Powder Scale and Dispenser

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Mission Statement

Design, build, and test the electronics for the dispenser with a touch screen display and controlling two stepper motors by April 6, 2021 with a prototyping budget of $1,000.00 USD and for less than 600 people-hours.

Scope of Work

Design Specifications

Product Selection

* We chose the beaglebone back because that was the board that Creedmoor provided for us and concluded that after the prototype was handed back to Creedmoor they would be able to move the project along faster versus using a different board. We also choose to use the GeeekPi screen due to the high volumes of stock available at Digikey, and other website, when it came time for Creedmoor to mass produce.

Body

User’s Manual

* The primary function of the prototype is to dispense powder according to a user inputted value which then displays the current value on the scale to the prototype’s user interface.
* The prototype consists of beaglebone black wireless development board, with a powder scale connected to it via an USB connection, as well as an user interface displayed on a 5 inch screen, which is the way by which the user interacts with the prototype.

Developer’s Report

Software

* The programming language used to create the front and back end of the user interface was Python. We chose Python because it is a relatively easy language to learn, read, and understand.
* As previously mentioned, the software is broken up into 2 major sections: the front end and the back end. The front end is then broken up into different pages, each with their own purpose and function. The home page is the first screen users will see after booting up the prototype. However, the home page, and every other page, is slightly covered by another page known as main. Main consists of a black bar with 4 buttons, which allow the user to navigate directly back to the home page and turn off the prototype. The settings page is a hub for the different types of settings an user could interact with, for example, the brightness and sound of the prototype. When the user wants to create a new profile, or Load Card, they can click on the Save button on the home page and are directed to a page containing a filename along with several other fields that are involved with reloading ammunition. The user can save their own values and make notes onto a Load Card, and store that information for future use, which allows them to switch between Load Card depending on their current needs.
* The back end…
* The front end is designed to run on every machine, however, the back end is designed to run on a beaglebone black board with the powder scale feeding the beaglebone information via an USB connection.

Conclusion

The dispenser