ECOWORTHY Solar tracker
1. INTRODUCTION

We are manufacturers and wholesalers of solar panels and renewable energy products. Our solar business has been established since 2002. OEM and ODM services are both available. We would like to be your best supplier in China.

We are a leading manufacturer and wholesaler of renewable energy products, solar LED lighting and other environment friendly products. 80% of our products are produced and assembled in our own factory and 20% are from 30 major partner factories worldwide.

Our engineers are experienced in solar and related accessories, if you buy from us you deal with not just a seller, the whole technical team is behind you and your business.

Our mission is to accelerate the renewable energy products as well as energy-saving and environmentally friendly products to come into vogue in the world.

2. WORKING PRINCIPLES

Due to the Earth's rotation, the illumination angle of the sun is changing all the time, if we set the solar photovoltaic power at a fixed place then we haven’t use the sunlight fully. In order to keep the generation efficiency at its best, we need to guarantee the solar panels facing the sunlight all the time.

The solar tracker is the power plant which can keep the solar panels facing the sun and can keep Vertical irradiation of the sunlight to the solar panels at any time, and thus it can significantly improve the power generation efficiency of solar photovoltaic modules.

By using this solar tracking system, the generation efficiency of solar photovoltaic modules can be 30% higher than normal fixed solar panels, this product has the advantages of easy for installing, easy for using, durable and cheap.

3. PRODUCT OVERVIEW

Building a complete solar tracking system has never been easier. The ECOWORTHY Solar Tracker Kit can be used directly on 12volt system. The solar tracking system just functions like a MPPT controller. It can trace the strongest sunlight and always keep the solar panel facing towards the strongest sunlight and thus can significantly improve the efficiency of solar photovoltaic modules.

3.1 FEATURES

- Standard 1 year warranty on parts and labor.
- 100% pre-wired and 85% pre-assembled.
- Single axis tracker provides up to 35% more power production than fixed solar panels
- Engineered to hold up to 1000 Watts of solar panels
- All electronics are water-tight with IP65 rated enclosures.
- Electronics are designed to handle max 3A current.

3.2 SAFETY PRECAUTION

CAUTION: Never approach a solar tracker while the ECOWORTHY Solar Tracker electronics are “on”. The solar tracker can move unexpectedly and the powerful linear actuator/motor can cause serious injury or death. Always disconnect the ECOWORTHY Solar Tracker electronics from its power supply before approaching the solar tracker.
The whole view of the solar tracker system

![Diagram of the solar tracker system with parts labeled]

ECOWORTHY Solar tracker

The 3 mail elements of the solar tracker system

<table>
<thead>
<tr>
<th>solar tracking controller</th>
<th>Solar tracking sensor</th>
<th>North-South Linear Actuator</th>
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</table>
This control box is made of analog circuit control system. The comparison testing is achieved by the dual-voltage signal returned by the orientation of the sensor head into the control circuit. Then the drive relays make appropriate action and at the same time output to achieving the forward reverse of the motor and stop signals. The locking accuracy of this controller box is ±3 degrees, and it can be improved by increasing the baffle on the umbrella detection.

**Features**

1. There is a detection system inside the controller box, when the sunlight is below the set point, the system stops working and in dormant state, and the weak sunlight indicator is on.

2. The controller box has DUAL LED and is convenient to check the working state of the controller.

3. The circuit is detected by a professional experimental platform.

4. The controller also has the function of overcurrent protection, EMF elimination.
4.1 Solartracking sensor

This device is using a new umbrella detection, the metal parts of the detection head are all made of 304 stainless steel material, the detecting element is made of two Epoxy silicon cells, the lead is rubberized-handled so it can cope with the outdoor harsh conditions. And you can adjust the direction angle and then calibrate the orientation.

The installation orientation of the tracking should be consistent with the bracket’s moving direction.
4.2 North-South Linear Actuator

The linear actuator is excellent for controlling the tracking in the north/south direction on Do-It-Yourself solar trackers.

Limit switches are pre-installed on the linear actuator so you do not have to worry about the solar tracker electronics forcing the linear actuator to over travel. The linear actuator will stop moving after it extends 17.72 inches even if the solar tracker electronics tell the linear actuator to keep moving.

Dimensional Drawing

Input Voltage: DC12V  
Max Load: 1500N  
Stroke Length: 450mm  
Speed: 5.7mm/s  
Duty Cycle: 25%  
Protection Class: IP65

Note: all dimensions are in mm’s
1 inch = 25.4mm
**Product highlights**

1. Limit switches pre-installed during assembly
2. Sealed and lubricated shaft
3. Solid aluminum shaft and zinc alloy housing
4. Metal gears
5. Retracted length = 24.41 in (620mm)
6. Extended length = 40.55 in (1030mm)
7. Stroke length = 17.72 in (450mm)
8. Travel speed = 5.7mm/s
9. No-load current < 1A
10. Max load current = 3A
11. IP65 rated (suitable for outdoor use)
12. Certification = CE

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**5. INSTALLTION**

**5.1 GENERAL INSTALLTIONGUIDELINES**

The ECOWORTHY Solar Tracker provides the electronics to build a single axis solar tracker. The ECOWORTHY Solar Tracker Electronics are capable of operating at 3 amps continuously and 4 amps intermittently. In general, solar trackers use linear actuators (geared motors) to move and follow the sun.

The 3 amp operational capacity of the ECOWORTHY Solar Tracker Electronics is powerful enough to power linear actuators for solar trackers up to 1kw (1000 watts). Check the amp draw of the linear actuators or geared motors are going to be connected to the ECOWORTHY Solar Tracker Electronics and make sure each motor used does not exceed the 3 amp limit.

The ECOWORTHY Solar Tracker comes with everything required for a fully operational solar tracker. The left is a picture of the Complete Single Axis Solar Tracker.

Parts are labeled ①-⑥.

Pls be noted: This picture is for a complete Solar Tracker System. Here on sale is only including the Linear Actuator. And solar tracking controller & Solar track sensor. You need to prepare the bracket, frame and the solar panel by yourself.
### 5.2 INSTALLATION STEPS

<table>
<thead>
<tr>
<th>Step 1: Connect the bracket and the frame.</th>
<th>Step 2: Connect the bracket and the LinearActuator.</th>
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<tbody>
<tr>
<td><img src="image1" alt="Step 1" /></td>
<td><img src="image2" alt="Step 2" /></td>
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<table>
<thead>
<tr>
<th>Step 3: Assemble the solar panel.</th>
<th>Step 4: Assemble the solar tracking controller and the Solartracking sensor. Connection the power supply, then the system starts working.</th>
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<tbody>
<tr>
<td><img src="image3" alt="Step 3" /></td>
<td><img src="image4" alt="Step 4" /></td>
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5.3. NOTES DURING THE INSTALLATION

1) All the Brackets and solar panels in the above pictures are only for reference. Pls choose the appropriate bracket according to the actual situation. (Such as Solar panel dimension etc.)

2) Make sure that the installation orientation of the tracking is consistent with the bracket’s moving direction.

3) When assembling the actuator, make sure the actuator’s position matches well with the bracket’s actual angle.

4) If the actuator’s moving direction is opposite to the detected direction, pls turn the actuator by 180 degrees or change the positive and the negative position to the power supply.

5) The power supply of the controller can be directly connected to the battery of the system, but pls make sure the battery is 12V (the voltage of the battery and the controller must be consistent).

5 TROUBLE SHOOTING AND SUPPORT