

Solar tracker diagram

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The circuit and the mechanism I have explained in this article may be considered as the easiest and perfect dual axis solar tracker system.

The device is able to track the daytime motion of the sun precisely and shift in the vertical axis accordingly.

The device also effectively tracks the seasonal displacement of the sun and moves the entire mechanism in the horizontal plane or in a lateral motion such that the orientation of the solar panel is always kept in a straight axis to the sun, so that it complements the vertical actions of the tracker appropriately.

The pivotal arrangement allows the panel mounts to move on a circular axis over almost 360 degrees.

A motor gear mechanism as shown in the diagram is fitted just at the corner of the pivotal axis in such a way that when the motor rotates the entire solar panel shifts proportionately about its central pivot, either anticlockwise or clockwise, depending upon the motion of the motor which in turn depends on the position of the sun.

The position of the LDRs are critical here and the set of LDR which corresponds to this vertical plane movement is so positioned that it senses the sun light accurately and tries to keep the panel perpendicular to the sun rays by moving the motor in the appropriate direction through a definite number of stepped rotations.

The LDR sensing is actually accurately received and interpreted by an electronic circuit which commands the motor for the above explained actions.

This motion takes place in response to the position of the sun during the seasonal changes, therefore in contrast to the vertical movements; this operation is very gradual and cannot be experienced on a daily basis.

For the above procedure a different set of LDRs are used and are mounted horizontally over the panel, at a specific position as shown in the diagram.

A careful investigation of the circuit shown in the diagram reveals that the whole configuration is actually very simple and straightforward.

Here a single IC 324 is utilized and only two of its op amps are employed for the required operations.

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