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Microcontroller based automatic water level controller- A Review

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Abstract: The water crises is increasing globally. Hence it is of utmost importance to preserve water on earth. In many domestic, commercial places lot of water is being wasted daily due to overflow of water tanks. An automatic water level controller is beneficial in preventing overflow of water tank. As water level rises or fall below maximum or minimum values different sensors installed inside water tank send signals. These signals are used to turn on or turn off the motor pump.

Keywords: Automatic water level indicator, sensors, Controller, water.

I. INTRODUCTION

Water is among one of the basic survival need of day to day life. Rapid industrialization and growing population created water scarcity problem worldwide. So saving of water from getting wasted is primary concern. We used water tanks to store water to meet up our daily needs. Most commonly overhead water tank is used for domestic and commercial water storage. The main problem associated with water tank is over flow of water from the water tank. To prevent overflow one should keep monitoring the tank to switch off pump when water tank is full otherwise water will start flowing out and is being wasted due to improper management. Therefore there is a need of automatic shut down mechanism by which pump will automatically shut down on reaching maximum level. With the help of sensor, micro controllers, water level of tank can be effectively monitored and controlled to achieve automatic water level controller. The sensor is used to monitor the water level of water tank. The microcontroller receives the water level information from the sensors. Depending upon the signals receive from sensors microcontroller produce a signal to turn off/ turn on the motor.

II. LITERATURE SURVEY

In [7] The key aim of this paper is to reduce water wastage in agriculture field by using automatic water level controller with wireless technology. The paper discussed four stage water level controller. In this paper author also compared Bluetooth based and wired water level controller. The methodology used in this paper based on circuit design using ultrasonic sensor, arduino uno microcontroller, pump, relay and Bluetooth module.

In [8] paper discussed the issue of excessive water wastage in domestic and commercial purpose. The paper discussed development of water level controller using sensor, digital logic processing unit or integrated circuit. 7 segment displays, JK flip flop sequential circuit, motor driver which is controlled by array.

In [9] author focused on designing of water level management system using with automatic control. In this paper sensors are installed at different level at tank and integrated circuits uses these sensors to monitor water level of tank.

In[10] automatic water level indicator is developed using ultrasonic sensors to determine the water level of tank. A water level indicator, water level sensors, water pump control system, micro controller all included in one system. Micro controller receives signals from sensors and and micro controller activates pulses to control tank level.

In[11] author proposed basic water level monitoring system with multiple stages. It indicates the status of water level in a tank, when water level is rise or fall from the required level.This method helps us to better understand how Bluetooth module works.

III. METHODOLOGY

The modeling and analysis of automatic water level controller is divided in to two circuits 1) Transmitter circuit 2) Receiver circuit. In transmitter circuit two sensors, one NRF module, one micro controller is used. Arduino uno is used

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for interfacing with the devices connected to controller. Two sensors are placed in upper and lower side of the water tank to monitor upper level and lower level of water.NRF module connected to arduino transmit the signals provided by sensors to receivers side. In receiver circuit one NRF module, one relay module, LCD display, buzzer connected to arduino controller. The on / off operation of motor is controlled by relay module which is connected in series with motor. The NRF module on receiver circuit receives signal from transmitter circuit and forward receive signal to arduino controller. When water level reaches to sensors, sensors send signals to buzzer and buzzer will turn on.

1) Transmitter circuit:

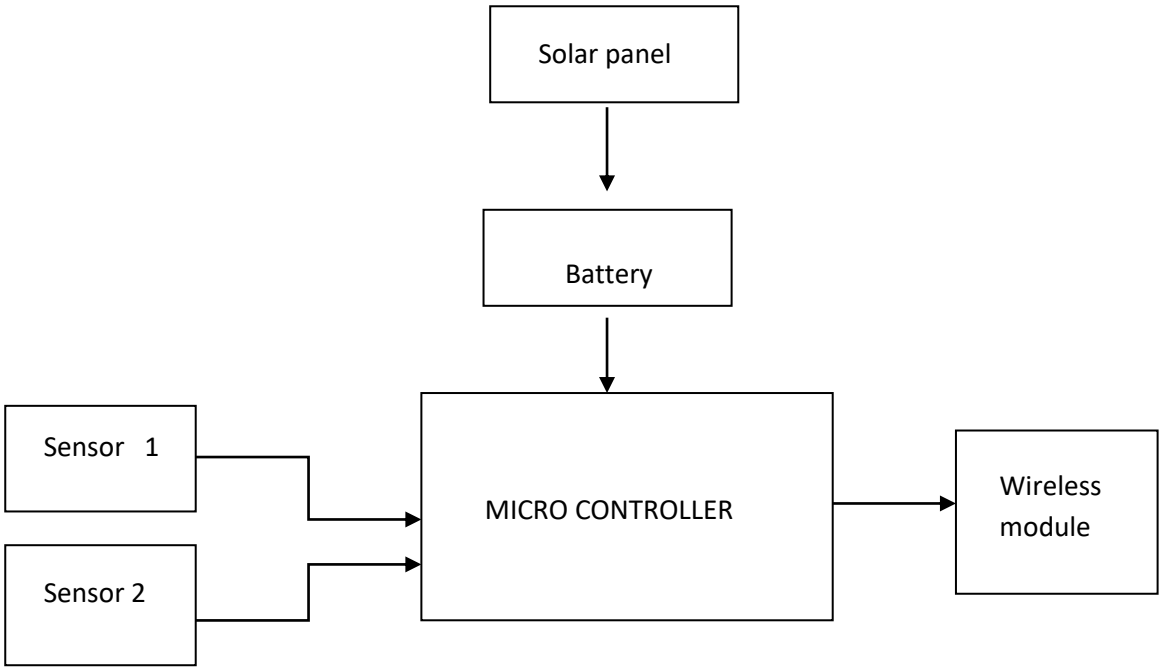

Fig.1 Block diagram of proposed transmitter circuit

1) Receiver circuit

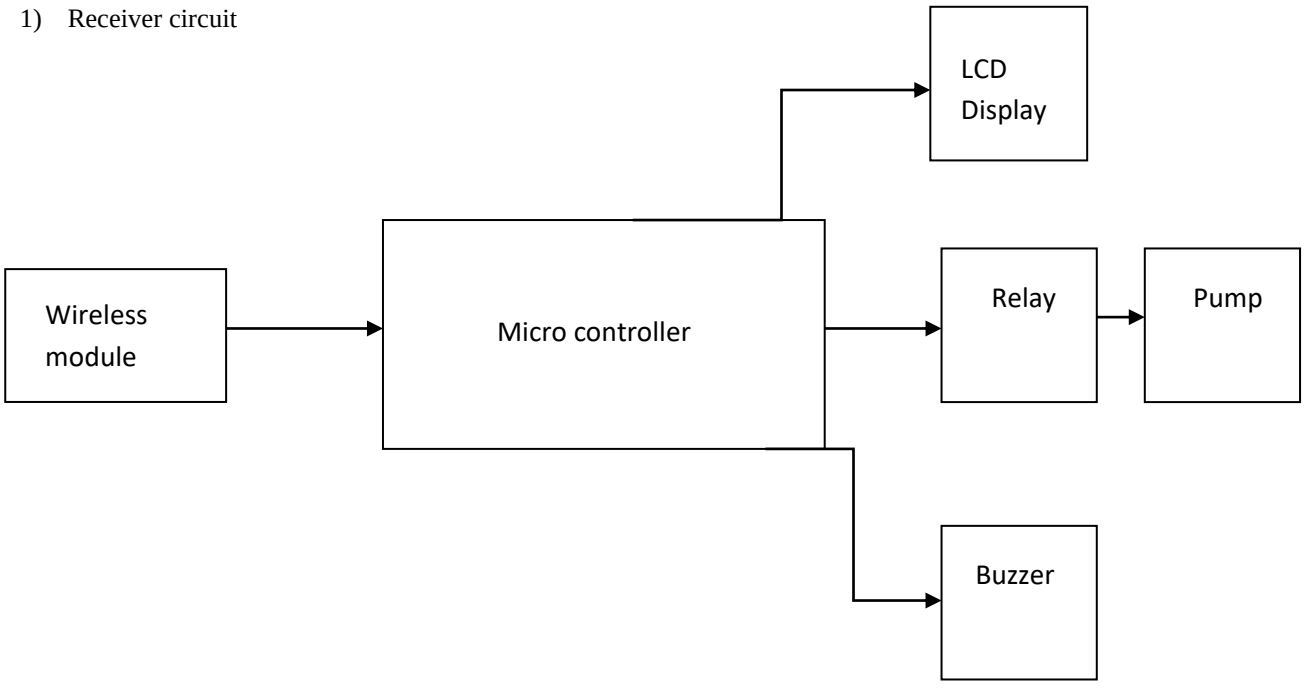

Fig.2 Block diagram of proposed transmitter circuit

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IV.CONCLUSION

The automatic water level controller is benefited in automatic monitoring and controlling water level of water tank. Due to the sensors and LCD displays user can be aware from actual operations of water level indicator. It is low cost easy to use system and helpful in tank management. It is smart system and prevent water from being wasted.

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