UV BOTTLE WITH TDS INDICATOR

Harshwardhan D. Hiwale, Abhinav A. Jadhav, Aditi D. Kurkute Author, Department of Electronics and Telecommunication Engineering, Sanjivani College of Engineering, Kopargaon, (Affiliated to Savitribai Phule Pune University, Pune)
Sachin V. Chaudhari Associate Professor, Department of Electronics and Telecommunication Engineering, Sanjivani College of Engineering, Kopargaon, (Affiliated to Savitribai Phule Pune University, Pune)

Abstract
A UV water purification bottle is a great type of water purification device that uses UV light to kill various bacteria, germs, viruses**,** and various microorganisms in water. UV light attacks the genetic core or DNA of microorganisms that cause a variety of water-borne diseases such as influenza, cholera, hepatitis, and typhoid fever. This destroys fertility and reproductive capacity. The UV bottle system described in this paper purifies the water and displays the temperature , TDS level of the water.

Keywords: UV,LED, TDS

Introduction
Ultraviolet water purifiers are a great type of water purifier that utilizes ultraviolet light to kill numerous bacteria, germs, viruses**,** and various microorganisms in water. UV light attacks the genetic center or DNA of microorganisms that can cause various water-borne diseases such as influenza, cholera, hepatitis and typhoid fever**.** This destroys reproduction and breeding potential. UV light can easily kill disease-causing microorganisms. Dissolved solids cannot be disposed off and various impurities.

How it Work
UV-C light has long been recognized as a powerful tool for cleaning water and surfaces. Most pathogens, such as bacteria, are highly sensitive to UV-C light, which can irreparably damage DNA and adversely affect RNA as well. Ultimately, 99.9% of all microbes in water are killed or neutralized, making them completely harmless. It is important to note that UV-C light does not physically destroy the bodies of bacteria, cysts, and viruses. They stay in your water even after being killed. UV bottles have many uses as UV-C light can destroy the DNA of bacteria, viruses, protozoa and other microorganisms and kill them by purifying water for drinking purposes. It also sterilizes both the water in the bottle and the inside of the bottle. The bottle is therefore also useful for travel, trekking and other purposes.

Benefits
• No handling of potentially harmful chemicals (chlorine)
• Low power consumption Eco-friendly (no product disinfection)
• Can purify water anywhere in the world.
• Easy to carry
• No special considerations

Objective
• Disinfect bacteria from water
• Develop effective UV bottles as water treatment tools.
• Near-instantaneous disinfection
• Penetrates and eliminates harmful pathogens by attacking their genetic core

The UV industry is expected to grow and market analysts predict that new features will be added to the bottle each year to compete in the market. Some of the dominant sensors are areas that need attention.

UV LED

An ultraviolet light emitting diode (LED) is a semiconductor device that produces light when current flows from the positive side (anode) to the negative side (cathode) of a circuit. UV LED semiconductors (UV-LEDs) emit narrow bandwidth light at junctions where doped semiconductor holes combine with negative electrons when a voltage is applied.

TDS Sensor

Dissolved solids refers to minerals, salts, metals, cations, or anions dissolved. Total Dissolved Solids (TDS) includes inorganic salts, primarily calcium, magnesium, potassium,sodium, bicarbonates, chlorides, sulfates, and small amounts of organic salts. Substance A substance dissolved in water.

Fig.no.1 TDS Sensor

Specifications

1. Input Voltage: 3.3 ~ 5.5V
2. Output Voltage: 0 ~ 2.3V
3. Working Current: 3 ~ 6mA
4. TDS Measurement Range: 0 ~ 1000ppm
5. TDS Measurement Accuracy: ± 10% FS (25 ℃)
6. TDS probe with Number of Needle: 2

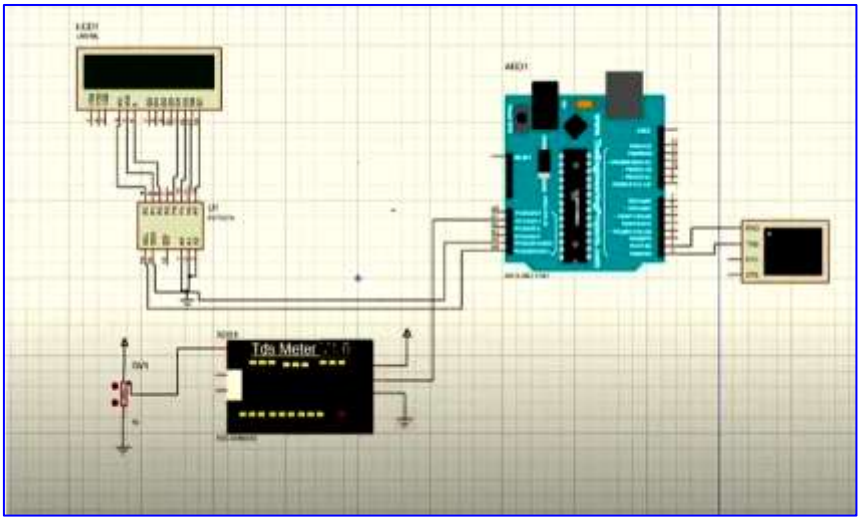

Fig.no.2 Simulation using Proteus Software for TDS Sensor

Importance of TDS in Drinking Water

TDS in drinking water comes from sources such as natural springs, sewage, municipal wastewater, industrial wastewater, chemicals in water treatment processes, and fertilizers used in horticulture and plumbing. Water is a universal solvent and can easily absorb impurities and quickly absorb and dis-

solve these particles. Elevated TDS concentrations in drinking water do not pose a health risk, but give the water a bitter, salty, or brackish taste. Calcium and magnesium,two minerals commonly found in TDS, can also contribute to water hardness, scale build-up, and staining.

What are Different TDS levels

The TDS value indicates whether the water is fit for consumption, needs to be filtered, or is heavily contaminated. Parts per million (PPM) is used to measure the level of TDS in water is the unit to be used.

TDS Level Chart for Drinking Water

TDS in Water (measured in PPM)	Suitability for Drinking Water
Between 50-150	Excellent for drinking
150-250	Good
250-300	Fair
300-500	Poor, not good for drinking
Above 1200	Unacceptable

Why Should You Measure TDS Levels

Of course, mineral water is tasteless and odorless. Altering the TDS level changes the texture and taste and makes the water unfit for consumption. Some of the reasons why you should measure the TDS of drinking water are:

*Health Concerns (water with high TDS does not have much impact on health, but high lead and copper content can make you sick).

*Cooking (TDS levels above 1000 PPM may change the taste of food).

CONCLUSION

As the growth forecast shows, the UV bottle industry is on a growth trajectory. Applications in the UV bottle industry are increasing as more research is done. UV bottles will change the way people buy products, as demonstrated by the model proposed by Amazon. This area is definitely a game changer with many prospects to watch. Maintaining his TDS level in bottled water is essential. If you can drink water from a UV bottle, you don't have to worry about filtration or contamination. The ideal TDS level maintained in each bottle or glass of mineral water ensures that the body receives essential dissolved organic and inorganic salts.

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