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Solar Tracking with Temp. & VTG Meter

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ABSTRACT: The light from the sun is non-vanishing source of energy, which is free from environment the solar cell fabrication pass through number of implement steps the thin film solar cells enhanced the cell efficiency.

KEYWORDS: Microcontroller PIC 16f877a, Reset Circuit, Oscillator Circuit, Voltage Sensor, Temperature Sensor, LCD 16*2, Motor Driver IC L293D, Battery 12V, Solar Panel 18V.

I. INTRODUCTION

Now days it is essential to develop electricity with solar energy, Because low creativity of electricity & high demand of electricity. So we want to develop such a project that saves lots of electricity, used solar based energy converted into electricity. Solar through battery charging circuit is save energy & according to sun movement, Solar panel rotate their position. And the charged battery used for DC appliances.

II. LITERATURE REVIEW

In [1], Umar Coubey P.C. Oudhia, And Dewangan R. have designed a dual-axis sun tracking system with the use of photodiode and PIC Microcontroller. The objective of this reaserch is to design and construct dual axis solar tracker from maximum sun energy utilize. In [2], Wurfel P. And wurfel, U. Have design construction of microcontroller based photodiode to sense the intensity of sun light and DC motor to rotate their position.

III. PROPOSED WORK

The major objectives of proposed work are listed below:

- Shows the Temperature & Voltage on LCD display.
- Reduces human efforts and saves lots of electricity.
- Battery save energy for all DC appliances.

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A. BLOCK DIAGRAM

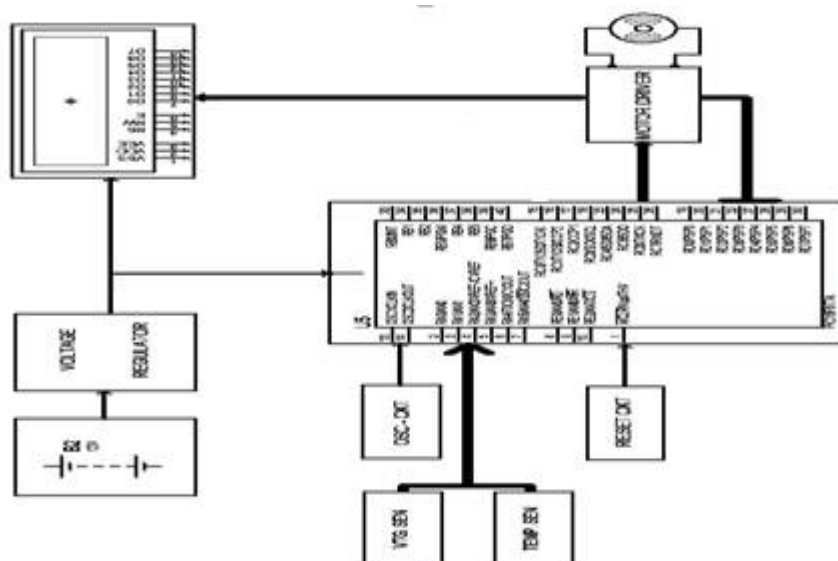


Figure 1: Block Diagram of Solar Tracking With Temp. & VTG Meter

- A. Power Supply:** Here microcontroller, LED indicators operates with DC 5V, Motor driver operates with DC12V supply and this supply is provided by 12V solar panel output stored in the battery.
- B. Microcontroller:** A Liquid Crystal Display (LCD) We used PIC microcontroller in which, external crystal required it works on 3.5V to 5V, it has program memory up to 8Kb program memory.
- C. Reset And Oscillator Circuit:** Any microcontroller requires oscillation frequency for its operating it can be internal for few microcontrollers and for few it provide external also. Reset circuit requires for reset program from beginning it is used when microcontroller hangs.
- D. LCD display:** LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 16*2 LCD display is very basic module and is very commonly used in various devices and circuit.
- E. Sensor Module:** This 4x4 Matr In all sensor module physical condition sensor is used to sense through Photodiode and the potentiometer is used to sensitivity of the light.
- F. Motor Driver:** The power Microcontroller has very low current output it cannot drive current consuming sources, such like motor hence motor driver circuit requires, We can implement this circuit using motor driver IC.

B. WORKING

Here circuit 12V unregulated DC supply for charging unit. We used 18V(600mAh) Solar panel to charge battery filter of 1000uf 25V, Now the output of capacitor is DC 18V which is given to the battery for charging purpose. 12V DC is converted in 5V by regulated IC LM35 supply is given to microcontroller, LCD display in this circuit 4MHZ crystal required. Pin RA1,RA3 are connected with voltage sensor module & temperature sensor module. All capacitor of 0.1uf are connected to reduce spikes in the circuit.



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VI. EXPERIMENTAL RESULTS

TIME	SINGLE AXIS
7am	8.15v
8am	10.27v
9am	12.5v
10am	19.12v
11am	17.02v
12pm	17.27v
1pm	16.05v
2pm	14.8v
3pm	13.06v
4pm	10.03v
5pm	0.85v

Table 1: Generated Power For Single Axis Tracking

VII. CONCLUSION

We develop this project named as “Solar Tracking With Temp. & VTG Meter” It is detects the sun light follow it from east to west direction and finally it turns to the east for next day Temp. Sensor works accurately for Positive temperature and solar voltage shows on LCD display.

VIII. FUTURE WORK

In future we can implement this project for higher wattage circuits. And automatic solar tracking system offers a prototype for implementing a large array type solar tracker , this will be an expansion of mechanical well as electronic system.

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