

Traditional Solar Pump with brushless motor
Making • Life • Easier

Traditional Solar Pump with brushless motor

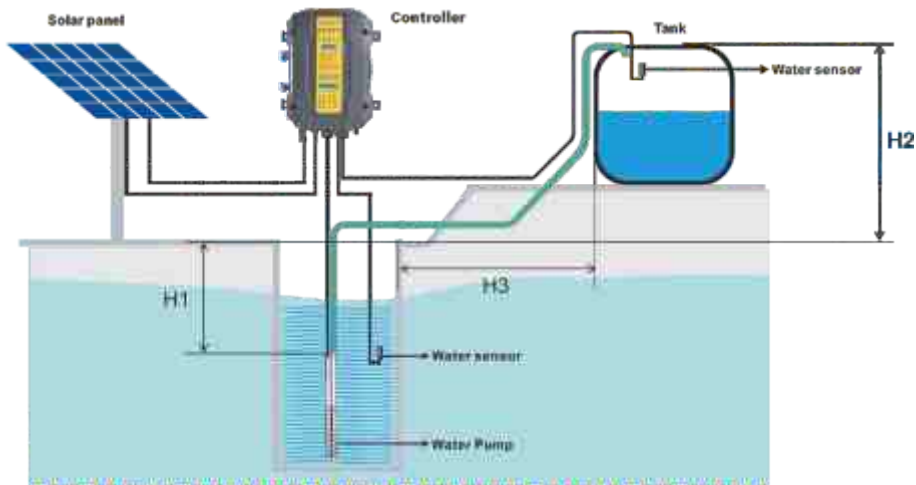
ENGLISH MANUAL



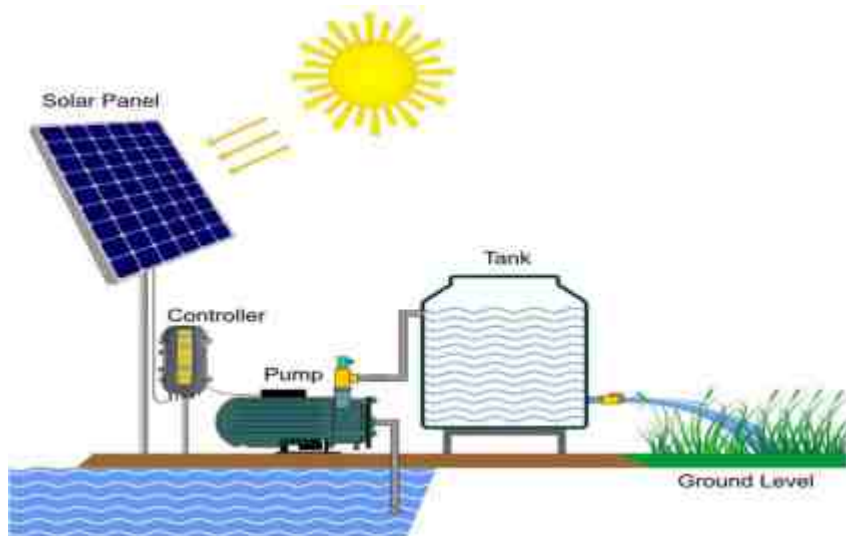
1. DC SOLAR PUMP WITH CONTROLLER

A. Operating principle

Brief introduction of deep well solar pump system



Brief introduction of surface solar pump system



Solar panels convert sunlight energy to electricity energy through solar pump controller. The solar pump controller stabilize the voltage and creates a three phase output to drive pump motor.

a. Selecting the solar panel of pumping system

If you don' t buy the complete system from your supplier, the following formula will be very helpful for you to choose the solar panel.

a. solar panel selection:

Power of solar panel(watts)=Rated power of water pump(watts) X (1.2-1.3) times
Best working Voltage of solar panel=Rated voltage of water pump(V) X (1.0-1.4) times

The controller have already been matched to the pump by your supplier.

Eg. 300 watts water pump need the minimum power of solar panel:300X1.3=390w, the solar panel selection should be according to the local sunlight strength.

b. when install solar panels, especially the big power solar pump systems. You can make the solar panel in series circuit in one line to reach the needed voltage, and make the solar panels in parallel circuit to reach the needed current.

Solar panel in parallel, add the current and the power(watt) of the solar panel.

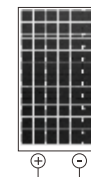
Solar panel in series, add the voltage and the power(watt) of the solar panel.

Eg. 2X12 volt 100 watts solar panel in paralles becomes a 12V 200 watt system

2X12 volt 100 watts solar panel in series becomes a 24V 200 watt system

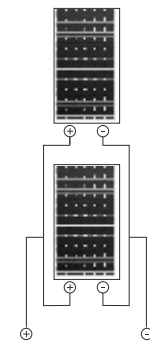
For example:

For pump of 24V-180W,24V-250W:



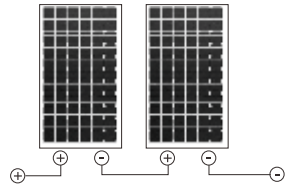
Solar Panel Type: 250W/300W

For pump of 24V-280W 24V-350W
24V-370W 24V-400W 24V-500W



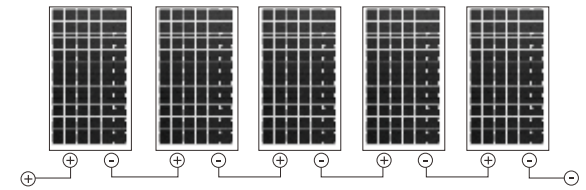
Solar Panel Type: 250W/300W

For pump of 48V-400W



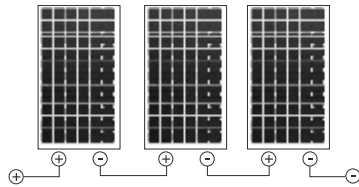
Solar Panel Type: 250W/300W

For pump of 120V-900W



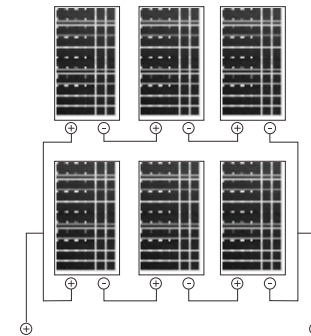
Solar Panel Type: 250W

For pump of 48V-500W
60V-500W、60V-550W、60V-600W、60V-650W
72V-600W、72V-650W:



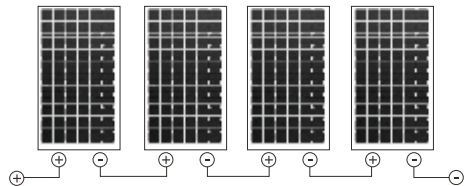
Solar Panel Type: 250W/300W

For pump of 72V-1000W、72V-1100W、72V-1200W、72V-1300W、
96V-1100W、96V-1250W:



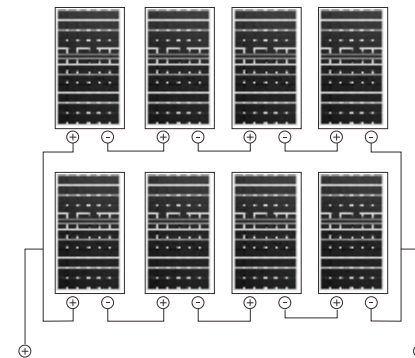
Solar Panel Type: 250W/300W

For pump of 48V-750W、60V-750W、72V-750W、72V-800W、
72V-900W、96V-750W:



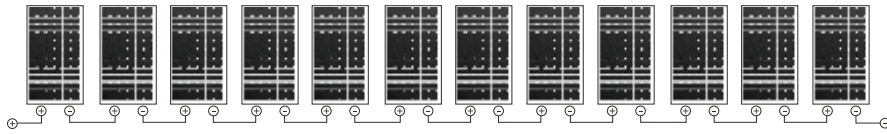
Solar Panel Type: 250W

For pump of 96V-1500W、110V-1500W、110V-1600W:



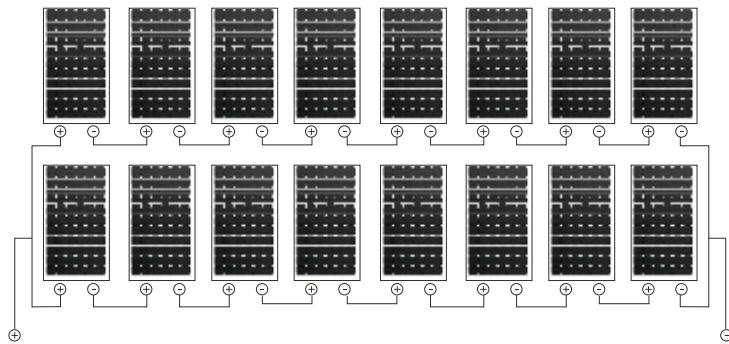
Solar Panel Type: 250W/300W

For pump of 280V-2200W:



Solar Panel Type: 250W(12PCS)

For pump of 192V-3000W:



Solar Panel Type: 250W(16PCS)

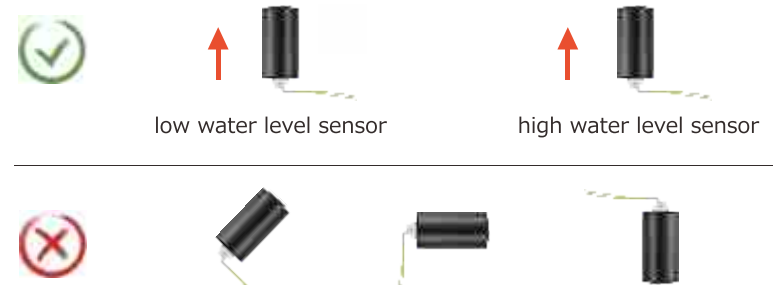
B. Selecting the battery of the solar pump system.

You need to buy the battery if you want to make the water pump working when it is not sunny, please note, if you want to add the battery, you should buy the solar battery charging systems. And the way to select the power of battery will be according to how much time need the water pump work when it is not sunny, pls read following way:
 For example, the motor power is 200w, the battery capacity is 100AM, the voltage is 12V and the battery is fully charged, then the use hour is: $100 \div (200 \div 12) \times 0.6 = 3.6$ hours
 The battery capacity = the use hour $\div 0.6 \times$ (the motor power \div the battery voltage)
 For example, the motor power is 200w, the battery voltage is 12V and the battery need to be used for 3.6 hours, then the battery capacity is: $3.6 \div 0.6 \times (200 \div 12) = 100$ AH

2.main Accessory Picture



NOTE:Water level sensor installation position drawing



Note : two water level sensors are the same, can be used to anyone.

3.Installation

(1). Wiring the pump

Connecting a longer cable to the pump, (size of cable must be at least 1.5mm²)
 Use the parts contained in the cable connector kit (heat-shrink tube and tape) to connect a longer supply wire to the pump. If you don't have a heat gun to shrink the tube, the barrel of your soldering iron will do or you can use a butane torch but with great care so you don't melt the insulation or set it on fire. Bare the insulation back as shown above.

- 1/Layout the components needed to make the join
- 2/Put the large diameter piece of heat-shrink over the main cable and then the smaller diameter pieces over the individual wires, keep the heat-shrink back away from the joints as you solder them. Any heat transfer will prematurely shrink the heat-shrink.
- 3/4. Slide the small heat-shrink over the soldered joints and heat using a heat gun or alternative heat source to shrink the sleeve down over the wires.
- 5/ Wrap the tape over the sealed joints
- 6/ Finally slide the large diameter heat-shrink over the completed joint and shrink to it.

Place the pump in water before you start wiring the controller box this will allow the pump to go through the pre-conditioning required. Do not put the pump in its final position until you have tested it, unless it is easy to see and remove.

(2). Solar pump controller

① Function of solar pump controller box:

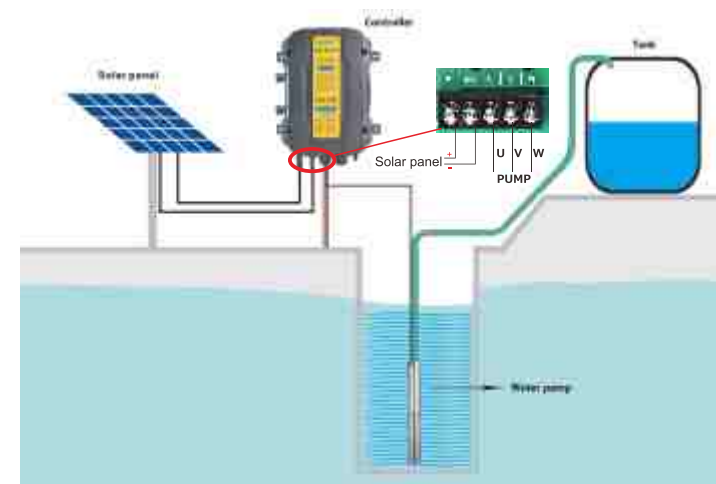
- A. Low-voltage protection (it is automatic)
- B. overcurrent protection(it is automatic)
- C. Locked rotor protection
- D. Temperature protection
- E. lack of phase protection
- F. protection for low water level in well(K1,GND sensor)
- G. protection for full water level in tank(K2,GNDsensor)
- H. Controlling running speed of motor(speed regulator)
- I. Delay working when full water in tank(A timer inside can delay working for 10mins when the tank going to not full)
- J. Delay working when low water in well(A timer inside can delay working for 10mins after the pump stops working from low water level protection in well)
- K. MPPT function.(maximum power point tracking)
- L. Battery is optional.(battery can be used with solar charger battery system)

(3).Wiring the controller.

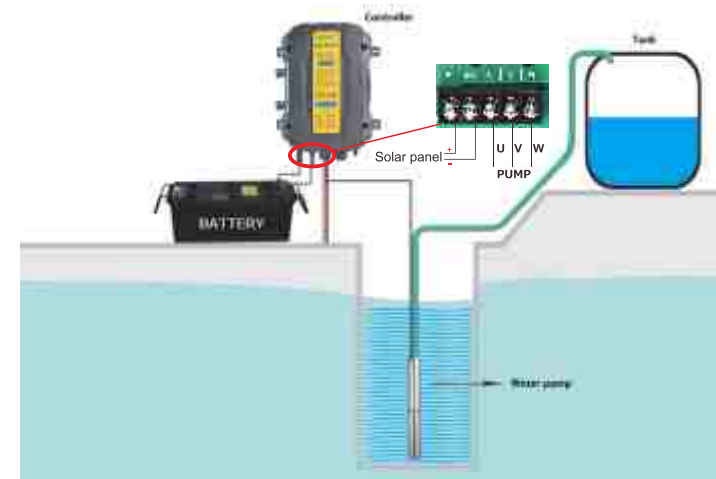
Before you start wiring the controller ,switch must be in the off position, please make sure the pump wires U V W connect to the controller U V W terminal correctly . and all other detailed connecting information as following drawing according to your different demand.

1.Input no water level sensor

A:Input:Solar,panel,no water level sensor



B:Input:BATTERY,no water level sensor



5. TROUBLE SHOOTING

light	Reason	solution
Alarm: flash 1 times	power source not stable or Power down detection	checking the solar panel connection carefully whether it is ok. or pls turn on or turn off the switch again
Alarm: flash 3 times	the pump impeller is stoped by something	pls check the pump impeller is working good or not
Alarm: flash 4 times	MOSFET part is broken	change the broken mosfet or change a new controller
Alarm: flash 6 times	the controller temperature is too high	pls check the input solar panel power is too much or not
Alarm: flash 7 times	over-current protection	pls check the input solar panel power is too much or not, and check the water pump have problem or not
Alarm: flash 8 times	under-voltage protection	pls check the input solar panel voltage whether it is enough
Alarm: flash 9 times	Lack of phase protection	pls check water pump U,V,W three phase
Alarm: flash 10 times	Phase to ground short circuit	check water pump U,V,W three phase line is connecting to the outside box directly
POWER	Solar panel input indicate	when it is off, pls check the input solar panel connection input
running	motor running	when it is off, pls check the connecting of water pump
tank	tank full	pls check the tank is full or not, if it is not full, this light is on, pls check the water level sensor connection
well	well is empty	pls check the well have water or no, if there is water , the light is on, pls check the water level sensor connection

6. DOS AND DON'TS

Do keep the Pump under water at all times when operating

Do be careful with wiring

Do remove the pump if not used for a long time

Do make sure the pump has adequate water around it during pumping. if the sensors are activated there will be at least a 10 minutes delay between pumping sessions.

Do put your solar PV panels in a sunny position facing true north (southern hemisphere) or true south (northern hemisphere). If the panel angle is fixed then an angle equal to your latitude will be a good compromise.

Don't run the pump out of the water, even momentarily. It will void the warranty

Don't adjust the regulation bolt in the base of the pump. It is factory set. It will void the warranty.

Don't use the pump in dirty water. Premature wear will not be covered by warranty.

Don't disassemble the control box. There are no user parts inside

Customer record card

Name: _____

Address: _____

Tel: _____

Email: _____

Model number: _____

Date of purchase: _____

Note: _____
