Wireless I/O Board
Repository Overview

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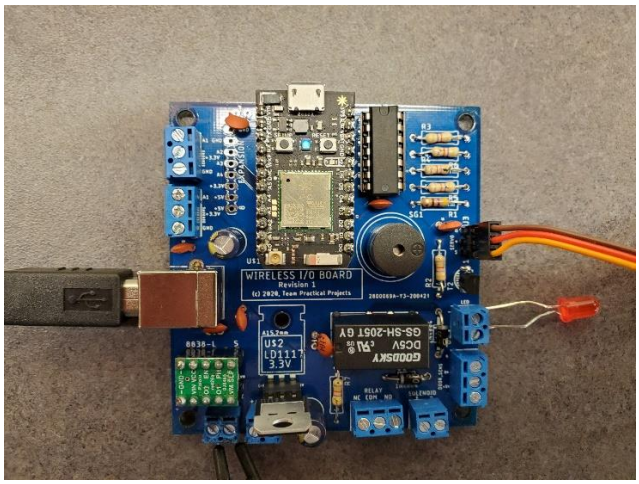
NOTICE: Use of this document is subject to the terms of use described in the document "Terms_of_Use_License_and_Disclaimer" that is included in this release package. This document can be found at:

https://github.com/TeamPracticalProjects/Wireless_IO_Board/blob/master/Terms_of_Use_License_and_Disclaimer.pdf



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1. OVERVIEW.

The *Wireless I/O Board* provides a variety of Internet-accessible controls for actuators and sensors. The Board is based upon the Particle Photon[1]: a low cost, 32 bit microcontroller module with built-in WiFi capability. The *Wireless I/O Board* provides the following capabilities that are accessible through firmware on the Photon:

- Control of a small motor
- Control of an on-board relay
- Control of an external solenoid, via the relay
- Control of a hobby servo
- Control of an on-board buzzer
- Control of an external LED
- A 5 volt tolerant general purpose digital I/O capability
- Two 3.3 volt analog inputs; alternatively, general purpose digital I/Os

This document describes the organization and content of this Repository.

2. REPOSITORY ORGANIZATION.

The structure of this Repository is as follows:

Wireless_IO_Board Repository

```
|
|----  README.md (markdown document)
|----  Terms_of_Use_License_and_Disclaimer (pdf document)
|----  Overview (pdf document)
|----  .gitattributes (markdown document)
|
|---- Docs (folder)
        |---- Wireless_IO_Board_User_Manual (pdf document)
        |---- Wireless_IO_Board_Build_Instructions (pdf document)
|
|---- Hardware (folder)
        |
        |---- PCB (folder)
              |---- Wireless_IO_Board_Parts_List (pdf document)
              |---- Wireless_IO_Board_Rev_1_PCB_brd (pdf document)
              |---- Wireless_IO_Board_Rev_1_PCB_sch (pdf document)
              |
              |---- Eagle_files (folder)
```

[1] https://docs.particle.io/datasheets/wi-fi/photon-datasheet/

|---- RFID_Lock_Rev_1_PCB.brd (Eagle board file)
|---- RFID_Lock_Rev_1_PCB.sch (Eagle schematic file)
|---- RFID_Lock_Rev_1_PCB_2020-04-20.zip (Eagle CAM output files)
|
|---- *Test_Firmware (folder)*
|---- locktest.ino (source code)

3. REPOSITORY CONTENT.

README.md:

- This is the README file that appears on the home page of this Repository.
- The file type is “markdown” (.md) format.

Terms_of_Use_License_and_Disclaimer:

- This is a pdf formatted document.
- This document contains licensing and terms of use information. *You MUST read through this document and AGREE to everything in it before you can use any of the material in this Repository*.

Overview:

- This is a pdf formatted document.
- This is *this* document. It provides an overview of what is in this Repository.

.gitattributes:

- This is “markdown” (.md) document.
- This document contains the properties of this GitHub Repository. It is not necessary to read through this document.

Docs/Wireless_IO_Board_User_Manual:

- This is a pdf formatted document.

- This document describes the functions and specifications for the Wireless I/O Board. *You should read through this document before proceeding to purchase parts and assemble and use this project*.

Docs/Wireless_IO_Board_Build_Instructions:

- This is a pdf formatted document.
- This document provides you with instructions to build this Board. The Board has many functions; not all of them are needed for any particular project. This document shows you what components must be assembled on the Board for each particular function.
- *We recommend that you read through the User Manual before deciding that this project is for you*.

Hardware/PCB/Wireless_IO_Board_Parts_List:

- This is a pdf formatted document.
- This document is a parts list for all parts required to build the Board. A url is provided for each part so that the part can be purchased over the Internet. Of course, you may obtain your parts from any vendor that you choose. Note that the Board has many functions; not all of them are needed for any particular project. Read through the Build Instructions document first to determine what parts you will need to purchase for your particular project.
- *We recommend that you read through the User Manual before purchasing any parts*.

Hardware/PCB/Wireless_IO-Board_Rev_1_PCB_brd:

- This document is a pdf version of the Eagle board (.brd) file. It is provided for those users who wish to see the board layout but don't have Cadsoft Eagle.

Hardware/PCB/Wireless_IO-Board_Rev_1_PCB_sch:

- This document is a pdf version of the Eagle schematic(.sch) file. It is provided for those users who wish to see the board schematic but don't have Cadsoft Eagle.

Hardware/PCB/Eagle_files/ RFID_Lock_Rev_1_PCB.brd:

- This is the Eagle board (.brd) file for the *Wireless I/O Board*. You can open this file in Eagle and, along with the associated Eagle schematic (.sch) file in this folder, you can view and modify the *Wireless I/O Board* design.
- This file was produced in Cadsoft Eagle version 9.4.2.

Hardware/PCB/Eagle_files/ RFID_Lock_Rev_1_PCB.sch:

- This is the Eagle schematic (.sch) file for the *Wireless I/O Board*. You can open this file in Eagle and, along with the associated Eagle board (.brd) file in this folder, you can view and modify the *Wireless I/O Board* design.
- This file was produced in Cadsoft Eagle version 9.4.2.

Hardware/PCB/Eagle_files/ RFID_Lock_Rev_1_PCB_2020-04-20.zip:

- This is a .zip archive with manufacturing data produced by running the Eagle CAM processor on the Eagle board and schematic files that are included in this folder. Most printed circuit board manufacturers will accept this .zip archive as is and they will select the Gerber and Excellon files from this archive that they need to manufacture the *Wireless I/O Board* printed circuit board.
- Eagle 9.4.2 was used to produce this .zip archive. Eagle's default CAM processing rules were used. These rules are generic and should work with most printed circuit board manufacturing services. *However, we have only used these files with jlcpcb.com, a low cost printed circuit manufacturing service from China.* **If you have a different manufacturer use these files to make your boards, you do so at your own risk**.
- Many printed circuit manufacturers can work directly with the Eagle .brd file. If you choose a printed circuit board manufacturer who supports this, we recommend that you supply the file "Hardware/PCB/Eagle_files/RFID_Lock_Rev_1_PCB.brd" and let the manufacturer run the Eagle CAM processor using their own manufacturing rules.

Test_Firmware/locktest.ino:

- This is a Particle .ino file. The .ino extension is an Arduino/Particle convention. The file is, in fact, just a text file with .ino as the extension in lieu of .txt.
- The document "Docs/Wireless_IO_Baord_User_Manual" provides instructions for installing and using this firmware.