

Sanitizer spraying and temperature checking robot using smart phone

PROF.P.J.Chorage¹, Mrs.M.P.Gujar², sana desai³, misba shaikh⁴,juveriya nadaf⁵

¹Student-Bachelor Of Engineering,Electronics & Telecommunication Engineering Department, DR. Daulatrao Aher College Of Engineering Karad , Maharashtra , India

²Student-Bachelor Of Engineering,Electronics & Telecommunication Engineering Department, DR. Daulatrao Aher College Of Engineering Karad , Maharashtra , India

³Student-Bachelor Of Engineering,Electronics & Telecommunication Engineering Department, DR. Daulatrao Aher College Of Engineering Karad , Maharashtra , India

³Assistant Professor, Electronics &Telecommunication Engineering Department, DR. Daulatrao Aher College Of Engineering, Karad, Maharashtra, India

Abstract - The design depicted shows the preventive measure that can be taken during the COVID-19 pandemic in the whole world. Sanitizers have become the most significant commodities right now. By the new rules and regulations given by WHO, vigorous sanitization is needed to survive. The design gave the solution for the problem stated. The design introduces an automatic hand sanitizer and temperature sensing system, to keep the hand sanitized whenever a person wants to do it, without a contact with the sanitizing machine. The temperature sensor on touching gives the body temperature of the person.

Key Words: Automatic hand sanitizer, Arduino, ultrasonic sensor, temperature sensor, Relay, L293D, Motor, LCD.

1.INTRODUCTION

Since December 2019 the world is under tremendous tension, the numbers are increasing day by day, and till date no vaccine has been fully proved against the pandemic agent. Yes it is COVID-19, it was unknown to the race before it broke out in Wuhan, China. Being from a large family, a continuous mutation is occurring, forbidding the researchers, microbiologists, and pharmaceuticals to draw the line of conclusion on the vaccine. Affecting the most prestigious countries in a chain; China, Italy, Spain, USA, India, Russia,

The design encompasses few parameters to be calculated and taken as priority, such as –

[1] the virus has proved its strength and subservient a technologically enhanced race.

The race of homosapiens. The policies taken worldwide has lessened its affect to some extent but could not eradicate it. Lockdown has economically weakened many nations, and testing of different medicines has also not proven to be satisfactory. The question now prevail is Life vs. Livelihood. The weaker section of

the society is facing the hardship due to vigorous lockdown across the nations. Seeing the picture of India, one of the most promising countries in technology, the laborers are rushing for a little piece of grain. The starving faces reveal the pain. Industries are in losses, workers are losing jobs, economical growth of the nation has taken a back seat, but it should be realized that a regular monitoring of body temperature and periodical hand sanitization can prevent the spread of the pandemic to the masses. Keeping in mind, the situation worldwide, sanitization commodities should be installed in each and every corner of the sphere, be it an industry, a corporate office, an educational institute or a shopping mall. In this research work, an automatic hand sanitizer with temperature sensing design prototype has been made

- Installation of temperature sensor. □
Installation of LCD to display the sensed temperature.
- Installation of ultrasonic and Spo2 sensors.
- Installation of spray pumps/submersible pumps
- Synchronizing all the sensors with Arduino microcontroller.

The circuit connection should be done minutely to avoid any kind of fault while working of the device.

2. BLOCK DIAGRAM

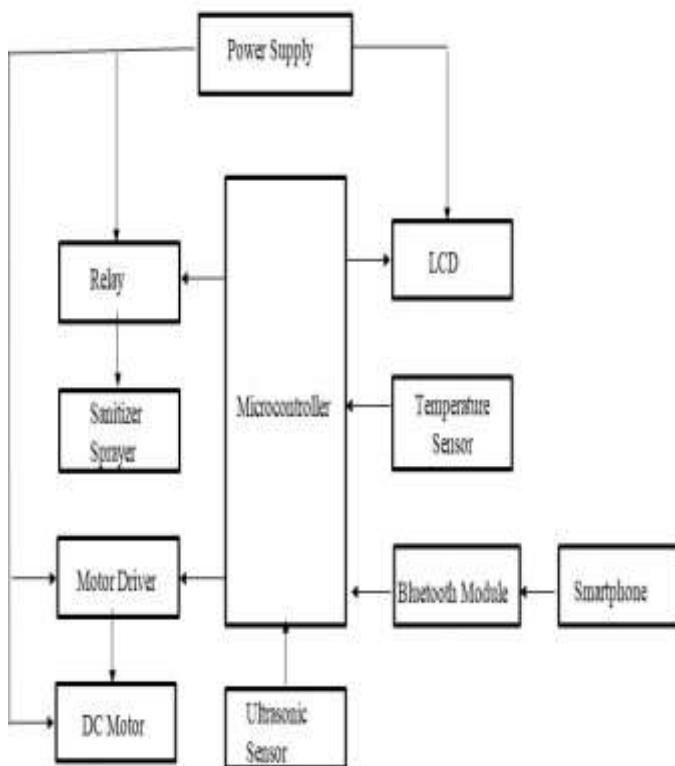


Fig 1 Block Diagram

2.1 ARDUINO

Arduino Uno is a microcontroller board based on 8-bit ATmega328P microcontroller. Along with ATmega328P, it consists other components such as crystal oscillator, serial communication, voltage regulator, etc. to support the microcontroller. Arduino Uno has 14 digital input/output pins (out of which 6 can be used as PWM outputs), 6 analog input

pins, a USB connection, A Power barrel jack, an ICSP header and a reset button.

2.2 Temperature Sensor LM35 Regulator Features:

Minimum and Maximum Input Voltage is 35V and -2V respectively. Typically 5V.

- Can measure temperature ranging from -55°C to 150°C
- Output voltage is directly proportional (Linear) to temperature (i.e.) there will be a rise of 10mV (0.01V) for every 1°C rise in temperature.
- $\pm 0.5^\circ\text{C}$ Accuracy
- Drain current is less than 60uA
- Low cost temperature sensor
- Small and hence suitable for remote applications
- Available in TO-92, TO-220, TO-CAN and SOIC package

2.3 ULTRASONIC SENSOR

The ultrasonic sensor (or transducer) works on the same principles as a radar system. An ultrasonic sensor can convert electrical energy into acoustic waves and vice versa. The acoustic wave signal is an ultrasonic wave traveling at a frequency above 18 kHz. The famous HC SR04 ultrasonic sensor generates ultrasonic waves at 40 kHz frequency typically, a microcontroller is used for communication with an ultrasonic sensor. To begin measuring the distance, the microcontroller sends a trigger signal to the ultrasonic sensor. The duty cycle of this trigger signal is 10 μ s for the HC-SR04 ultrasonic sensor. When triggered, the ultrasonic sensor generates eight acoustic (ultrasonic) wave bursts and initiates a time counter. As soon as the reflected (echo) signal is received, the timer stops. The output of the ultrasonic sensor is a high pulse with the same duration as the time difference between transmitted ultrasonic bursts and the received echo signal.

2.4 RELAY

Features of 5-Pin 5V Relay

- Trigger Voltage (Voltage across coil) : 5V DC
- Trigger Current (Nominal current) : 70mA
- Maximum AC load current: 10A @ 250/125V AC
- Maximum DC load current: 10A @ 30/28V DC
- Compact 5-pin configuration with plastic moulding
- Operating time: 10msec Release time: 5msec
- Maximum switching: 300 operating/minute (mechanically)

2.5 L293D Motor Drive

The L293D is a popular 16-Pin **Motor Driver IC**. As the name suggests it is mainly used to drive motors. A single **L293D IC** is capable of running two DC motors at the same time; also the direction of these two motors can be controlled independently. So if you have motors which has operating voltage less than 36V and operating current less than 600mA, which are to be controlled by digital circuits like Op- Amp, 555 timers, digital gates or even Micron rollers like Arduino, PIC, ARM etc.. this IC will be the right choice for you

3. OTHER SPECIFICATION

A. ADVANTAGES

- Easy to use
- Easy to install
- User friendly
- Low cost model

B. LIMITATIONS

- This system is totally dependent on Sensor network

C. APPLICATIONS

- It can be manufactured in any household at a very low cost
- It can be installed anywhere be it in offices, educational institutes
- public transport
- regular shops etc.
- Useful in hospitals
- Useful in school and colleges
- Useful to provide protection from Covid-19

- It is very useful at public places

4. CONCLUSION AND FUTURE SCOPE

As stated earlier the device circuit is made in software and simulated accordingly. While prototyping the hardware some power distribution to each module can be a hindrance, to overcome the problem, relays must be installed to drive the spray pumps/submersible pumps, so that the sensors, lcd and other minute modules get enough power supply from the inbuilt 5 V and 3.3 V ports of the Arduino microcontroller. It can be manufactured in any household at a very low cost and can be installed anywhere be it in offices, educational institutes, public transport, regular shops etc. To draw a concluding line to the project it can be said that in a war with an invisible enemy the device is a weapon for survival in this pandemic situation.

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