

What is a servo motor in a solar tracker?

A servo motor (SG90) for the solar tracker's vertical movement and a micro servo motor (MG996R) for the horizontal movement. A servo motor is able to wait for predetermined positions in the instructions given to it and then to maintain them, so it works in a closed loop.

How servo motors are used in solar PV system?

In this work, tiny servo motors controlled directly by the microcontroller are used to moving the PV panel with very low energy consumption. On the other part, in a large solar PV system, the required structure will be much heavier and will require powerful motors and the power requirements will be higher.

How does a dual axis servo motor work?

A dual-axis mechanism is developed in order to tilt the PV panel by two servo motors facing the highest intensity of sunlight captured by LDR sensors, which are placed in the four corners of PV panel. The DAST prototype was constructed practically and tested using a real-time virtual instrument based on Excel to determine its efficiency.

Why do we use servo motors for PV panel motorization?

Moreover, we used servo motors for the motorization of the PV panel instead of stepper motors or DC motors as in [50, 56, 55] that need an interface circuit to control the speed and the position, which increases the materials and the consumption of the energy.

How servo motors work with Arduino?

When we power on the Arduino all the sensors and servo motors are in the action. As you can see in the above image. Usually, when we increase the light intensity on the LDR Sensor, the signal is sent to the Arduino. And Hence it guides the two servo motors to better place the solar panel. To increase its efficiency.

Why should you use 2 servo motors in your project?

Thanks to the 2 Servo Motors in your project, the axes will be able to move according to the sun angles. If you've installed solar panels to support your electricity needs, on a camping trip or in a caravan to provide electricity, with this project you can be sure the panels are properly aligned.

According to the mechanical structure, the solar tracking system has 2 types: single and dual-axis systems [12], [19]. Of these, dual shafts are often used because it provides higher accuracy ...

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Sunlight sensing for maximum illumination, providing initial position and delays of photovoltaic (PV) panel, design of an adequate control unit for minimal consuming servo ...

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Abstract-- The paper describes a tracking system of Dual Axis Solar Tracker using PIC 16F887 microcontroller. Four LDRs are used as sensor to sense the sun light. The sensing signals are ...

This paper suggests the design, simulation of a dual-axis solar tracker where the solar module easily moved on two (2) axis of rotation to monitor the sun's progress from east to west and ...

The dual-axis solar tracker structure is made up of PV panels, a worm gear system, and a spring to balance the

elevated rotation of the structural panels and panel frame. ...

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