



Automatic Solar Tracking System Using Arduino

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ABSTRACT

Solar energy is apace gaining ill fame as a crucial suggests that of increasing renewable energy resources. As such, it's very important that those in engineering fields perceive the technologies related to this space. Our project will include the design and construction of aarduino-based solar panel tracking system. Solar following permits additional energy to be created as a result of the solar battery is ready to stay aligned to the sun..

This solar tracker project is to keep the solar photovoltaic panel perpendicular to the sun throughout the year in order to make it more efficient. The dual axis star electrical phenomenon panel takes astronomical information as reference and also the following system has the aptitude to invariably purpose the solar battery toward the sun and might be installed in various regions with minor modifications. The vertical and horizontal motion of the panel is obtained by taking altitude angle and angle as reference.

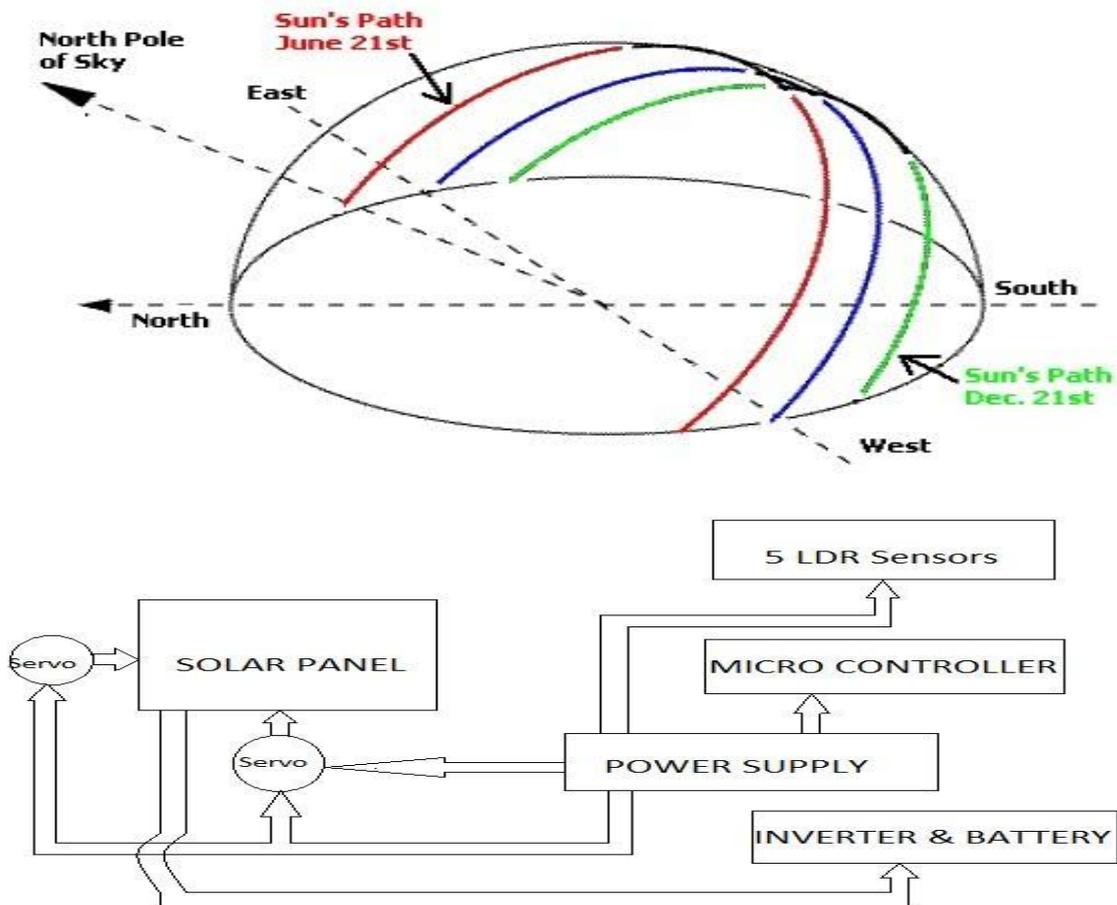
Keywords: Arduino, photovoltaic panel, renewable energy, space, solar battery

INTRODUCTION

The continuous evolution of the technology determined a sustained increase of the conversion efficiency of PV panels, but nonetheless the most part of the commercial panels have efficiencies no more than 20%. A constant analysis preoccupation of the technical community concerned within the solar power harnessing technology refers to varied solutions to extend the PV panel's conversion potency. Among PV potency rising solutions we will mention: star following, optimisation of star cells pure mathematics, improvement of sunshine caparison capability, use of recent materials, etc. The output power created by the PV panels depends powerfully on the incident lightweight radiation.

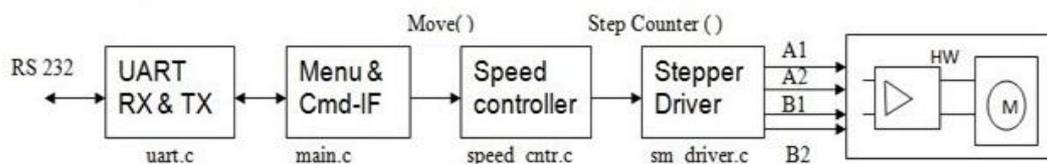
PROPOSED SYSTEM

Double axis star trackers have each a horizontal and a vertical shaft then will track the Sun's motion specifically anyplace within the World. This type of system is used to control astronomical telescopes, and so there is plenty of software available to automatically predict and track the motion of the sun across the sky. By chase the sun, the potency of the star panels are often accrued by 30-40%.The dual axis chase system is additionally used for concentrating a star reflector toward the concentrator on heliostat systems



IMPLEMENTATION

A operating implementation written in C is enclosed with this application note. Full documentation of the ASCII text file and compilation info is found by gap the 'readme.html' file enclosed with the ASCII text file. The demo application demonstrates linear speed management of a stepper motor. The user will management the stepper motor speed profile by issuance completely different commands victimization the interface, and therefore the AVR can drive the connected stepper motor consequently. The demo application is split in 3 major blocks, as shown within the diagram in Figure four.6. There is one file for every block and additionally a file for UART routines employed by the most routine.



Main c incorporates a menu and a command interface, giving the user management of the stepper motor by a terminal connected to the serial line. Speed controller c calculates the required information and generates step pulses to create the stepper motor follow the specified speed profile. Smdriver.c counts the steps and outputs the proper signals to regulate the stepper motor.



CONCLUSION

From the design of experimental set up with Micro Controller Based Solar Tracking System Using Stepper Motor If we compare Tracking by the use of LDR with Fixed Solar Panel System we found that the efficiency of Micro Controller Based Solar Tracking System is improved by 30-45% and it was found that all the parts of the experimental setup are giving good results. The required Power is employed to run the motor by victimization decrease T/F by victimization 220V AC. Moreover, this pursuit system will track the sun in a very continuous manner. And this method is additional economical and value effective in long-standing time. From the results it is found that, by automatic tracking system, there is 30 % gain in increase of efficiency when compared with non-tracking system. The star hunter will be still increased further options like rain protection and wind protection which may be done as future work.

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