
OSU HART Ignition Box

Release v1.0.0

OSU HART

May 21, 2021

CONTENTS

- 1 Introduction 1**
- 2 Project Overview 3**
 - 2.1 Goals 3
 - 2.2 Requirements 3
- 3 Parts List 5**
- 4 Getting Started 7**
 - 4.1 Assembling the Controller 7
 - 4.2 Using the Controller 7
- 5 Download 9**
- 6 Contributing 11**
 - 6.1 How Can I Contribute? 11
 - 6.1.1 Report Bugs 11
 - 6.1.2 Suggest Features 11
 - 6.1.3 Create a Pull Request 11

INTRODUCTION



The ignition box is the part of the launch system that is left on the launch pad, attached to the rocket booster igniter leads. It is able to apply 12 volts and 8 amps to the igniter leads, allowing it to reliably activate the igniters.

PROJECT OVERVIEW

2.1 Goals

The user must be able to ignite booster from safe distance.

2.2 Requirements

- The system must transmit a user-triggered signal to trigger an igniter at a distance of more than 1000 ft.

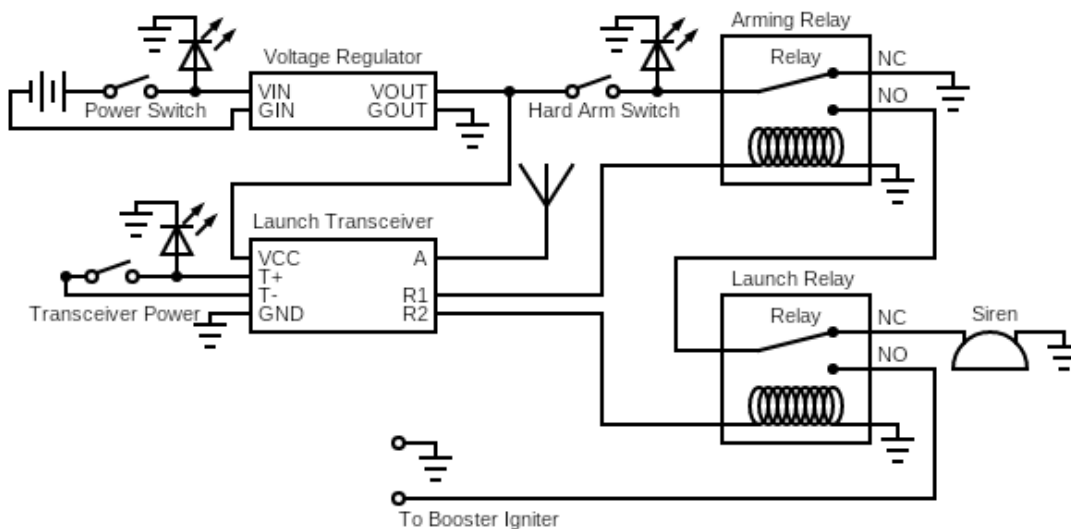
PARTS LIST

- Electrical wire
- Compact 12v battery
- Teensy 4.0
- Buck boost converter
- Toggle switch with a safety cover
- Dual-position selector switch
- Loud flashing warning siren
- Yellow indicator LED
- Red indicator LED
- Xbee Pro S3B
- 3D-printed enclosure
 - Enclosure
 - Lid

GETTING STARTED

4.1 Assembling the Controller

1. Print the enclosure
2. Wire electronic components together according to the wiring diagram



- Put the electronics in the enclosure
- Press fit the lid into the enclosure

4.2 Using the Controller

1. Attach the igniter leads to the output wires of the ignition box
2. Uncover the toggle switch and flip it to the on position to power up the ignition box



3. Turn the black arming switch to the upward position in order to arm the ignition box



4. Once everyone is a safe distance away from the launch pad, use the launch controller to send the signal to first establish a connection to the ignition box—after which the safety siren on the launch ignition box should activate—and then send the signal to ignite the rocket booster

DOWNLOAD

Project artifacts are available at <https://github.com/HART-Avionics/OSU-HART-Ignition-Box/releases>.

CONTRIBUTING

Contributions are what make the open source community such an amazing place to be learn, inspire, and create. Any contributions you make are **greatly appreciated**.

Contributions to the project are primarily done through modifications to the system structure, improvements to documentation wording, and evaluation of potential solutions. This includes adding, modifying, or restructuring blocks and interfaces as well as correcting spelling/grammar mistakes and writing research reports on a new design.

6.1 How Can I Contribute?

6.1.1 Report Bugs

To report a bug, [create a new Bug Report issue](#).

6.1.2 Suggest Features

To suggest a feature, [create a new Feature Request issue](#).

6.1.3 Create a Pull Request

If you want to add a few quick changes or are adding changes related to an issue,

1. Fork the project
2. Create your feature branch (`git checkout -b username/amazing-feature`)
3. Commit your changes (`git commit -m 'Add some amazing feature'`)
4. Push to the branch (`git push origin username/amazing-feature`)
5. Open a pull request onto the `develop` branch of the official repository

Otherwise, [create a new Feature Request issue](#) and include a comment requesting to be assigned to that issue.