on the solar HT terminal.
7. Fit all connections tightly.
8. Install the product in covered space with proper ventilation and keep one foot gap between back of product and wall or any obstruction.
9. Use proper and standard plugs for connections.
10. Product and battery should be kept in a trolley and dry place.
11. Always use the recommended battery Ah and number of batteries.
12. Ensure all vents of the connected battery are not obstructed.
13. Please contact the authorized service person in case of any issue in the product.
14. Disconnect Solar, Mains & battery connection before servicing.

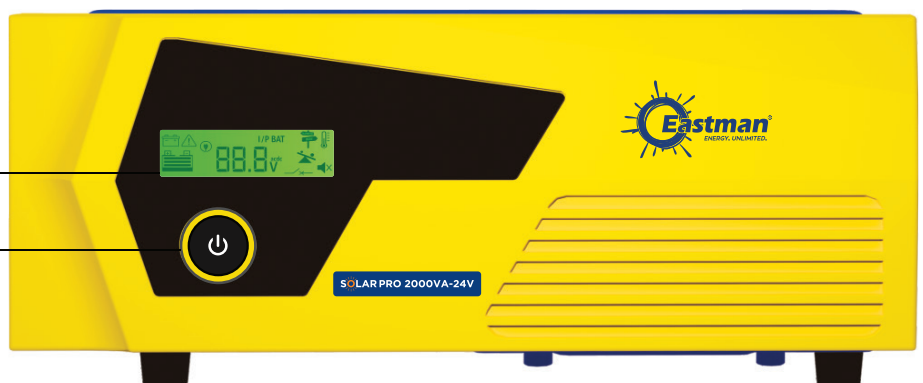


1. Never connect product to battery without checking correct polarity of battery wires from the product & battery terminals.
2. Never connect electricity (mains) or Solar without connecting the battery with the product.
3. The room should not be heated for PCU and battery.
4. Never connect all the load with the product.
5. Never connect solar without checking solar VOC.
6. Never connect the product to the solar without checking the polarity of the solar panel wire and product HT (solar terminal block).
7. Never leave the loose connections.
8. Never install the product under the sky, in tight space, near a water tank or kitchen.
9. Never use loose or nonstandard plugs for connections.
10. Never place product and battery on floor and dusty.
11. Never use an un-recommended battery.
12. Never block the vents of the connected battery.
13. Do not try to open or repair the product on your own as it may electrocute.
14. Do not use any liquid or detergent powder for cleaning the product.

## Front Panel Description

**Jumbo LCD Display**

**Power ON/OFF Switch**



# Display Indications

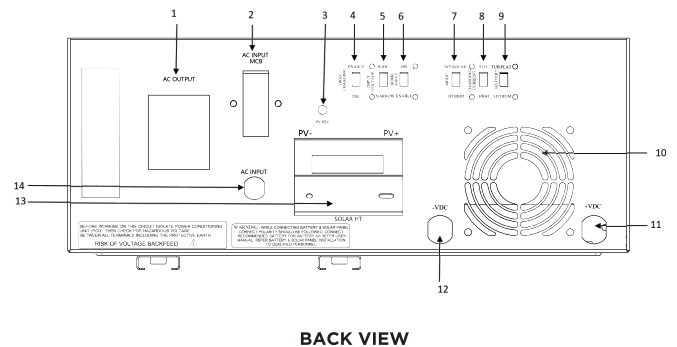
- i bPS:- Grid Bypass
- ii HI:- Grid High Voltage/Temperature High/Solar High
- iii LO:- Grid Voltage Low/Battery Voltage Low
- iv SCt:- Short Circuit/Battery High
- v Cut:- Grid cut
- vi oL:- Overload
- vii Cbt:- MCB trip
- viii t:- Tubular
- ix S:- Solar
- x F:- Flat
- xi I:- Intelligent
- xii H:- Hybrid
- xiii L:- Lithium
- xiv OUT:- Frequency Out



SYMBOL	INDICATION	SYMBOL	INDICATION
	MAINS ON		WARNING
	BATTERY PRESENT		OVERLOAD
	BATTERY VOLTAGE / INPUT VOLTAGE OUTPUT VOLTAGE / PV VOLTAGE BATTERY CURRENT / PV CURRENT OUL/ScT/Otp/Lob/cbt/OFF		BUZZER MUTE
	BATTERY STATUS		CIRCUIT BREAKER TRIPED
	OVER TEMPERATURE		NARROW / WIDE MODE
	SOLAR PRESENT		

# Back Panel (SOLAR PRO 2000VA-24V)

- 1 AC OUTPUT
- 2 AC INPUT MCB/CIRCUIT BREAKER
- 3 PV REV.
- 4 GRID CHARGING (ENABLE/DIS.)
- 5 INPUT VOLTAGE (WIDE/NARROW)
- 6 HOME AWAY (DIS./ENABLE)
- 7 MODE (INT./SOLAR/HYBRID)
- 8 CHARGING CURRENT (STD/HIGH)
- 9 BATTERY (TUB./FLAT/LITHIUM)
- 10 DC FAN
- 11 POSITIVE (+) BATTERY LEAD
- 12 NEGATIVE (-) BATTERY LEAD
- 13 SOLAR HT (PV-,PV+)
- 14 AC INPUT



**Caution:** Proper selection of switch position is recommended based on the battery manufacturers specifications, for proper backup and to avoid any damage to the battery due to wrong selection.

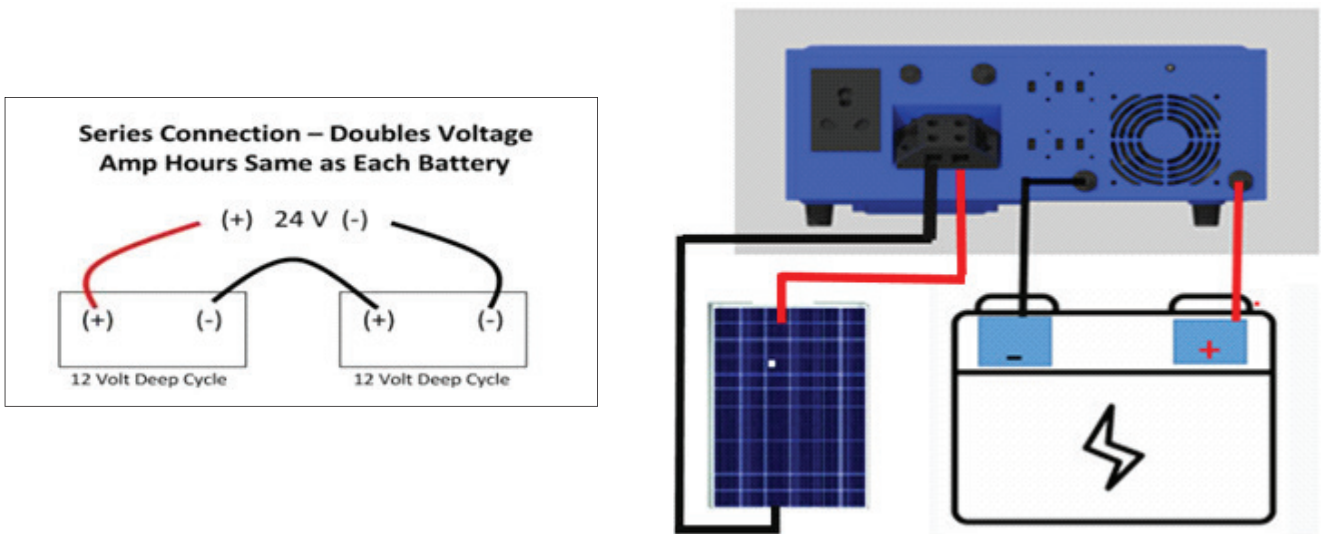


# Battery & Solar Panel Installation & Connections

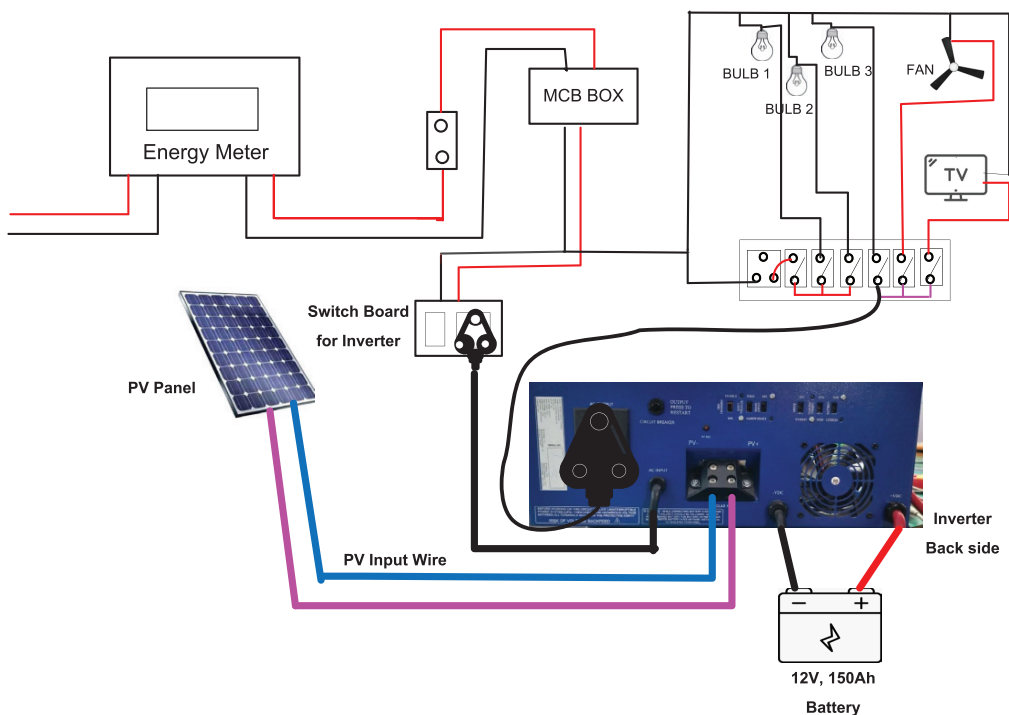
**CAUTIONS:** Battery/Solar polarity must be checked before connections. Wrong polarity connections with PCU will cause Reverse Protection Fuse Blown and may lead to fire hazards.

## Installation shall be done by a knowledgeable person.

Take Precaution while connecting the thimble of Battery cable to battery post, avoid short circuit by Spanner etc.



## Connection Diagram for Installation

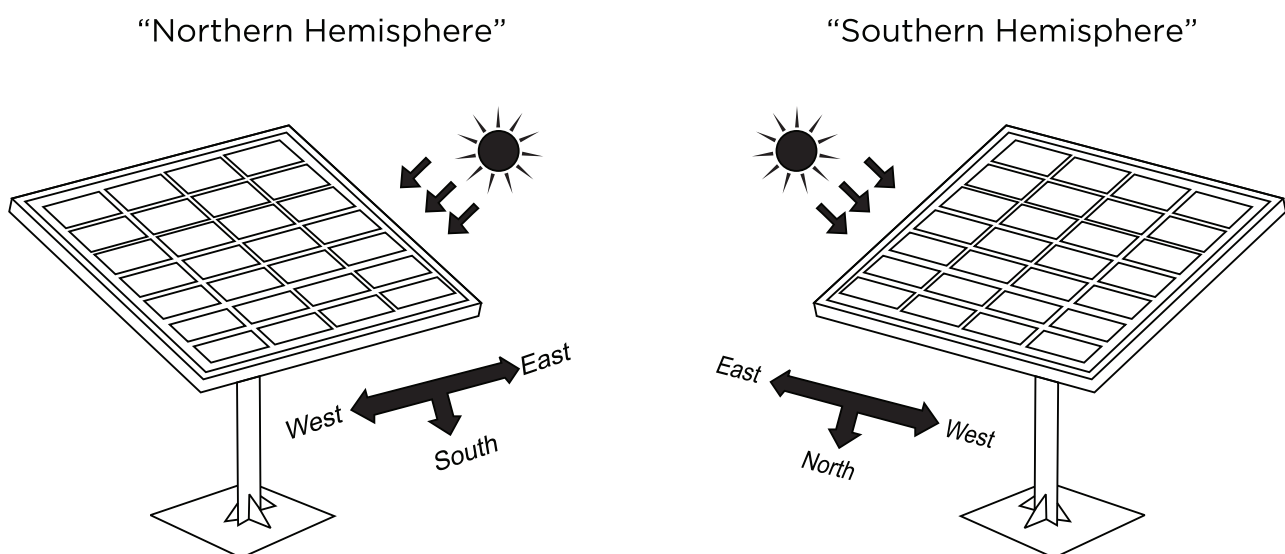


# Steps for PCU Installation

## To be done by an authorized service person

- Switch off the supply to the distribution point to which the PCU unit to be connected.
- For extra safety also remove the fuses from the line. Make sure with measurement that there is no power.
- A readily accessible disconnect device must be incorporated in all fixed input wiring. The disconnect device shall have a contact separation of at least 3mm. The PCU has automatic back feed isolation but for extra safety a warning label can be added on the primary power isolator installed remote from the PCU to warn electrical maintenance.
- Check the building wiring, improper wiring will not prevent the PCU from operating but will limit its protection capabilities. Improper building wiring could result in equipment damaged that is not covered in warranty.
- Connect the battery/ batteries to PCU as per its requirement.
- Keep the front switch of PCU on OFF Position.
- Measure Voc which is coming from the solar panel, it should be within range which is mentioned in the technical specification.
- Connect solar wires to the system according to marking (Polarity check) on the rear panel of the system.
- Connect the Load wire to the right hole of the output socket located on the rear panel of PCU.
- Switch on the front switch of the PCU.
- Connect AC input wire to commercial mains Socket.

## Recommended solar panel mounting orientation Panel stand mounting pole



# Important

In the event of any instrument requiring service at our authorized service center, the following procedure should be adopted:-

1. The instrument must be securely packed, preferably in its original packing. Also ensure that nothing inside packing is damaged. Please transport the product in its original packaging to protect against shock, damage & impact.
2. We reserve the right to charge the consignee for any damages incurred during transit.
3. The output of the PCU should never be connected to a generator or incoming utility power source.
4. This situation is far worse than a short circuit. If the unit survives the condition, it will shut down until correction is made.

# Troubleshooting

<p>1. Main supply is normal but:-  a) PCU is working on battery</p>	<p>a) Check the AC mains presence in the mains AC wall socket.  b) Check the AC mains input voltage, it should be in the range of 90 to 290. Vac when selected mode is WIDE &amp; 170 to 270Vac in NARROW mode.</p>
<p>b.) Or no output from PCU</p>	<p>Check the circuit breaker at the rear panel. If tripped, push the circuit breaker (reset) to switch on the mains, if again tripped then call the authorized service engineer.</p>
<p>2. PCU trips frequently in NARROW mode.</p>	<p>The load might be more. Reduce the load and reset the PCU.</p>
<p>3. PCU mode but no power :-  a. Overload (overload in display)  b. Low battery (low battery in display)  c. Short circuit (overload/short-circuit in display)</p>	<p>a) Reduce the load and reset the switch on the front panel (on-off).  b.) battery has discharged. Recharge the battery after the mains or solar restoration.  c) Check or reduce the output load &amp; turn the reset switch on the front panel (OFF-ON). Call electrician to check the short circuit.</p>
<p>4. Backups not satisfactory with PV connected</p>	<p>a) Connect the PV wire in the correct terminal with correct polarity as per marking.  b) The PV panel should be mounted properly with the correct angle.  c) Voc should be within the range which is mentioned in the technical specification.</p>

# Technical Specifications

Specifications	850VA-12V	1000VA-12V	1400VA-12V	2000VA-24V
Input Voltage (WIDE MODE)	90V-290V ± 10V			
Input Range (NARROW MODE)	170V-270V ± 10V			
Output Voltage on Mains Mode	Same as input			
Output Voltage on Backup Mode	210V+10%, -15%			
Output Frequency in Backup Mode	50Hz ± 0.1Hz			
Switching from mains to Backup and from Backup to Mains	Automatic			
Output Waveform on Mains Mode	Same as input			
Output Waveform on Backup Mode	Pure Sine Wave			
Battery Charging Current	Constant Charging approx 10% of the rated battery current in Ah			
Charger	CCCV			
PCU Overload/PCU Short Circuit	110% / 300%			
PCU Transfer Time	<=15msec			
Technology	DSPIC BASED DESIGN			
Auto Reset Feature	Yes			
Operating Temperature	-10°C to +45°C			
Voc Range	17V-27V			34V-54V
Max PV Power	900W(150*6) 825W(165*5)	1050W(150*7) 990W(165*6)	1350W(150*9) 1320W(165*8)	2010W(335*6) 2000W(400*5) 2160W(540*4)
Solar Current Max.	55AMP ± 5A	60AMP ± 5A	75AMP ± 5A	55AMP ± 5A
Type of Charge	PWM with Isolated Gate Drive			

## \*NOTE:-

- Power factor may vary depending upon the load.
- Because of a policy of continuous product improvement, specifications are subject to change without notice.

## Going On Vacations

1. Must put the PCU ON/OFF switch in off Position.
2. Must put the HOME AWAY switch in ENABLE Position.

## Instrument Description:-

Eastman Solar Pro Series External Battery PCU

Single Battery (12V) & Double Battery (24V) system.

- SOLAR PRO 850VA-12V**
- SOLAR PRO 1000VA-12V**
- SOLAR PRO 1400VA-12V**
- SOLAR PRO 2000VA-24V**



**AMPS MIDDLE EAST FZ LLC**  
#703, 7<sup>th</sup> Floor, Deira Twin Tower,  
Baniyas Square, Deira, Dubai (UAE)

**EASTMAN AUTO & POWER LTD.**  
ASF Towers, 249, Udyog Vihar Phase-4,  
Gurugram, Haryana-122016, India

**GUANGDONG EASTMAN NEW ENERGY CO., LTD**  
#1602, Meilan business centre, Intersection of Xixiang Avenue  
and Qianjin Second Road, Bao'an, District, Shenzhen-518102, China