ELEX-4560-0 - Telecom & Networks Project

Project Requirements

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February 11, 2022

1 Introduction

With our product, users can get alarm when the temperature, particular, and moisture exceed the preset value. Users can set out product in their home, office, workshop and etc. to get info when accident fire, leakage and other unexpected even happen and get a stragate to reslove it.

2 Must Have

2.1 Temperature Detection

2.1.1 Description

Temperature detection is one of the main feature in our project, the sensor should create a analog signal accroding to temperature.

2.1.2 How to Test

Microcontroller must set a digital-high on a pin when temperature exceed a preset value.

2.2 Particular Detection

2.2.1 Description

Particular detection is one of the main feature in our project, the sensor should create a analog signal accroding to particular.

2.2.2 How to Test

Microcontroller must set a digital-high on a pin when particular exceed a preset value.

2.3 Moisture Detection

2.3.1 Description

Moisture detection is one of the main feature in our project, the sensor should create a analog signal accroding to moisture.

2.3.2 How to Test

Microcontroller must set a digital-high on a pin when moisture exceed a preset value.

2.4 XBee Wirless Transmission

2.4.1 Description

Wireles transmission is an improtant role in out project design. By using the wireless transmission design, user can git rid of the annoying wire and has more fixbility to place the sensors.

2.4.2 How to Test

When the microcontroller transimit a digital-high, XBee should able to create a wireless singal on the sensor side and transimit it to the server side.

2.5 Alarm System

2.5.1 Description

Alarm system is the part that commnicate between human and machine. User should be able know the status about the place where the sensor are.

2.5.2 How to Test

When any of the sensor trigger a digital-high, the Respberry should able to trigger a alarm to user. (e.g. flashing light, beep)

2.6 Long-duration Operating

2.6.1 Description

User may not confort when they need to pay attention to device frequently especially change battery. Our product should run at a long time without any manufacture.

2.6.2 How to Test

Our product should be able to run at least two weeks without change battery(measured by power usage and battery capacity) and a stability(less or equal than one error per two weeks)

3 Nice to Have

3.1 Enclosure

3.1.1 Description

It is nice to have an enclosure that printed by a 3d printer to fit all the parts.

3.1.2 How to Test

A enclosure created by 3D printer.

3.2 Water Proof

3.2.1 Description

Our product shoud be able to work in any unexpected enviroment. Watere proof is a main factor to cause eletronic failure.

3.2.2 How to Test

Sensor can remain work when water fall from above.

4 Wishes

4.1 Email Notice

4.1.1 Description

User may not often stay around alarm system. It is nice to have email notice when they are away.

4.1.2 How to Test

Recieve a email when alarm is tirggered.

4.2 LCD Display

4.2.1 Description

Having a human interface is not necessary but it is nice to have real time information.

4.2.2 How to Test

Can diaplay real-time temp/particular/moisture parameter with a refresh rate of 10 sec.

4.3 Status Bar

4.3.1 Description

Device may disconnect from the server due the signal attenuation. Having a status bar could notify user that device is working or not.

4.3.2 How to Test

For any of the device goes offline, the relative LED should be off.