

# U.V.-C type Disinfectant Robot

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**Abstract**—Ultraviolet C type Disinfectant Robot basically obtaining electrical from use of in killing the bacterias as well as cleaning the surface in any where like a hospitals, collages, malls etc. which moves under the control of Bluetooth To make the safety for human.

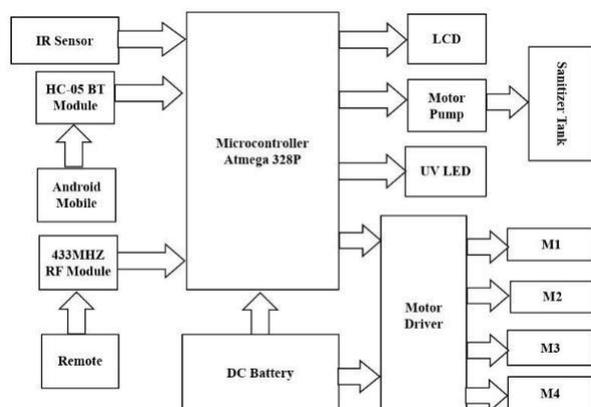
### 3. INTRODUCTION (HEADING 1)

As the Covid-19 pandemic continues to unfold, washing and sanitization of hands have become an absolute necessity regularly. In this global pandemic, robots are being used for jobs such as sanitizing hospitals and delivering food and medicines, and have proved to be very much useful and handy. Health Organizations have advised physical distancing for people around the world to prevent community level transmission of Covid-19 and quarantine infected people effectively. Nowadays, Robots are also being deployed for administering treatment and providing support to quarantined patients. Sanitization, which has become a really important aspect in these pandemic times and plays an essential role in preventing us from exposure of this deadly virus and thus helping in eradication of this global pandemic, is incredibly important. One of the high-risk zones of exposure to the deadly virus is in the hospitals and the medical wards.

### 2. Overview

The robot uses radiation of UV rays to kill the microorganisms. It gives a live video streaming of its surrounding using a Wi-fi based camera. With the help of Bluetooth module and android mobile, we can control the movement of the robot inside the room without being physically present. It is built with PIC Microcontroller and Ultraviolet-C (UVC) Sanitization LED. UV-C has bandwidth range of 200-280nm and is most powerful when it comes to killing pathogens in the room. This allows us to sterilise the room effectively. By killing the germs, the UV light restricts their multiplication by destroying their reproductive system. Thus, use of this robot lowers the threat of infection, cost of traditional cleaning and sterilisation and increases security in medical facilities. Thus, we are trying to implement a more efficient way of sanitization by building a Low- cost UV sanitization Robot which can be used in small clinics and for household purpose.

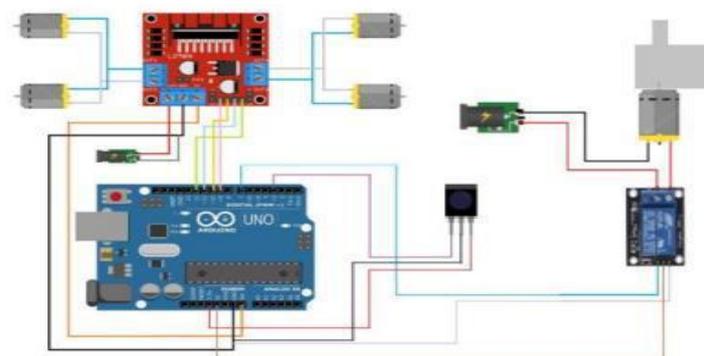
### 3. Block Diagram



### 4. Working

This robot moves autonomously in a pre-defined area after being programmed for the parameters exposure time and distance of surfaces. It consists of eight lamps that are located on top of a platform. During a disinfection cycle, they emit UV-C irradiation at a wavelength of 254 nm, enabling a 360 degree coverage. During the disinfection process, the UV-C light emitting robot moves at 10 cm per second, providing a dose of 2.7 mJ/cm<sup>2</sup> per second for directly exposed surfaces in 1 m distance and achieving a coverage of areas at a distance of several meters (according to manufacturer's specifications). However, it is worth bearing in mind that the UV-C light intensity over distance is governed by the inverse square law, resulting in significantly smaller doses for areas further away from the device. To enable autonomous moving, the robot must be pre-programmed using a detailed map of the position of furniture and other obstacles in the area to be treated with UV-C irradiation. Once every parameter is set, furniture and all other objects must remain in exactly the same place to enable an autonomous functioning. Due to the high -intensity UV-C irradiation, the UV-C robot may only be used in rooms devoid of people. Unintentional exposure leads to cutaneous erythema and photokeratitis. For safety, this UV-C robot automatically shuts off when its motion sensor detects any moving individuals during the disinfection process.

### 5. Installation Diagram



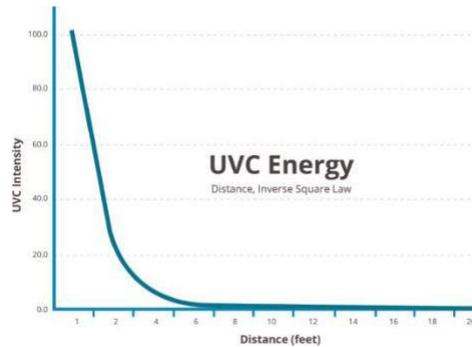
### 6. Advantages

- UV-C Light kills germs without the use of chemicals.
- Robot is provides service without human being.
- By using this robot we can control the spread of bacteria and viruses.
- Compact in size.
- Less time consumption.

## 7. Future Work

1. In the future we will try to improve our design by high sensing devices.
2. As well as we will try to minimize the time delay.
3. In future we will try to increase the performance, reliability, and efficiency of the robot.

## 8. Result



## 9. References

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