

# WATER LEVEL INDICATOR USING SMART BLUETOOTH

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## Abstract

Water scarcity is one of the major problems facing major cities of the world and wastage during transmission has been identified as a major culprit; this is one of the motivations for this research, to deploy computing techniques in creating a barrier to wastage in order to not only provide more financial gains and energy saving, but also help the environment and water cycle which in turn ensures that we save water for our future. We presented our research in embedding a control system into an automatic water pump controller through the use of different technologies in its design, development, and

## 1.Introduction

An Water Level Indicator might be characterized as a framework by which we can get the data of any water store. Water level pointer framework are very valuable to diminish the wastage of water from any repository, while filling such store. A basic water level marker can be made utilizing the EAB. For this you may outline a water sensor by utilizing any The wire with Black shading is associated with Vcc of the EAB. The wires with hues Blue, Red, Green and Yellow are changed in accordance with check Level1, Level2, Level3 and Level4 separately. Each of these four wires are associated with the speaker. This enhancer will intensify the flag and will give the individual rationale to the microcontroller. At that point the program rationale inside the microcontroller will give the individual A basic water level pointer can be made utilizing the EAB. For this you may outline a water sensor by utilizing any directing wires. In this anticipate we have composed the sensor to gauge water up to four levels. Take 5 fragments of protected directing wires. Detached the finishes of these wires, roughly 1cm. Alter the length of the wire fragments as indicated by the water levels.

## 2.Literature Survey

implementation. The system used microcontroller to automate the process of water pumping in an over-head tank storage system and has the ability to detect the level of water in a tank, switch On/off the pump accordingly and display the status on an android mobile phone. In this anticipate we have planned the sensor to quantify water up to four levels by making use of serial connector Rs 232 and Bluetooth uart attempting to work on new project.

**Keywords:** microcontroller, conductivity, water pump, assembly language, computer simulation, waste

In the accompanying graph it has been shown with 5 unique hues.. This research has successfully provided an improvement on existing water level controllers by its use of calibrated circuit to indicate the water level and use of DC instead of AC power thereby eliminating risk of electrocution In this anticipate we have planned the sensor to quantify water up to four levels. This document is meant to provide a short introduction to Smart technology and to Bluetooth Smart products. The purpose of this document is not to give a deep technology or product overview, Bluetooth but should act more as an introduction to both of them and give the necessary information to continue studying. The document is organized into two sections. Firstly a quick introduction to Smart technology is given.

**The Components required for building the water level indicator application are:**

Embedded Application Board, LED board, Water Sensor (Conducting Wires),Jumpers, Water Beaker, Transistor (BC548),Resistor(1K and 470 Ohm),Breadboard or Vero board. (1 nos), Power Supply (5V DC),Water, Salt (optional),Bluetooth uart, baffo usb to RS 232.

Khaled Reza et al., (2010) introduced the notion of water level monitoring and management within the context of electrical conductivity of the water. The authors motivated by the technological affordances of mobile devices and believe that water level management approach would help in reducing the home power consumption and as well as water overflow; investigated the microcontroller based water level sensing and controlling in a wired and wireless environment. The research result was a flexible, economical and easy configurable system designed on a low cost PIC16F84A microcontroller and finally, proposed a web and cellular based monitoring service protocol to determine and senses water level globally.

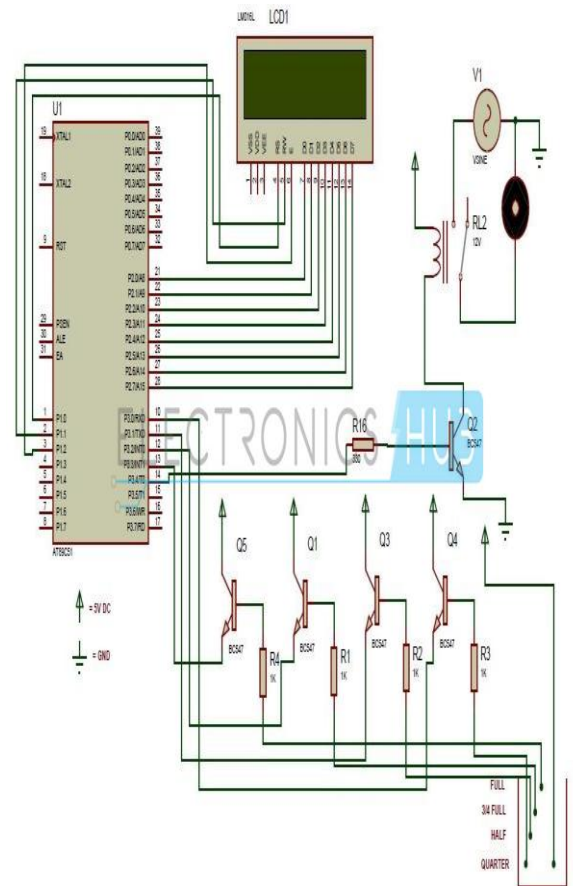
A controller based automatic plant irrigation system was designed by Gunturi (2013). The main aim of the research was to provide automatic irrigation to the plants with a system that operates with less manpower. This in turn helps to save funds and water. The researcher programmed the 8051 microcontroller as giving the interrupt signal to the sprinkler, and this was used to control the entire system. Temperature sensor and humidity sensor were connected to internal ports of the microcontroller via a comparator, and whenever there is a change in temperature and humidity of the surroundings these

sensors sense the change in temperature and humidity and gives an interrupt signal to the micro-controller and thus the sprinkler is activated. It was the position of a paper by Hodgson and Walter () that based on real world systems as the benchmark, using optimization software in place of traditional design techniques results in significant cost savings for both first cost and LCC. The researchers discussed the potentials of modern optimization technology to the pumping industry and presented examples of cost-saving design experiences.

Rojiha (2013) analysed this existing oil-pumping system and discovered that they have a high power-consuming process and needs more manual power. He then proposed a sensor network based intelligent control system for power economy and efficient oil well health monitoring. Several basic sensors were used for oil well data sensing, and the sensed data was given to the controller which processed the oil wells data and it was given to the oil pump control unit which controls the process accordingly. If any abnormality is detected then the maintenance manager is notified through an sms via the GSM. This system allowed oil wells to be monitored and controlled from remote places. n easy way to comply with the conference paper formatting requirements is to use this document as a template and simply.

**Algorithm for Water Level Controller Circuit:**

- In the first place arrange the controller sticks P3.0, P3.1, P3.2 and P3.3 as inputs and P3.4 as yield. Now instate the LCD.
- Continuously check the water level info sticks P3.0, P3.1, P3.2, and P3.3
- If every one of the sticks are low then show tank is vacant on LCD and make P3.4 stick high to run the engine consequently.
- High heartbeat on the stick P3.0 demonstrates quarter level, show the same thing on LCD.
- If P3.1 is high then water level is half.
- High heartbeat on P3.2 demonstrates 3/4th loaded with the tank.
- If P3.3 is high then tank is full, now make P3.4 stick is low to kill the engine naturally..



**EXPERIMENTAL RESULT OF WATER LEVEL CONTROLLER UNIT, MOTOR AND VISIBLE LEVEL DESCRIPTION**

Reserve Tank	Water Tank	LED 1	LED 2	LED 3	LED 4	Motor	Transistor	Reserve Tank
0	000	OF	OF	OF	OF	OF	Em	Empty
	0	F	F	F	F	F	pty	
1	000	O	OF	OF	OF	ON	Em	Water

When HC-05 are out of factory, one part of parameters are set for activating the device. The work mode is not set, since user can set the mode of HC-05 as they want.

The principle capacity of Bluetooth serial module is supplanting the serial port line, for example,

1. There are two MCUs need to speak with each other. One interfaces with Bluetooth ace gadget while the other one associates with slave gadget. Their association can be fabricated once the match is made. This Bluetooth association is comparably gotten a kick out of the chance to a serial port line association including RXD, TXD flags. What's more, they can utilize the Bluetooth serial module to speak with each other.

2. At the point when MCU has Bluetooth treatment module, it can speak with Bluetooth connector of PCs and advanced cells. At that point there is a virtual transmittable serial port line in the middle of MCU and PC or PDA.

3. The Bluetooth gadgets in the market generally are treatment gadgets, for example, Bluetooth printer, Bluetooth GPS. Along these lines, we can utilize ace module to make combine and speak with them. Bluetooth Serial module's operation

**Fig:Bluetooth uart**

**Manual for the first use of HC-05**

This will introduce how to test and use the HC-05 if it's the first time for user to operate it.

(1) PINs description

PIN1: UART\_TXD, Bluetooth serial signal sending PIN, can connect with MCU's RXD PIN

	0	N	F	F	F		pty	Exist
1	100	O	ON	OF	OF	NO	1/4	Water
	0	N		F	F	OP		Exist
1	110	O	ON	ON	OF	NO	2/4	Water
	0	N			F	OP		Exist
1	111	O	ON	ON	ON	NO	3/4	Water
	0	N				OP		Exist
1	111	O	ON	ON	ON	ON	Full	Water
	1	N						Exist

**3.Detail Design and implementation**

needn't bother with drive, and can speak with the other Bluetooth gadget who has the serial. But communication between two Bluetooth modules requires at

least two conditions:

- (1) The communication must be between master and slave.
- (2) The password must be correct.

However, the two conditions are not sufficient conditions. There are also some other conditions

basing on different device model. Detailed information is provided in the following chapters.



PIN2 :UART\_RXD, Bluetooth serial signal receiving PIN, can connect with the MCU's TXD PIN, there is no pull-up resistor in this PIN. But It needs to be added an eternal pull-up resistor.

PIN11 : RESET, the reset PIN of module, inputting low level can reset the module, when the module is in using, this PIN can connect to air.

PIN12 : VCC, voltage supply for logic, the standard voltage is 3.3V, and can work at 3.0-4.2V PIN13 GND

PIN31 :LED1, indicator of work mode. Has 3 modes: When the module is supplied power and PIN34 is input high level, PIN31 output 1Hz square wave to make the LED flicker slowly. It indicates that the module is at the AT mode, and the baud rate is 38400. When the module is supplied power and PIN34 is input low level, PIN31 output 2Hz square wave to make the LED flicker quickly. It indicates the module is at the pairable mode. If PIN34 is input high level, then the module will enter to AT mode, but the output of PIN31 is still 2Hz square wave. After the pairing, PIN31 output 2Hz square wave.

The Keil Microcontroller Development Kit (MDK) helps you to create embedded applications for ARM Cortex-M processor-based devices. MDK is a powerful, yet easy to learn **MDK Tools**

The MDK Tools include all the components that you need to create, build, and debug an embedded application for ARM based microcontroller devices. The MDK-Core is based on the genuine Keil  $\mu$ Vision IDE/Debugger with leading support for Cortex-M processor-based microcontroller devices including the new ARMv8-M architecture. DS-MDK contains the Eclipse-based DS-5 IDE/Debugger and offers multi-processor support for devices based on 32-bit Cortex-A processors or hybrid systems with 32-bit Cortex-A and

### Asynchronous Serial (RS-232)

- Commonly used for one-to-one communication.
- There are many variants, the simplest uses just two lines, TX (transmit) and RX (receive).
- Transmission process (9600 baud, 1 bit=1/9600=0.104 mS) – Transmit idles high (when no communication). It stays high for 1 bit (0.104S) – It goes low for 1 bit (0.104 mS) – It sends out data, LSB first (7 or 8 bits) – There may be a parity bit (even or odd –error detection) – There may be a stop bit

### limitations :

The availability of water level controller for low cost in market. And the process goes complex for people with no knowledge.

Note: if PIN34 keep high level, all the commands in the AT command set can be in application. Otherwise, if just excite PIN34 with high level but not keep, only some command can be used.

PIN32 : Output terminal. Before paired, it output low level. Once the pair is finished, it output high level.

PIN34 : Mode switch input. If it is input low level, the module is at paired or communication mode. If it's input high level, the module will enter to AT mode. Even though the module is at communication, the module can enter to the AT mode if PIN34 is input high level. Then it will go back to the communication mode if PIN34 is input low level again.

and use development system. MDK consists of the MDK Core plus device-specific Software Packs, which can be downloaded and installed based on the requirements of your application.

Cortex-M processors. MDK includes two ARM C/C++ Compilers with assembler, linker, and highly optimized runtime libraries tailored for optimum code size and performance:

- ARM Compiler Version 5 is the reference C/C++ compiler available with a TÜV certified Qualification Kit and Long-Term Support and Maintenance.
- ARM Compiler Version 6 is based on the innovative LLVM technology and supports the latest C language standards including C++11 and C++14.

fig:serial port connector



### Advantage:

Gaining the knowledge of latest technology, user friendly.

### Conclusion:

The main role of the project is controlling the water tank/sump via android mobile by connecting to smart Bluetooth when the tank get filled. The explanation follows like this by the help of water level sensor we came to know which level the water will be the water level indicator will consist a controller in that one smart Bluetooth will be fitted. the all android mobile are having smart Bluetooth build in, It within some building frequency we connect to both the

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devices and from that we get a message in which level the water will be, by knowing that we can switch off the motor, system and board connected via baffle serial connector and Bluetooth device pair with other and following operation happens. App developed for mobile named as Bluetooth terminal the entire operation will be handled from the app developed. idea which I have which has few disadvantage's to over come that I enhance this project in future.

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