

Solar Charged Battery Powered Arduino Uno

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Abstract

If you are doing remote data logging, energy source is problem, many time the power supply is not available, because that you want use batteries but that batteries have limited power, because of that reason you want go that places regularly for change Batteries. If you want to do not want to go that places for change batteries, solar is best option for free energy from sun To the charge batteries give the regular power to arduino. Arduino is a use in many work remote data logging is one of that for remote data logging some sensors collect data using arduino from some out of the field and transfer to data logger and that for power outlets are not available in out of the field. So that for we can use solar cell power.

Key Words: ArduinoUno, Solar cell, Lithium battery

INTRODUCTION

We have assured that the problem of energy source or energy providing source is not infinitely available and in place of electricity and battery charged appliances we can definitely use solar panel. This will also reduce the time management and problem of the energy source. In place of chargeable battery we can place solar panel charge battery for use to charge arduino.

If we are doing data logging we want to use arduino and some sensors for doing data logging from out in field you have use power outlets for give power to arduino but some places power outlet is not available for give the power to arduino that why we use batteries for power supply to arduino but batteries have limited power supply and that why you want to go regularly to that place to check batteries for replace battery. because arduino consume lots of energy from batteries, also when you take it to sleep.

For this power supply issue we can use natural energy from any place using solar cell as power supply solar is a very efficient and self charge. We can use solar panel at that place where we can doing data logging and for given power supply to arduino. Solar for arduino is small board can be give the power to arduino board. And you don't go that place for checking power supply and it save your time.

MODELING AND ANALYSIS

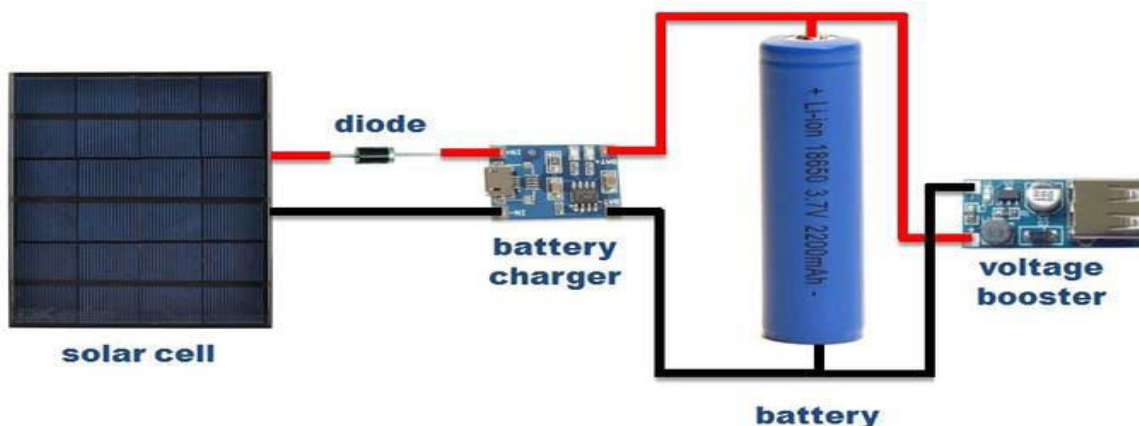


Figure:1 circuit diagram

a)Solar cell:-

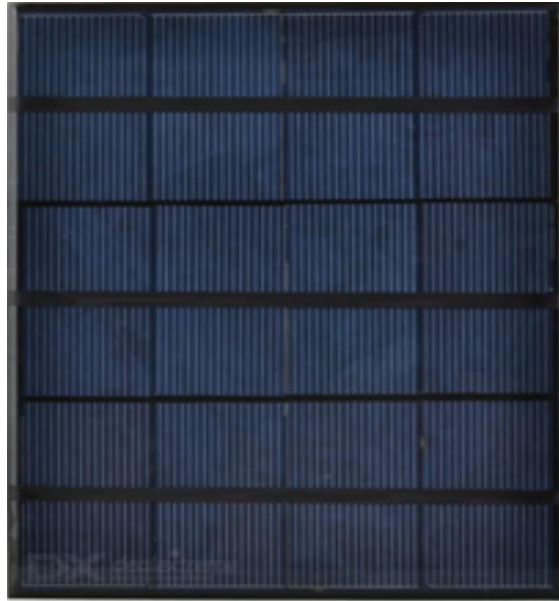


Figure:2 Solar cell

A solar cell is a electrical device and it is converts the energy of light into electricity by the photovoltaic effect,that is a physical phenomenon and chemical phenomenon. It's a form of photoelectric cell, define as a device have electrical Characteristics,such as current, resistance, or voltage, when exposed to light. Solar cell device are often the electrical building blocks of photovoltaic modules, known informal as solar panels.

Advantages:-

Renewable Energy Source:-Among all the benefits of solar panels, the most important thing is that solar energy is a truly renewable energy source. It can be harnessed in all areas of the world and is available every day. We cannot run out of solar energy, unlike some of the other sources of energy.Solar energy will be accessible as long as we have the sun, therefore sunlight will be available to us for at least 5 billion years when according to scientists the sun is going to die.

Low Maintenance Costs:-Solar energy systems generally don't require a lot of maintenance. You only need to keep them relatively clean, so cleaning them a couple of times per year will do the job. If in doubt, you can always rely on specialised cleaning companies,Most reliable solar panel manufacturers offer 20-25 years warranty.

Technology Development:- Technology in the solar power industry is constantly advancing and improvements will intensify in the future. Innovations in quantum physics and nanotechnology can potentially increase the effectiveness of solar panels and double, or even triple, the electrical input of the solar power systems.

Lithium battery



Figure:3 Lithium battery

Lithium batteries are widely used in portable consumer electronic devices. The term “lithium battery” refers to a family of different lithium-metal chemistries, comprising many types of cathodes and electrolytes but all with metallic lithium as the anode. There are many advantages to using a li-ion cell of battery. As a result the technology is being used increasingly for a huge number of widely varying applications. Everything from small electronic devices, through smartphones and laptops to vehicles and many other applications.

Arduino uno

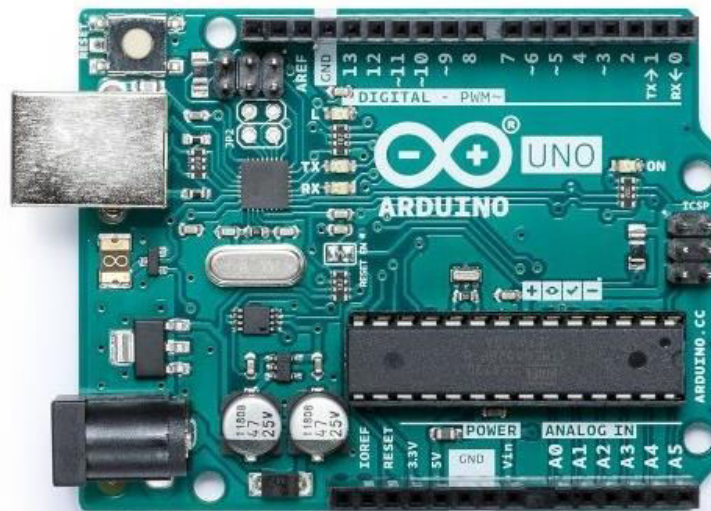


Figure:4 Arduino uno

The Arduino Uno is an open-source microcontroller board based on the microcontroller and developed by Arduino.cc. The board is provided with sets of digital and analog input/output pins which will be interfaced to varied expansion boards and other circuits.

CONCLUSION

This is a Solar charged battery powered arduino uno because of that remote data logging is simple. arduino is a use in many work remote data logging is one of that for remote data logging some sensors collect data using arduino from some out of the field and transfer to data logger and that for power outlets are not available in out of the field. So that for we can use solar cell power.

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