ARDUINO BASED WATER FLOW CONTROL SYSTEM WITH IoT

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Abstract:

This system is fully automated from the source of the water to usage of each customer. The Arduino (ATmega328) is the main control circuit of the entire system which receives and transmits the signal to the GSM and IoT to perform the required operation of the customer. The user sends the signal to the GSM to open the valve, here the GSM receives the signal from the mobile phone and transmits that signal to the Arduino. The Arduino collects the signal and controls the relay to open the valve and water flows.

Keywords: Flow sensor, GSM, Arduino, LCD, IoT

I INTRODUCTION

In this research an automatic water distribution system using various integrated components which includes GSM, IoT, Relay, Microcontroller, Flow sensor and Power supply. The Arduino is encrypted with the coding that is the timing allotted for each houses. The quantity of the water flowing after the valve is open for each house is calculated using the flow sensor. Flow sensor is placed in the pipe to sense the force of the water to allow only the permitted amount of water for each houses within the set period of time. Once the flow rate and timing exceeds the small value allotted for each houses the valve is automatically closed. The customer can get the water at any desired time within the period of one week before the next loot. The data's from the Arduino was updated to the cloud using IoT module. IoT module collects all the data's about the customer quantity of water fetched, timing at when the water is fetched and every detail of each houses and updated to the cloud for the monitoring of the rule sectors.
II BLOCK DIAGRAM

![Block Diagram](image)

**ARDUINO**

The high-performance Atmel pico Power 8-bit AVR RISC-based microcontroller combines:

- ISP-32KB, flash memory with read-while-write capabilities,
- EEPROM -1024KB,
- SRAM -2KB,
- 23 -general purpose I/O lines,
- 32 -general purpose working registers,
- 3-flexible timer/counters with compare modes,
- internal and external interrupts,
- USART -serial programmable,
- 2-wire serial interface a byte-oriented,
- SPI -serial port,
- 6-channel 10-bit A/D converter.
The device operates between 1.8-5.5 volts. By executing controlling instructions in a single clock cycle, the device achieves through approaching 1 MIPS per MHz, balancing power use and processing speed.

![Arduino](image)

**POWER SUPPLY**

The power is a source of all device, here this supply contain step down transformer bridge wave rectifier, Voltage Regulator, capacitor. 12-0-12 transformer is used here its output is AC a device should work DC. So it converts AC into DC by means of bridge wave rectifier and its output has been regulator by voltage regulator. (IC 7805 and 7812) these are two regulator IC’s should use for this processor. The input to the power supply is 230V AC, 50 Hz. The 7805 IC Regulator will convert the AC signal to 5V DC signal. Power is generated and sends to the distribution transformer.

![Power Supply Block Diagram](image)

**FLOW SENSOR**

The connections required for this flow rate sensor with respect to the Arduino is very least. Three Wires,

- 5V Vcc- Red wire,
- GND - Black wire.
- Signal/pulse – yellow.
Water supply is provided until it reaches the maximum and when the maximum is attained, the flow sensor stops supplying water even though the tap is open. Flow sensor calculates the usage of water and displays the amount in the LCD display.

INTERNET of THINGS (IoT)

IoT involves extending Internet connectivity beyond standard devices, such as desktops, laptops, smartphones, and tablets, to any range of usually dumb or non-internet-enabled physical devices and everyday objects. Embedded with technology, these devices can communicate and interact over
the Internet, and they can be remotely monitored and controlled.

III CONCLUSION

In this modern area of automation and advanced computing using IoT with artificial intelligence offers promising solutions towards the automation of industries and the daily routine usages of people. This paper reviews about the automatic distribution of water to the consumers with IoT and GSM for monitoring and remotely accessing the water supply.

IV REFERENCE


