

## 1. Introduction

The coronavirus disease (Covid-19) pandemic has changed aspects of people's lives in the world and in Indonesia [1]. Covid-19 still exists, and the application of health protocols must be carried out according to the rules that apply in various public places [2]. Health protocols are maintaining distance, wearing masks, and washing hands (3M) [3]. The implementation rate of the 3M health protocol of public places in Indonesia is still low at around 28.36% according to the Covid-19 Task Force (Satgas) and causes many problems [4], such as handwashing, which is done manually by touching the container, thus allowing the virus to be left in the hand sanitizer container. Then there are many empty hand sanitizer containers when someone wants to wash their hands. However, the officers did not realize this. It will be dangerous because it can trigger people to touch something in an unsterile state. Another problem is measuring body temperature before entering public places such as malls or amusement parks using a thermo gun and generally triggering a crowd. It is because the process of checking body temperature is carried out one by one and still requires officers. It will cause Covid-19 to increase [5].

Research on measuring body temperature and automatic hand sanitizer has been widely discussed by researchers, namely: Ahmed Rizky, Ahmad Fauzi, and Andry Maulana conducted a study that resulted in a system that can dispense hand sanitizer, and measure body temperature automatically. However, the body temperature monitoring system is only limited to using the LCD and there is no notification of hand sanitizer liquid in low conditions [5]. Ari Rahayuningtyas, Eko Pramono, Diang Sagita produce automatic hand sanitizer and monitor body temperature via the cloud. However, in the system, there is no notification of hand sanitizer liquid in low conditions [6]. Ghifar Javad H. Aziz, Arnando Fajar Shidhiq, Jidah Caesar Pratama, and S. Samsugi produce automatic hand sanitizer and a limited body temperature monitoring system via the LCD and there is no notification of hand sanitizer liquid in low condition [7]. Yayan Hendrian and Rizky Ali Amien Rais produce body temperature measuring devices and automatic hand sanitizer. Where the system can only unify body temperature through Thingspeak which is only a graph, there are no temperature figures and there is no notification of hand sanitizer in low conditions [8]. Ika Miranti and Bambang Suhartono produce automatic hand sanitizer. Where the system cannot measure body temperature and there is no notification of hand sanitizer in low condition [9]. Kristin Damayanti produces automatic hand sanitizer and checks body temperature via Android which is monitored via a computer that is less than optimal in terms of appearance and the system does not have hand sanitizer notifications in low conditions [10].

In a study conducted by [5] – [10], the system that has been created cannot monitor the level of hand sanitizer so that officers do not get notification from the system that the hand sanitizer liquid in the container is in low condition. Then body temperature monitoring is only limited to the Blynk, Android, Cloud, and Thingspeak applications, where officers must first install the application. Based on the shortcomings found in previous studies, the system proposed in this paper adds a hand sanitizer liquid detection feature in a low state using a water level sensor with a transistor. The sensor works when it detects liquid past the predetermined low limit. When the liquid is low, the system will give a warning that is sent via the Twilio bot on WhatsApp. Then the system uses a PHP-based website hosting that can be accessed in real-time as a body temperature monitoring platform. The system is also equipped with an IR-obstacle proximity sensor for object detection and a trigger system to turn on the 12V pump as a hand sanitizer pump. An MLX90614 temperature sensor as a temperature sensor, water level sensor as a hand sanitizer level detection in the container, buzzer as a notification in the form of sound when the temperature is above 37.5 Celsius (°C), and LCD for body temperature display.