

SLIDEBAR

TECHNICAL REFERENCE

Motorized fader-based keyboard slider with an advanced controller

Features

- Motorized fader composed of a linear potentiometer and a belt and pulley system to move the fader
- Open hardware and source
- USB Powered (USB Mini B connector)
- Desktop configuration GUI
- Programmable plugins
- USB CDC Virtual Serial Port for plug-n-play on any PC

Hardware specifications

- USB Mini B connector
- STM32F072C8Tx MCU
- 5-pin ST-Link V2 programming interface
- 5V to 3.3V regulator (MIC5205-33)
- 5V to 10V boost converter (MT3608) with trimmable potentiometer
- TB6612FNG motor driver (max 1.2 A)
- Pin headers for debug, motor out, and potentiometer in



Figure 1. Motorized fader

Software specifications

- Desktop side:
 - Written in C++ with Qt for the GUI
 - IDE: Qt Creator
 - Base application allows user to manage settings, connect, load plugins and set activators for each plugin
 - Base application does nothing, the plugins parse the slider's input
 - Each plugin receives the SliderBar's position and can use the app's API to execute actions
- Embedded side:
 - Written in C++ with STM32CubeHal
 - IDE: Visual Studio Code with PlatformIO
 - Lightweight communication protocol composed of:

startflag	command_type	value	crc	endflag
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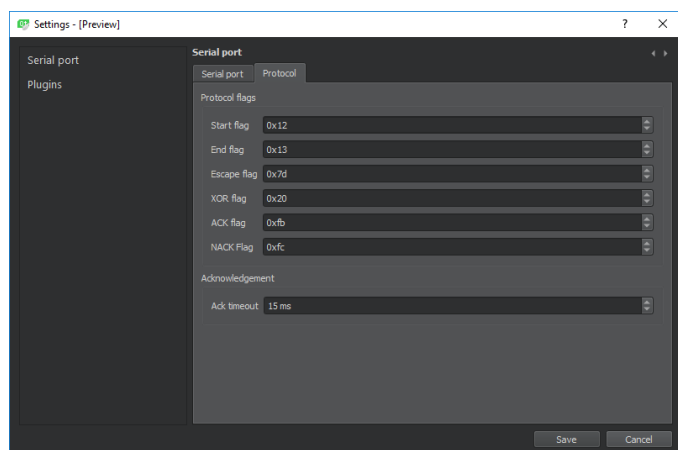


Figure 2. Configuration window

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1 Introduction

1.1 Description

2 Hardware

3 Software

4 Electrical characteristics

4.1 Typical values

Unless otherwise specified, typical data are based on $T_A = 25\text{ }^{\circ}\text{C}$, $V_{DD} = 5\text{V}$.

4.2 Operating conditions

4.2.1 General operating conditions

Table 1. General operating conditions

Symbol	Parameter	Conditions	Min	Typical	Max	Unit
V_{PP}	Programming operating voltage	-	3.5	5	10	V
V_{BUS}	USB supply voltage	-	4.75	5	5.25	V

4.2.2 Supply current characteristics

The current consumption is a function of several parameters and factors such as microcontroller state (run, sleep) and motor state (full speed, stop).

The current consumption is measured using a cheap USB Voltmeter.



Figure 3. USB Voltmeter

Table 2. Supply current characteristics

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5 **Revision history**