# Introduction

The Round Touch 60 Switch can control 3.5 mm audio outputs like in the Xbox Adaptive Controller and other switch adapted products. This device may benefit users with limited hand dexterity and strength who find it challenging to trigger mechanical switches.

# Research

|  |  |  |
| --- | --- | --- |
| **Device** | **Price** | **Link** |
| Capacitive Touch Button  K50 Pro Series 50 mm Programmable Multicolor Touch Button | ~$200 | [Capacitive Touch Button Selection (bannerengineering.com)](https://www.bannerengineering.com/us/en/products/lighting-and-indicators/touch-buttons/capacitive.html) |

# Requirements

## Goals

|  |  |
| --- | --- |
| G01 | Allow users with limited hand dexterity/strength trigger switches |

## Functional Requirements

|  |  |
| --- | --- |
| F01 | Activate switch operated devices through a 3.5 mm mono jack |
| F02 | Use capacitive touch to trigger a switch |

## Non-functional Requirement

|  |  |
| --- | --- |
| NF01 | Housing should be printed without supports |

## Constraints

|  |  |
| --- | --- |
| C01 | Built with 3D printed and off the shelf components |

# Detailed Design

* Design by Jeffrey Ebin and submitted to [forum.](https://makersmakingchange.com/wp-admin/admin.php?page=gf_entries&view=entry&id=2&lid=10334&order=ASC&filter&paged=1&pos=6&field_id&operator)
* Capacitive touch switch with 3D printed housing.

# Opportunities for Improvement

* Battery operated.
* BOM refined for low quantity builds.

## Alternate Components

A true solid-state relay may be a more useful switch than the optocoupler (as drawn by Jeffrey Ebin, MD). While the optocoupler would be adequate for a computer input (low current), its output is polarity sensitive, and doesn't have enough current handling capacity to control many switch adapted toys. Here's a part that solves both of these issues, and for icing on the cake, is a drop-in replacement for the one in the drawing. Will cost about 5 dollars more though.   
<https://www.digikey.ca/en/products/detail/omron-electronics-inc-emc-div/G3VM-41AY1/5799756>