



AUTOMATIC DRIP IRRIGATION SYSTEM USING SOLAR POWER

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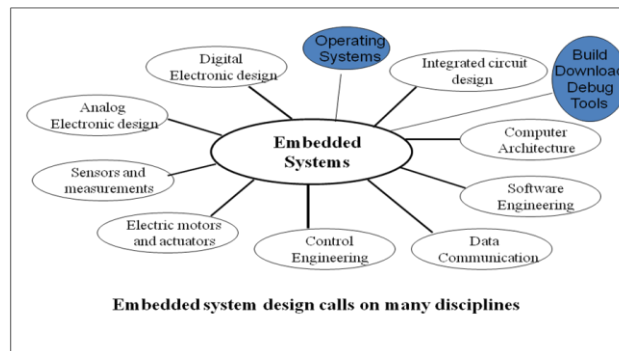
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Abstract— In the field of agriculture, use of proper method of irrigation is important because the main reason is the lack of rains & scarcity of land reservoir water. Another very important reason of this is due to unplanned use of water due to which a significant amount of water goes waste. For this purpose; we use this automatic plant irrigation system. In this project we use solar energy which is used to operate the irrigation pump. This project is designed to water plants regularly. The circuit comprises of sensor parts built using op-amp IC LM358. Op-amp's are configured here as a comparator. Two stiff copper wires are inserted in the soil to sense whether the soil is wet or dry.

KEYWORDS—MICRO CONTROLLER, SOLAR POWER, WATER, AGRICULTURE

I. INTRODUCTION

An embedded system is not a computer system that is used primarily for processing, not a software system on PC or UNIX, not a traditional business or scientific application. High-end embedded & lower end embedded systems.



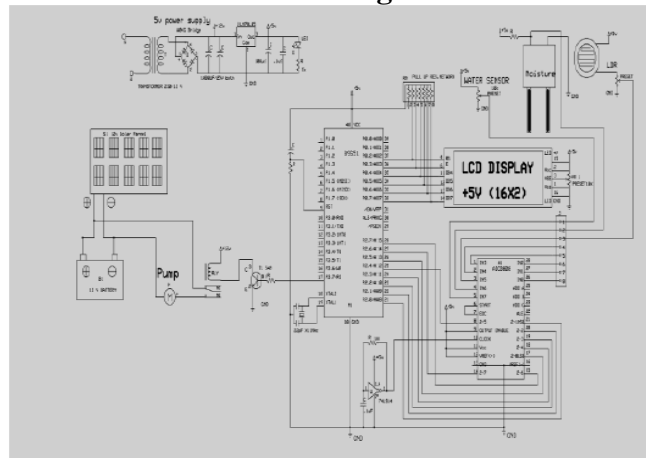
High-end embedded system - Generally 32, 64 Bit Controllers used with OS. Examples Personal Digital Assistant and Mobile phones etc .Lower end embedded systems - Generally 8,16 Bit Controllers used with an minimal operating systems and hardware layout designed for the specific purpose. Formatter will need to create these components, incorporating the applicable criteria that follow.

II. PROPOSED WORK

Analog inputs are given to IC1, a 8-bit analog-to digital converter from National Semiconductors .It has 8 analog inputs for interface the analog sensor like temperature, humidity, pressure etc. the successive approximation A/D converter, transforms the analog output of the multiplexer to an 8-bit digital word. The output of the multiplexer goes to one of two comparator inputs. The other input is derived from a 256R resistor ladder, which is tapped by a MOSFET transistor switch tree. The converter control logic controls the switch tree, funneling a particular tap voltage to the comparator. Based on the result of this comparison, the control logic and the successive approximation register (SAR) will decide whether the next tap to be selected should be higher or lower than the present tap on the resistor ladder. This algorithm is executed 8 times per conversion, once every 8-clock period,

yielding a total conversion. When the conversion cycle is complete the resulting data is loaded into the TRI-STATE... output latch. The data in the output latch can then be read by the host system any time before the end of the next conversion.

Circuit Diagram



III. TRANSFORMER

Transformers convert AC electricity from one voltage to another with a little loss of power. Step-up transformers increase voltage, step-down transformers reduce voltage. Most power supplies use a step-down transformer to reduce the dangerously high voltage to a safer low voltage.

IV. MICROCONTROLLER

The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory. The device is manufactured using Atmel's high-density non volatile memory technology and is compatible with the industry standard 80C51 instruction set and pin out. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional non volatile memory programmer. By combining a versatile 8-bit CPU with in-system programmable Flash on a monolithic chip, the Atmel AT89S52 is a powerful microcontroller which provides a highly-flexible and cost-effective solution to many embedded control applications.

V. SOLAR POWER:

Expose the cell to light, and the energy from each photon (light particle) hitting the silicon, will liberate an electron and a corresponding hole.

If this happens within range of the electric field's influence, the electrons will be sent to the N side and the holes to the P one, resulting in yet further disruption of electrical neutrality This flow of electrons is a current; the electrical field in the cell causes a voltage and the product of these two is power.



VI. DIODE 1N4007:

Diodes are used to convert AC into DC these are used as half wave rectifier or full wave rectifier. Three points must be kept in mind while using any type of diode.

1. Maximum forward current capacity
2. Maximum reverse voltage capacity
3. Maximum forward voltage capacity



Diode of same capacities can be used in place of one another. Besides this diode of more capacity can be used in place of diode of low capacity but diode of low capacity cannot be used in place of diode of high capacity. For example, in place The diode BY125 made by company BEL is equivalent of diode from IN4001 to IN4003. BY 126 is equivalent to diodes IN4004 to 4006 and BY 127 is equivalent to diode IN4007. Diodes of number IN4001, IN4002, IN4003, IN4004, IN4005, IN4006 and IN4007 have maximum reverse bias voltage capacity of 50V and maximum forward current capacity of 1 Amp.

VII. CONCLUSION

The use of drip irrigation allows changing the cropping patterns that encourage land cultivation. A lot of farmers and experts and administrations shows their interest in drip irrigation technologies using considerable small amount of water that is very important in region with scarce fresh water resources. Drip irrigation is profitable irrigation practice since it provides opportunity to get fresh vegetables with small amount of applied work and work load. Drip irrigation is very adaptive to the soil conditions and local sources of fresh water. System of drip irrigation can be successfully located and used at small holding so at farms of different type of ownership. Using drip irrigation, more productive appeared to be tomato sorts that are grown in Volgograd region. It is more conservative in water use and increase water availability for households. Initial investment to install drip irrigation system is the bottleneck. We have done drip irrigation system successfully in soil cultivation.

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