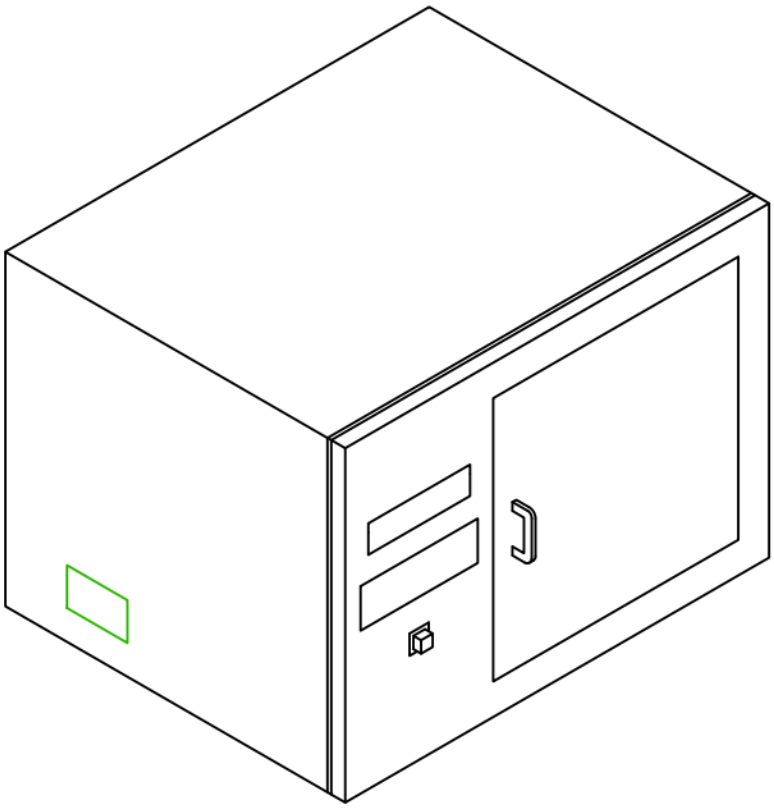


MFAD USER MANUAL

Read this manual before operating the device

Table of Contents

MFaD

Chapter 1 : Introduction

About the prototype

The MFaD (Microcontrolled Facemask Disinfecting Device) is a prototype used for disinfecting surgical face masks to help the environment lessen disposable surgical face mask pollution by providing a solution to prolong and reuse viable surgical face masks and to further help the community by providing security and safety by disinfecting their masks through the combination of two reliable disinfecting agents, the UV-C and dry heating. MFaD can be used in areas that can utilize its benefits, such as places that reportedly have enormous biomedical waste, to help mitigate the increase of biomedical waste in the environment, or to places that use facemasks mainly for their job or experiments such as laboratories. It can also help different establishments and companies for their employees to provide more protection and security for their safety regarding respiratory-related diseases. MFaD utilizes the use of UV-C and dry heat in the sterilization of facemasks to provide more effective disinfection within a set amount of time. MFaD can be used to disinfect a facemask and prolong its use for about a day which in turn is beneficial for us and the environment.

Chapter 1 : Introduction

Features

Real-Time Status Monitoring and Display: The device is able to monitor the statuses of the UV-C led, temperature and disinfection countdown timer to ensure that the device is always in proper working order.

Remote Device Monitoring: Users are able to monitor the statuses through their phone by using the app that comes with the prototype. *Download the application at Chapter 3*.

User-Friendly Interface: Designed for ease of use, the MFaD has a one-push-start and stop system for its end-users. This system avoids the complicated use of the device.

MFaD

Chapter 2 : Using the Device

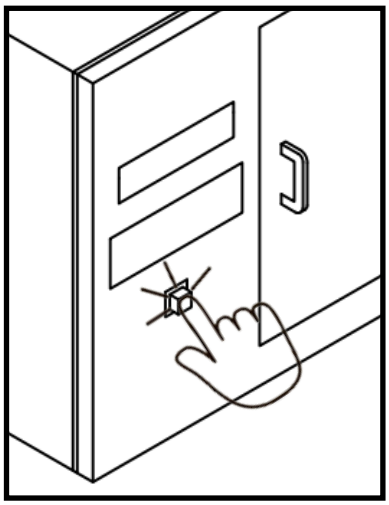
Preparation

Wait for the chamber of the device to reach 50 ℃–60 ℃; the device will maintain the chamber's temperature at this range. The device will not start the disinfection cycle if the mentioned condition is not met.

1.) Open the door then insert the facemasks inside the chamber and hang it on the hooks located at the roof of the chamber

2.) Close the door and push the button to start the disinfection cycle. The UV-C will turn on and the countdown of 30 minutes will start.

3.) After the 30 minute disinfection cycle, the buzzer will alarm indicating that you can now retrieve the facemasks.



The LCD screen at the left of the door above the button will show the countdown timer

Caution: Keep the device out of reach from children

MFaD

Chapter 3 :Using the App

Download and Install

Scan Me!

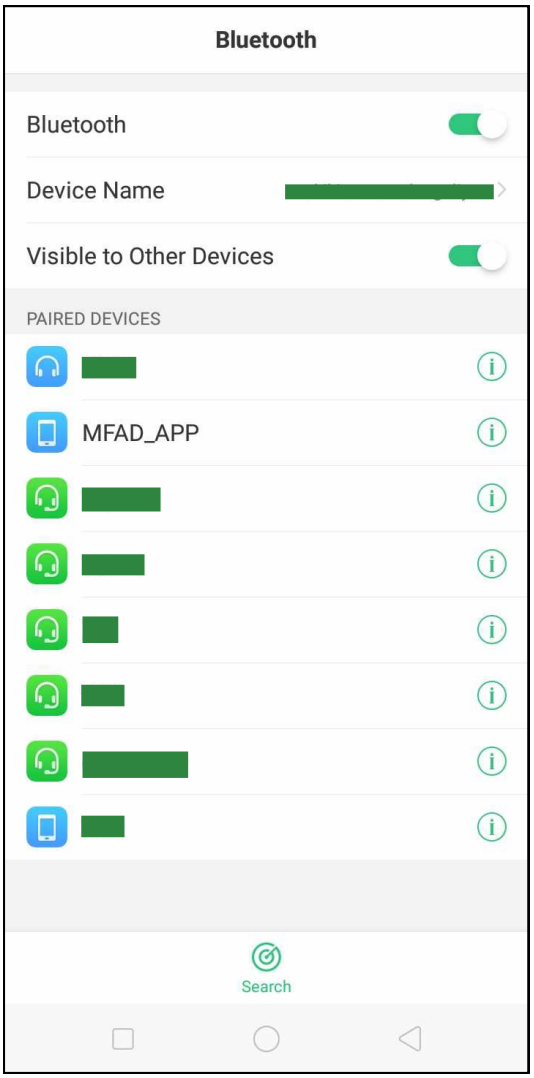
1.) Scan the QR code and download the APK file

2.) Install the app using the APK file

MFaD

Chapter 3 :Using the App

Pairing with the Device



1.) Open your phone settings and open your Bluetooth.

2.) Search for other devices and select “MFAD_APP”.

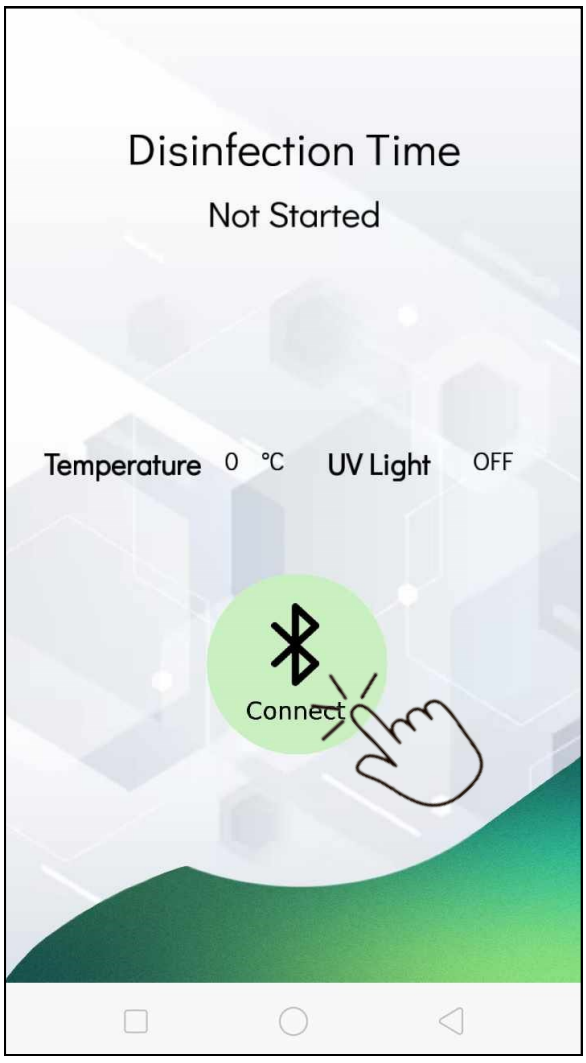
3.) Pair with “MFAD_APP”. The pair code is 0000.

4.) After successfully pairing, open the MFaD app.

MFaD

Chapter 3 :Using the App

Connecting Via Bluetooth



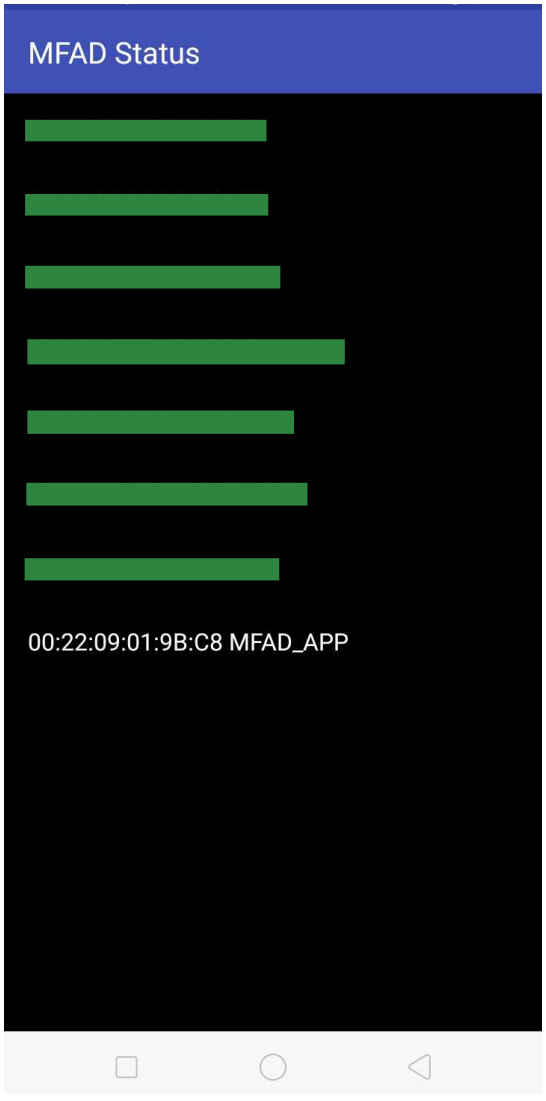
This is what the application should look like by default when it isn't paired with the device.

1.) Tap the connect button displayed on the screen.

MFaD

Chapter 3 :Using the App

Connecting Via Bluetooth



1.) Select the device named "MFAD_APP"

2.) The selection screen should close once the app has successfully connected with the device

MFaD

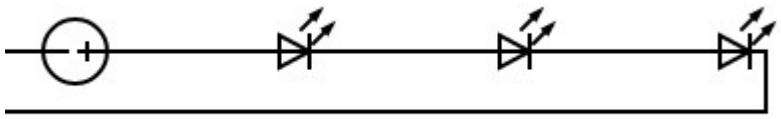
Chapter 4 : Troubleshooting

This chapter provides a step-by-step guide that addresses common problems and issues that may arise when using the device. Carefully read the instructions given below for the following common issues/problems that end-users may encounter.

UV-C LEDs not turning on

1.) Check the LEDs: Test if the LEDs are properly secured in place by lightly twisting the bulbs. If it isn't, it should snap in to place.

2.) Check the connectors: See if the LED tube connectors are properly connected on each end. Each LED are connected to one If all three LEDs aren't turning on, check the connector of the left UV-C LED. Check the 2nd connector if either of the top and right UV-C LEDs aren't turning on. Lastly, check the 3rd connector if the right UV-C isn't turning on.



3.) Verify for damages: Seek for any worn out wires/connectors or any other damages that are visible.

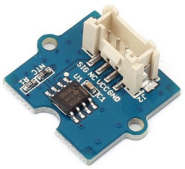
4.) Check Power Source: Ensure that the device is receiving a stable power supply. Fluctuations in power can affect the accuracy of temperature readings.

MFaD

Chapter 4 : Troubleshooting

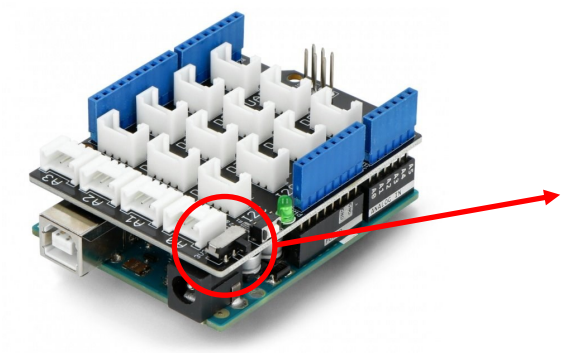
Display not showing the right Temperature

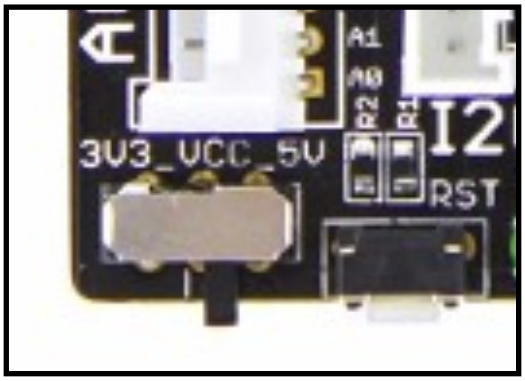
1.) Check wires: The temperature sensor is located center at the roof of the chamber near the door. See if the wires aren't properly connected.



2.) Check the microcontroller: Remove the front panel of the prototype by unscrewing the screws on each corner. You should be able to see the microcontroller shown below.

Verify if the voltage selector is set to 3.3V. If so, flick the switch to 5V. This should be the default setting.





3.) Reset or Restart: Reset the system by pressing the RST button right beside the voltage selector. Also try restarting the device to see if this resolves the temperature display issue.

MFaD

Chapter 4 : Troubleshooting

LCD Dim Display/Not Displaying Anything

1.) Check Power Source: Ensure that the device is properly powered and the power source is functioning correctly. A weak power source can result in a dim or no display.

2.) Backlight Adjustment: Both LCDs have backlight control located at the back side, make sure it's properly adjusted by using a screwdriver. The backlight provides illumination for the LCD display. If the backlight is too low or turned off, the display might appear dim or not visible.

3.) Connection Issues: Check the cables and connections. Loose or damaged cables can result in a dim or no display.

4.) Restart the Device: Try restarting the device. Sometimes, a simple restart can resolve display-related issues.

5.) Check for Physical Damage: Inspect the device for any physical damage to the LCD screen. Cracks or impact damage can result in a dim or non-functional display.

MFaD

Chapter 4 : Troubleshooting

Light Sensor False Readings

1.) Check for Obstructions: Make sure there are no physical obstructions covering the light sensor. Objects covering the sensor can lead to inaccurate readings.

2.) Clean the Sensor: Clean the light sensor gently using a soft, lint-free cloth. Dust or dirt buildup on the sensor can affect its accuracy. The light sensor is located at the left side of the chamber.

3.) Restart the Device: Try restarting the device. Sometimes, a restart can resolve sensor-related issues caused by temporary glitches.

4.) Electromagnetic Interference: Keep the device away from sources of electromagnetic interference, as this can affect sensor accuracy.

5.) Connection Issues: Check the cables and connections. Loose or damaged cables can result in a dim or no display.

MFaD

Chapter 4 : Troubleshooting

Application data display/connection related issues

1.) Check Distance and Interference: Ensure that you're within the recommended Bluetooth range for your devices. Also, minimize physical obstructions and sources of interference like other electronic devices or walls can affect sensor accuracy.

2.) Check Device Compatibility: Verify that your device is compatible with the Bluetooth device you're trying to connect to. Some devices may have compatibility limitations.

3.) Forget and Re-pair: On your device, forget the Bluetooth device you're having trouble connecting to, then try re-pairing it from scratch.

4.) Restart Bluetooth: Turn off Bluetooth on your device, wait a few seconds, and then turn it back on. Similarly, restart the device you're trying to connect to.

5.) Connection Issues: Check the cables and connections. Loose or damaged cables can result in a dim or no display.

6.) Forget Other Devices: If you have multiple Bluetooth devices paired with your device, try forgetting or disconnecting from others to eliminate potential conflicts.

7.) Check Battery Levels: Low battery levels on either device can affect Bluetooth connectivity. Ensure that your devices have sufficient battery power.

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