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# Temperature Access Point Using an AVR DA Microcontroller with Sanitizer 2020

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**ABSTRACT:** During the pandemic, people are being asked to have temperature checked at any local market or grocery store, which is usually done by another person. This can be a risky do to person to person interaction. In order to reduce this risk, we can use a Temperature Access Point, which automatically detects people and invites them to check their temperature, measuring it remotely, and then displaying it on a high-contrast (Organic Light Emitting Diode) OLED Display, without any human intervention.

The spread of the COVID virus has changed the way we interact as people. High contact areas such as pin pads, gas pumps and door handles pose a risk to the spread of the virus and create difficulty for store personnel to maintain. To solve this issue we can use a device that is able to sense and automatically sanitize the area between customers. The device we created applies a mist of cleaning solution that kills germs on contact and quickly vaporizes leaving a sanitized surface for the next customer.

**KEYWORDS:** Temperature, AVR , DA microcontroller, OLED display, Sanitizer.

## I. INTRODUCTION

Nowadays COVID-19 cases are increasing and everywhere people being ask to checking their temperature and sanitize the touched part at every shop, glossary, market, mall, etc...During this pandemic, the way of people interacting has change because the situation looks like normal but actually it is not normal.

During the pandemic, people are being asked to have temperature checked at any local market or grocery store, which is usually done by another person. This can be a risky do to person to person interaction. In order to reduce this risk, we can use a Temperature Access Point, which automatically detects people and invites them to check their temperature, measuring it remotely, and then displaying it on a high-contrast (Organic Light Emitting Diode) OLED Display, without any human intervention.

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### 1.1 Problem Definition

Due to COVID 19 situation, it is becoming important and compulsory to check temperature and sanitizing at every place. Nowadays every shop, glossary, market, etc. are being ask to check their temperature and sanitizing .The risk of getting COVID 19 are higher in crowded and inadequately ventilated space where infected people spend long period of time together in clos proximity. These environment are where the virus appear to spread by respiratory, droplets or aerosols more efficiency so taking precautions is even more important.

People are being asked to have temperature checked and sanitizing touched part at any local market or grocery store, which is usually done by another person. This can be a risky do to person to person interaction. In order to reduce this risk, we can use a Temperature Access Point, which automatically detects people and invites them to check their temperature, measuring it remotely, and then displaying it on a high-contrast (Organic Light Emitting Diode) OLED Display, without any human intervention.

## II. LITERATURE REVIEW

### 2.1 History

The COVID-19 coronavirus pandemic has led to mass scientific conference cancellations, travel restrictions, social distancing, and other unprecedented prevention measures.

A novel coronavirus outbreak was first documented in Wuhan, Hubei Province, China in December 2019. As of this writing, it has now been confirmed on six continents and in more than 100 countries. As the world's health systems funnel resources into learning about, treating, and preventing infections in humans, new information is released daily. In this two-part article series, we will first provide some history on coronaviruses to put this disease outbreak in perspective, and discuss global health security and planning for pandemic response. Secondly, we will offer guidance from the best trusted sources for prevention and planning in the workplace and at home.

Common signs of COVID-19 infection are similar to the common cold and include respiratory symptoms such as dry cough, fever, shortness of breath, and breathing difficulties. In more severe cases, infection can cause pneumonia, severe acute respiratory syndrome, kidney failure, and death.

The COVID-19 infection is spread from one person to others via droplets produced from the respiratory system of infected people, often during coughing or sneezing. According to current data, time from exposure to onset of symptoms is usually between two and 14 days, with an average of five days

It is needed to take precautions like temperature checking , sanitizing , social distancing etc....

## III. OVERVIEW

### 3.1 WORKING OF TEMPERATURE

This project describes the usage of the AVR DA microcontroller as the heart of the Temperature Auto-Scanning Door Access. The purpose is to detect a person using a PIR sensor and then measure its temperature using IR contactless thermo-scanner.

The ADC peripheral is used to read the PIR Click board, and trigger from sleep the CPU, only if the ADC value is Outside the Window Comparator Threshold. Then the OLED C Click board is used to Display the information to the User that needs to get a temperature measurement using the contactless temperature sensor on IR-Thermo click 3.3V board. The ADC will wake from sleep the microcontroller and then compare the (Tobj-Tamb) temperature with a predefined value and if above it will start measure again the User temp. and display it on the OLED screen. The Piezo buzzer is used to alert the user of the specific action, using 4 different beep sounds.

### 3.2 WORKING OF SANITIZER

The primary purpose of this device is to sanitize touched surfaces by spraying a cleaning solution on those surfaces. A simple approach was used to deliver the cleaning solution. The pump was directly attached to the mister nozzle allowing it to provide a high pressure spray. When the pump is activated it draws the cleaning solution from the storage container and is dispensed in a fine mist. The quantity is controlled by the duty cycle of the pump. To do this automatically, a sensors needs to be used to determine when to disinfect the surface. Different types of sensor were considered, but ultrasonic sensors were used because they are affordable and available. IR distance sensors were looked into as they are often more compact than ultrasonic sensors. With the main components selected, an enclosure was designed to house these parts. It needed to be manufacturer using a Fusion Deposition Modeling (FDM) 3D printer with a reasonable print time. A cubby for the cleaning liquid and a battery bank were also included in the housing design. This device can be mounted using zip ties or screws using the keyhole slots in the back of the housing. It can also be set on surface if tampering or theft is of limited concern. To help prepare this device for market, it was designed with manufacturability and assembly in mind. Preparing this device for assembly requires the wires and hoses to be properly connected. This prototype used screw terminals for electrical connections, but at higher volumes a surface mount connector will speed up the pump. With these steps done, assembly is quick. The circuit housing is designed with a slot for the bottom of the PCB to slide into so only the two top mounting screws need to be connected. The pump has a "cup" shaped holder that it slides into with a very light press fitting. There are slots in the housing that allow for the wires to be safely routed from the pump to the PCB. Four screws attach the top cover and finish the lower assembly. When a person enters at the door. The system will sense that person automatically and then sanitize the touched part of that person.



#### **IV. CONCLUSION**

Inspired by COVID-19 prevention. This example provides a method for using the AVR® DA family of microcontrollers as Temperature access point with auto-scanning and low power functions. AVR® DA will detect moving persons nearby and invite them to measure their temperature contactless, showing the result on the OLED display. The hardware setup can be powered by a single Lithium battery and because of the low power consumption it will last for many hours.

High contact areas such as pin pads, gas pumps and door handles pose a risk to the spread of the virus and create difficulty for store personnel to maintain. a device that is able to sense and automatically sanitize the area between customers. The device we created applies a mist of cleaning solution that kills germs on contact and quickly vaporizes leaving a sanitized surface for the next customer. In this way the sanitizer machine will work.

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