OpenAT-Switch-Latch
REQUIREMENTS SPECIFICATIONS

Makers Making Change
A Neil Squire Program

1. Introduction

Many assistive switches are the momentary type; however, it is often desirable to use such switches in a toggle switch manner to allow long duration use of a switched device.

2. Problem Definition

2.1 Who

Who will be using the device?

- Users who are unable (or prefer not) to activate an assistive switch for extended time periods.

Who will be affected by the device?

- Users who wish to control lights and other devices in a semi permanent manner, by utilizing their preferred momentary assistive switches.

2.2 What

What must the device do?

- Set a toggle switch output to it's opposite state, whenever the assistive switch is connected to the input, and enabled.

What needs must the device serve?

- Ability to control lights, tools, music effects, or toys for long durations.

2.3 Why

Why will the device be used?

- Because existing assistive switches are usually momentary, and toggleable switches are unlikely to be found in many assistive switch classes.

2.4 Where

- In homes, offices, or other work environments.

2.5 When

- When a device needs to be enabled for more than a few seconds.

3. Functional Properties

3.1 Goals

ID	Description
G01	Cost-effective
G02	Optimized for low-volume builds (I.e., 1)
G03	Open-Source Hardware
G04	Enable a momentary assistive switch to toggle (latch) a switch controllable device.
G05	Minimize material cost
G06	Sustainability

3.2 Functional Requirements

ID	Description
F01	The device shall have one or more input channels.
F02	Long duration operation (many days of operation on battery power).
F03	The device should have a visual feedback element to indicate switch activation (Example: LED)
F04	The device should allow activation by plugging a cable into the input jack and should default to a non-closed connection.
F05	The OpenAT Switch Latch should have a power switch to reduce power consumption when not being used.
F06	The battery hatch should provide a screw to prevent children from swallowing the lid or the battery underneath.
F07	The device should have a capacitor for input circuit switch input debouncing, as the device will not be able to achieve this using software.
F08	When off, the circuit must activate (and stay active) when a switch input is triggered.
F09	When on, the circuit must de-activate (and stay off) when a switch input is triggered.
F10	The circuit must contain some form of switch debouncing circuitry to keep operation reliable.

3.3 Non-functional Requirement

ID	Description
NF01	Shall look professional with tight tolerance on case size.
NF02	Input ports should be legibly labelled for easy identification
NF03	The device should require no mechanical force to operate.
NF04	The device should have a long battery life.
NF05	The toggle Adapter should use a minimum of electronic parts.

3.4 Constraints

ID	Description
C01	The OpenAT Switch Latch must be able to be constructed using basic ‘maker’ tools.
C02	The OpenAT Switch Latch should be able to be disinfected using detergent and alcohol.