

# Solar Power Monitoring System through IOT

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**Abstract**— As we all know fossilises are decreasing fastly, the future generations is to completely depends on renewable energies .so they have to maintain their resources efficiently for this purpose we implemented a monitoring system that continuously keep track on solar panels. if the panels are gets dust accumulated on the surface and how much the voltage is generated by the panel is continuously monitored by the sensors arranged to the each panels. These values are updated through internet of things.

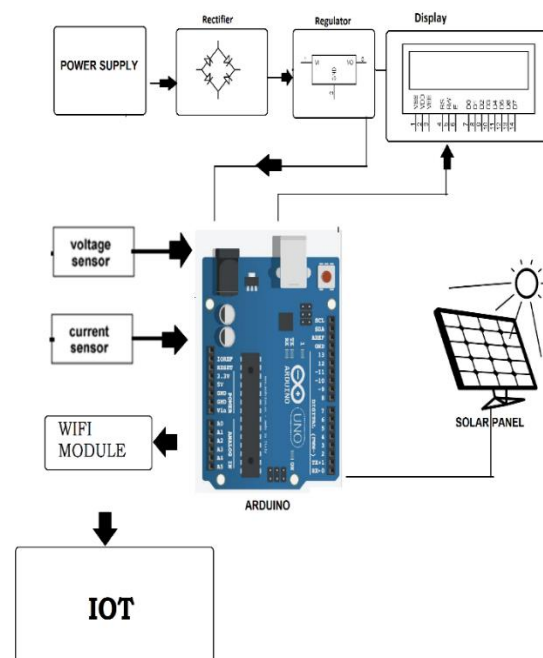
## INTRODUCTION

Power generation could be a major think about several developing countries. because of the development of the factories and business field, where the energy range reaches high. thus, overall area unit modest towards renewable energy supply and provide inexperienced output for energy consumption system. and will facilitate to the people for reducing the other gases emission carbons and layer depletion for upcoming people. Apart from this star electrical phenomenon technique is more acquired quality for vast availableness and decreasing the price, straight forward install, and the other purposes. Generally, Internet of Things (IOT) is academic degree it involves the new technology that the society and the things makes smart working and simple once connected through the transmission system protocol and the cloud platform. Therefore electrical devices and the other instruments is based on the parameters like current, voltage, intensity, and temperature.

## PROPOSED SYSTEM

This system is proposed to get the maximum output of the power from the solar panels and to maintain the panels with efficiently. By attaching the different sensors to the solar panels like voltage sensor, current, temperature, LDR sensors we get the different parameters .by using voltage divider formula we get the voltage and current mathematical

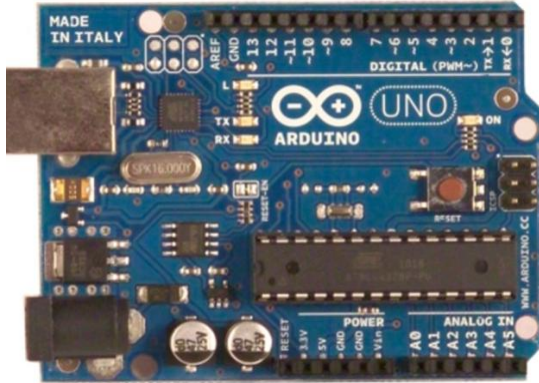
calculations across the panels. From this we are connected with the IOT source the values can be updated in the thing view app or different IOT platforms.



## HARDWARE SPECIFICATIONS

### ARDUINO UNO:

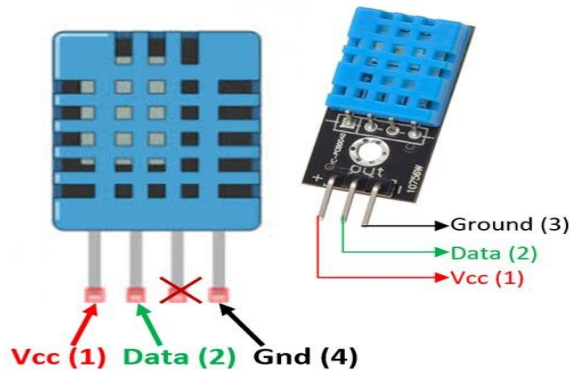
The Arduino Uno can be a microcontroller board upheld the ATmega328 (datasheet). it's fourteen computerized input/output pins (of that 1/2-dozen in addition utilized as PWM yields), it's fourteen digital input/output pins (of that 1/2-dozen is additionally used as PWM outputs). an effect on jack, partner in Nursing ICSP header, and a button AC-DC connector or battery to encourage commenced the FTDI USB-to-serial driving drive chip. rather, its alternatives the Atmega8U2 programmed as a USB-to-serial tool. The Uno and model one USB Arduino boards, so the reference model for the Arduino.



**DHT11 SENSOR:**

The DHT11 could be a ordinarily used Temperature and wetness detector. The detector comes with a fanatical NTC to live temperature and an 8-bit microcontroller to output the values of temperature and wetness as serial knowledge. The detector is additionally plant label and thus simple to interface with different microcontrollers. The detector will live temperature from 0°C to 50°C AND wetness from 2 hundredth to ninetieth with an accuracy of ±1°C and ±1%. therefore, if you're wanting to live this vary then this detector may be the correct selection for you.

**DHT11 Pinout Configuration**



FigNo.3.7.Pin Layout of DHT11 SENSOR

Voltage Detection detector Module may be a easy and extremely helpful module that uses a possible divider to scale back any input voltage by an element of five. this permits United States to use the Analog input pin of a microcontroller to observe voltages on top of it capable of sensing. as an example, with a 0V - 5V Analog input vary, you're able to live a voltage up to 25V. This module conjointly includes convenient screw terminals for simple and secure

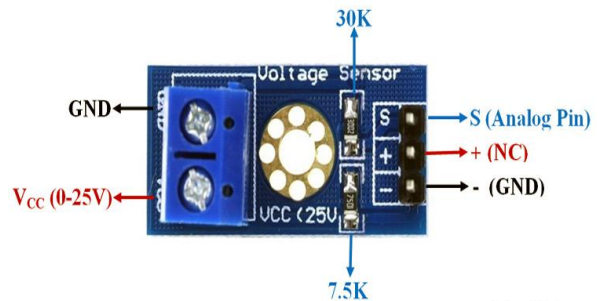
connections of a wire. Fig No.3.8. VOLTAGE SENSOR 3.8.1 Interfacing a voltage detector with Arduino Interfacing a voltage detector with Arduino or the other microcontroller is pretty undemanding. Connect the VCC and GND of voltage supply whose voltage to be measured to the screw terminals of the voltage detector. Connect the S and – (GND) pins of voltage detector to Analog pin and GND of Arduino severally.



**SOLAR PANEL:**

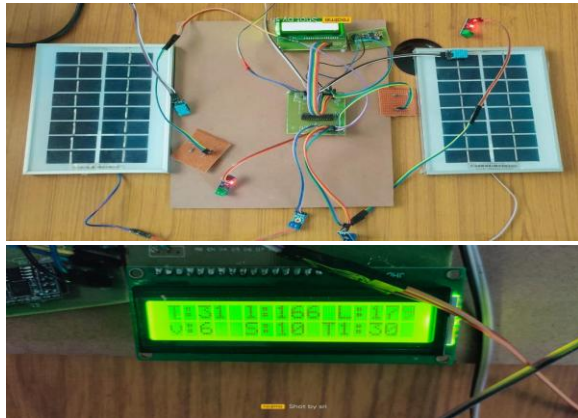
Inside the electric phenomenon device, opportunity power is immediately regenerate to energy. This makes the device manner greater handy and compact in comparison to thermal techniques of opportunity power conversion. the electrical cellular era is that the quickest growing electricity generating technology inside the international. it is because of simple reality that the big-name cells with conversion efficiency of pretty 4-hundredth have come to be provided.

**VOLTAGE SENSOR:**



**RESULT**

To date, most all observance systems area unit comprised of wire Picture a device throughout a field. And it created from various of star solar panels, these several units of solar panels producing large amount of electricity. the unit wired on central purpose, where star solar panels can convert the direct current (DC) energy created by the panels into analogy current (AC) energy which is accustomed power building parts. To monitor those solar panels to required benefit of a network of wired sensors an alternate energy observance system pattern the internet of Things (IOT) works. The observance of system depends part on the responsibility of transmission network and dependably the entry can transmit knowledge to the cloud. If any technical issue arises, the devices cannot ready to transmit data, through sensor. whereas effective, the worth and maintenance expense has restricted .With wireless internet of things (IOT) configurations, exhausting wire costs and succeeding maintenance is significantly reduced, giving a much better level of knowledge assortment, observance capabilities, and succeeding learning/AI applications.



### CONCLUSION

This technique keeps continue stack of alternative energy plant the daily weekly and monthly analysis becomes straight forward and economical additionally with the help of this analysis it's potential to discover any fault occurred a intervals station as a result of the generated power might show some in consistency in knowledge of alternative energy plant. Solar Energy observance Systems victimization The IoT virtually every installation comes with a alternative energy monitor, as a results of it's necessary to stay enlightened regarding what

the system is producing and therefore the means well it's activity. whether or not or not you' revictimization the energy to power your own building or promoting the extra energy for a tough and quick value to a utility company, you'd wish to grasp once one factor goes wrong so you will be able to address the matter quickly—and still derive the utmost fancy your investment.

### FEATURE SCOPE

By using this solar power monitoring system, we can monitor the each panel individually by setting anywhere in entire world through the IOT .so we can recognize which panel is working and how much it is generating the power, this leads to the feature generations use their resources efficiently and it reduces the man power for monitoring each panel by physically. It helps to the generation of solar power efficiently. This monitoring system will help to the feature generations lives smart.

### REFERENCE

- [1] R. Panna, R. Thesrumluk and C. Chantrapornchai, "Development of Energy Saving good Home Prototype" IJSH Vol. 7, No.1, Jan 2013
- [2]TriStar system Controller Installation and Operation Manual, Morningstar Corporation (2009) alternative energy wireless observation supported arm7
- [3]<http://ieeexplore.ieee.org/978-1-4577-0536-6/>
- [4]Shailesh Saswat, Indresh Yadav and Sanjay Kumar Maurya 2019 Real Time observation of star PV Parameter victimization IoT nine p 267
- [5]R.L.R. Lokesh adult male, D Rambabu, A. Rajesh Naidu, R. D. Prasad, and P. Gopi avatar 2018 IoT Enabled alternative energy observance System Int. J. Eng. & Tech. 7 p 526