INSTALLATION INSTRUCTIONS & WARRANTY

Distributor / Verspreider

Congratulations on taking a step towards a greener future. Please read carefully before installing your solar water pump system.

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Your Solar Water Pump System

The system consists of the following components

Main Components

Motor & Wet End

Solar PV Modules

Control Box

Helical Rotor

OR

Impellers (Fortis only)

Sensor Cable (10m)

System Extras (available on request)

Submersible Cable

Borehole Base Plate

Rope

Pump Sleeve

Pump Sock

Splice Kit

The Motor

The motor is filled with biodegradable oil to ensure longevity through constant operation. It also serves a cooling function to the motor. The pump should not be submerged deeper than 30m under water. This is to ensure that the oil seals in the pump are not compromised.

Wet End

This will consist either of a helical rotor or impellers. It is very important to submerge the pump in water for at least 15 minutes before running.

Control Box

Great caution should be taken when installing the control box. The switch should be in the off position when connecting the control box to the other components. The control box should not be installed in direct sunlight and should be adequately ventilated. The controllers should be installed upright and the cooling fins on the back end should not be covered.

Solar Modules & Module Configuration

Caution should be exercised when connecting the modules. The modules should be covered when connecting them. Take precautions to avoid any electric shock. Modules should be transported with care. They are fragile. Modules should be erected to face north (Southern Hemisphere) and at an angle to the ground, equal to that of the latitude at which the installation is done.

Control Box	**Basic solar module connection**
24 Volts	2 pieces of 17.5V solar panels in series connection
36 Volts	3 pieces of 17.5V solar panels in series connection
48 Volts	4 pieces of 17.5V solar panels in series connection
110 Volts	Enquire from our technical department or your distributor.

Water Pipe

When installing the pipe, cover it at both ends. This it to ensure that sand, rock and sediment are not scooped up by the pipe when unwinding it. When pipe has been outside or been stored for a long time. Flush it before installation.

Submersible Cable

The correct sizing cable should be selected to ensure that the voltage drop is at a minimum. Three core submersible cable should be used. We recommend 4mm up to 50 meters and 6mm if you go deeper. Make sure the connections are adequate. The connections should preferably be soldered and the connection area should be sealed with a waterproof epoxy cast or other durable methods. At no stage should there be any tension on the cable. This will result in pump failure and will NOT be covered by the warranty.

Rope

Sufficient strong rope should be securely fastened to the pump. Nothing less than polypropylene 8 mm rope.

Level Sensors

Due to the fact that our controller is outside the well, we need to install level sensors with the pump to ensure the pump is protected in the case of possible dry-run.
The sensors should be extended to depth of installation.
Sensors provided should be installed above the pump (about 20cm).

Shading

Shading and bad light will have an adverse effect on the modules performance. Depending on the area of the module, shading has a gearing ratio of 3 . That means if you cover 10% of the module, the power loss will be 30%. In case of cloud cover, mornings and afternoons, the pump performance will decrease due to lower levels of irradiation. The nearer to the peak of a pump system, the pump is installed; the quicker it will cease to pump water.

Battery Operation

Batteries should be connected to be the same voltage as the pumping system. The controller has an internal charge controller. The batteries are charged with excess power which the pump does not use. Determining battery sizing, one should know the amount of hours the system should operate without sunshine.

(Hours operation without sunshine) / (Watt Rating on pump)/(System Voltage))*0.6*

*This figure will be in AH. This will be for one battery in series connection.

Speed and Time Dials

The speed dial is to decrease the pump revolution and will decrease the flow and head of the pump. Turn the dial clockwise for maximum flow and head of the system.

The time dial is to regulate the time from when the Well level sensor runs dry, to the moment the pump restarts. When the level sensors are installed, the time dial should be at 30. This will ensure the well has 30min to recover water before the system starts pumping again.

Do's and Don'ts

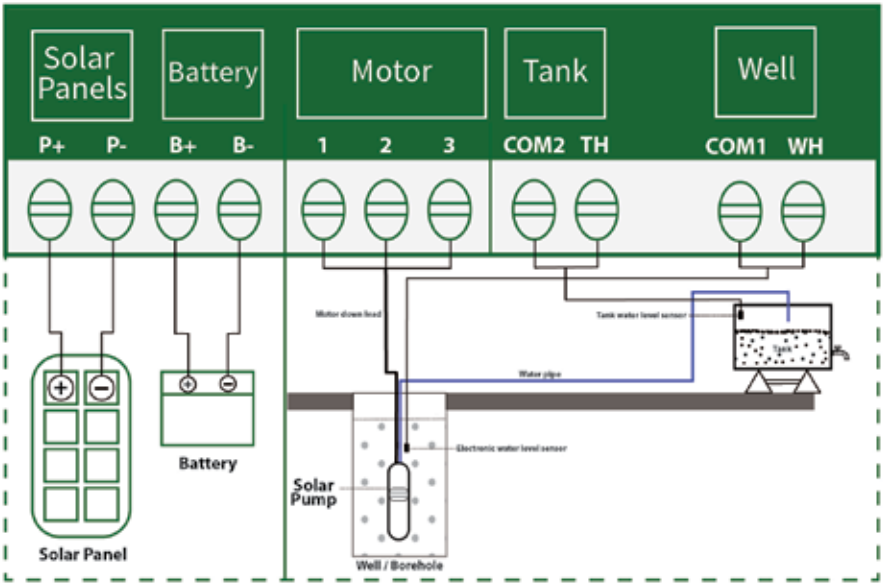
- ✔ Do watch the installation video **https://youtu.be/2nkfPq0tMuM**
- ✔ Do keep the pump under water at all times when operating.
- ✔ Do be careful when wiring. Label colors carefully before joining the wires.
- ✔ Do remove the pump if not used for a long time and wipe the screw and body. Wipe with vegetable oil.
- ✔ Do make sure the pump has adequate water around it during pumping. If the sensors are activated there can be a 5 to 30 minute 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.
- ✔ Do consult the module configuration chart before connecting your solar modules (pg 2) to the control box. Contact us if unsure.
- ✕ Don't run the pump out of the water, even momentarily. It will void the warranty.
- ✕ Don't bypass the WH sensor except to troubleshoot.
- ✕ 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.
- ✕ Don't open the motor section. This voids the warranty.

System Indicators

Label	Definition	Conclusion
SYS	System power	Constant Green light indicates the System is on, and in solar mode. Blinking Green Light indicates the system is on and in battery mode.
Pump	Pump running	Green light will indicate that the pump is running.
MPPT	Maximum power point tracking	Green light indicates the MPPT function is in operation.
ERR_I	Current error	Over load indication: Constant red light. Over current indication: Blinking red light
LOW_POWER	Voltage error	Constant yellow light indicates low power input.
Tank_F	Tank water level alarm	Green light, the tank is full.
WELL_L	Well water level alarm	Green light, the well is empty. If the light is blinking, it is the time-delay function at work.
Over Voltage	Over voltage	If the open circuit voltage is too high. The ERR_1 light will come on and the Low power light will flicker.
Battery	Charging state	The red light will constantly be on when the battery is charging. When the battery is fully charged, the red light will blink.

Connecting to the Control Box

Terminal	Instruction
P+	Connect with the anode of solar array
P-	Connect with the cathode of solar array
B+	Connect with the anode of battery (for 12V,24V,36V,48V pump only)
B-	Connect with the cathode of battery (for 12V,24V,36V,48V pump only)
1	Connect with the cable “1” of pump (black cable)
2	Connect with the cable “2” of pump (blue cable)
3	Connect with the cable “3” of pump (grown cable)
COM2	Connect with the water level sensor of tank
TH	Connect with the water level sensor of tank
COM1	Connect with the water level sensor of well
WH	Connect with the water level sensor of well



Warranty Statement

Warranty Statement for Pump and Controller pertaining to Cedar Solar Customers.

Cedar Solar Pumps and controllers are warranted to be free from defects in materials and/or workmanship for a one year period as defined below:

Failure to provide correct installation, operating conditions, or care for the products in accordance with the instruction manual will void this warranty.

Cedar Pumps are designed for pumping clean water or low viscosity, non-aggressive, non-explosive liquids containing NO solid particles. Cedar Solar is not responsible for the labor or other charges and expenses associated with the removal, transportation or re-installation of any defective product(s).

Pump warranty does not cover damages caused or due to: the presence of sand or abrasive silts in the water source, salt water corrosion, mineral deposits, or electrolytic action; lightning; flooding or other act of nature; mishandling or other abusive conditions.

Cedar Solar pumps makes no warranty, express or implied, and any implied warranty of merchantability/fitness for a particular purpose in excess of the foregoing warranty is hereby disclaimed by Cedar Solar. Cedar Solar also will not be liable for any consequential damages, losses or expenses arising in connection with the use of or inability to use goods provided by Cedar Solar for any purpose whatsoever.

Warranty will only pertain to purchased products. Replacement products do not carry any warranty. Warranty will only be valid by presenting original invoice and a signed copy of the warranty application form should be sent to info@cedarsolar.com no later than 14 days after date of invoice. Application forms can be found on our website (www.cedarsolar.com) or at our offices.

Cedar Solar SA Pty (Ltd), it's directors, distributors, agents or staff members thereof cannot be held accountable for the damage or defective products due to incorrect/incomplete information provided by the client, or the direct result of loss due to tampering with the pump or controller by an unqualified person.

Warranty is only valid for system purchases and does not warrant pump only purchases. By purchasing or agreeing to any quotation, it will be assumed that the customer has read through and agreed with the warranty statement.

Installation Checklist

- ☐ **Step 1** - Open box and check that all the different parts and products are in the box.
- ☐ **Step 2** - Check male fitting (that you purchased from your plumbing supply store) and ensure it is not too long for the pump. If the fitting screws in too deep the pump's impeller or control box will get damaged.
- ☐ **Step 3** - Make sure you have the correct cable specification for the model and depth of installation.
- ☐ **Step 4 -** I have checked the water level.
- ☐ **Step 5** - I am informed of the static water level.
- ☐ **Step 6** - I am informed of the depth of the well.
- ☐ **Step 7** - I am aware of the total head of the installation.
- ☐ **Step 8** - The controller is switched off.
- ☐ **Step 9** - Well sensors are attached to pipe and cable tied to the cable, pipe and rope.
- ☐ **Step 10** - Well sensors are extended to the depth of installation.
- ☐ **Step 11** - Pump is lowered by strong rope.

- ❒ **Step 12** - Pump is in water at least 15 minutes before switching on.
- ❒ **Step 13** - The cable winds are mended sufficiently and the cast has enough time to set.
- ❒ **Step 14** - 1,2,3 wires from the pump are connected to the correct terminals in the controller. If this is not the case, the motor will turn in a opposite direction and can damage the pump or controller.
- ❒ **Step 15** - The solar modules are connected correctly according to the installation guide provided by Cedar Solar. It should clearly be connected according to the specific model purchased. Please contact your local distributer or our technical staff.
- ❒ **Step 16** - Ensure the orientation and angle of the modules are correct according to the geographic site of the installation. Shading will also negatively affect the installation.
- ❒ **Step 17** - Ensure the open circuit volts are not larger than that of the specific controller's constraint.

Warranty Application Form

Please complete the form and email it to info@cedarsolar.com to activate the warranty. If we don't receive the warranty within 14 days after sale the product will not qualify for warranty. Please attach a copy of invoice, signed warranty form and warranty checklist to secure the warranty.

Invoice Nr & Date		Total Well Depth	
Name		Static Water Level	
Surname		Max Well Flow Rate	
District		Daily Water Requirement	
Cell		Height Distance (Well & Reservoir)	
Landline		Pipe Diameter (mm)	
VAT Nr		Product Model	
Address			
Postal			
Serial Nr			
Comment			

Hereby I, _____,
(name and ID Nr.) acknowledge that the above steps have been followed in the installation process. Cedar Solar will not be held liable for any incorrect or incomplete information. Please send with warranty document.

Signed at_____on this___(Day) ___(Month), 20___

_____ (Signature)

Customer Support

Contact your nearest agent for support. If you have any technical queries regarding the pump you can contact the Cedar Solar customer support team 011 794 4664 or email info@cedarsolar.com.

Procedure for warranty claims:
1) Return the product.
2) Transport costs for client's account.
3) Product will be tested.
4) If factory fault is confirmed we will fix the part or replace the product.
5) Time frame is 5 to 10 working days.