**Title**

Rocket Switch Interface

**Subtitle**

## A cost-effective two input switch interface based on a commercially available Trinkey board.

## Device Specifications

Build Time:

 < 1hr

1-4 hr

 5-10hr

 >10hr

Cost:

 $0 - $10

 $11 - $25

 $26 - $50

 $51 - $100

 $101 - $250

 $250+

Stage:

Skills:

Need:

Electronics, Soldering, 3D Printing, Custom PCB, Software, Engineering

Disability:

Mobility / Physical, Cognitive / Learning

Difficulty:

Intermediate

License:

Attribution-ShareAlike 4.0 International

Usages:

Recreation and Leisure, Computer Access, Communications Aids (AAC)

Type:

Designer:

Milad Hajihassan

## Device Details

### Overview

### The Rocket Switch Interface is a switch interface device which enables users to operate their computer or smartphone devices using adaptive switches. The Rocket Switch Interface supports up to two input 3.5 mm adaptive switches.

### Usage

Both switches can be used as inputs when short pressed, switch 1 can be used to change the operation mode when it’s pressed and hold for 4 seconds. The device can operate in several modes:

• Switch Mode: This mode can be used along switch control software available for Windows and Android Operating Systems. Switch 1 outputs A key and switch 2 outputs B key.

• Switch Mac Mode: This mode can be used along switch control software available for Mac Operating Systems. Switch 1 outputs F1 key and switch 2 outputs F2 key.

• Mouse Mode: This mode can be used to simulate a mouse button click. Switch 1 performs left mouse click and switch 2 performs right mouse click.

• Settings Mode: The settings mode allows the user to adjust the reaction time between switch presses. There are 10 levels in total and the default reaction level is set to 9. The minimum reaction time is 50 ms (Level 10) and maximum reaction time is 500 ms (Level 1). Switch 1 decrements the reaction level by 1 level and switch 2 increments the reaction level by 1 level as well.

### Cost

$45 ($15.16 Components and 3D prints; ~$30 for custom PCB)

### Build Instructions

The Rocket Switch Interface consists of 3D printed parts, electronic components, and custom Arduino program. The Assembly Guide is available at the GitHub repository.

#### Skills Required

* 3D Printing
* Soldering
* Custom PCB
* Microcontroller programming

#### Time Required

3D Printing Time: 49 Minutes

Assembly Time: 20 Minutes

Software Setup Time: 15 Minutes

#### Tools

* Soldering Iron and 60/40 electronics solder
* Needle nose pliers
* Side cutters
* Medium Phillips screwdriver
* Optional clamp or vise to align PCB’s.

#### Components

* 1X Rocket Switch Interface PCB
* 1X Adafruit Rotary Trinkey (i.e., https://www.adafruit.com/product/4964)
* 2X SJ-43514 3.5mm Jack Stereo
* 2X 4.7 kOhms 1/4W Through Hole Resistor
* 1X Light Pipe
* 1X M3 6MM Pan Head Machine Screw Phillip

#### 3D Printing

* 1X Top Case (3D)
* 1X Bottom Case (3D)
* 1X Assembly Jig (3D)

#### Custom PCB

This design utilizes a custom PCB. Five boards (minimum quantity) can be obtained for approximately $30 CAD (shipping included).

#### Programming

A custom Arduino code (Rocket\_Switch\_Interface.ino) needs to be flashed using Arduino IDE.

### Design

The PCB was designed using Autodesk EAGLE, and the enclosure was designed using Autodesk Fusion 360.

### Attribution

Designed by Makers Making Change

Designer:

Milad Hajihassan, Makers Making Change

Contributors:

Derrick Andrews, Makers Making Change