Keyboardio Model 01 Left LED Keyswitch PCB Test Plan

Prepared by Jesse Vincent

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Date	Version	Description	Author	
2014-12-26	v0.1	Initial Revision	Jesse Vincent	
2014-12-28	v0.2	Simplifcation	Jesse Vincent	

1. Introduction
2. Test theory
a. PCB preparation
b. Flash bootloader onto PCB using avrdude and ICSP cable
c. Flash Keyboardio test firmware to verify
  i. Ability to flash firmware
  ii. Connection to SX1509 IO Expander
  iii. Connection to RN42 bluetooth module (if included)

Test tools
a. PC running Linux or MacOS X
b. Arduino Micro (or equivalent) configured as ICSP programmer
c. Arduino to ICSP cable
d. The Keboardio Firmware Test Software Package, available at https://github.com/obra/KeyboardioModel01TestPlan
e. MicroUSB cable
f. Sticker with unique id and a space for test engineer signature for each board to be tested
  1. Unique ids should use the following format:
  YYYY-MM-DD-XXX
  OK _____
    YYYY=year

MM =month (01-12)
DD = day (01-31)
XXX = board # tested on that date
_____ = place for engineer to write their name

Example for the 6th board tested and OKed by JesseV on December 27, 2014:

```
2014-12-27-006
OK JesseV          .
```

Hardware and Software preparation

CONNECT: the Arduino serving as ISP to the host computer via USB

TYPE: cd KeyboardioModel01TestPlan/tools

TYPE: ./00-install-arduinoisp

This program will install the ICSP software on an Arduino Micro.
This will ERASE your Arduino and install the ArduinoISP software.

You only need to run this at the beginnging of a test session.
Make sure there are no Arduinos connected to this computer
and then hit RETURN or ENTER

Connect the Arduino ISP USB cable to your computer and hit
ENTER or RETURN

TYPE: ENTER

OK: Flashing worked. Your Arduino is now an ISP.
DONE

Test Procedure

CONNECT: the ICSP cable to the Arduino ISP and LEFT PCB with the following pinout

```
    Arduino      PCB ICSP          ICSP Header:
    =======      ========          MISO   GND
    3V3          3V3               3V3    RESET
    GND          GND               SCK    MOSI
    MOSI         MOSI
    MISO         MISO              On the PCB, MISO is on pin 1.
    SCK          SCK               Pin 1 is the SQUARE pin.
    10           RESET
```

TYPE: cd KeyboardioModel01TestPlan/tools

CONNECT: Arduino ISP to LEFT PCB with ICSP CABLE

TYPE: ./01-flash-and-test-mac

Connect the Arduino Micro being used as Programmer to the
ICSP header on the Keyboardio PCB:

Connections on Arduino Micro to Keyboardio PCB:

Arduino   PCB ICSP   ICSP Header:
=======   ========   MISO   GND
3V3   3V3   3V3   RESET
GND   GND   SCK   MOSI
MOSI   MOSI
MISO   MISO   On the PCB, MISO is on pin 1.
SCK   SCK   Pin 1 is the SQUARE pin.
10   RESET

Make sure there are no Arduinos connected to this computer
and then hit RETURN or ENTER

TYPE: ENTER

Connect the Arduino ISP USB cable to your computer and hit
ENTER or RETURN

Connect: Arduino ISP to host computer via USB
TYPE: ENTER

Setting fuses...done
Flashing bootloader...done
Please disconnect the Arduino ISP from the test PCB
From now on, you should only connect the USB cable to the LEFT PCB
Make sure there are no Arduinos connected to this computer
and then hit RETURN or ENTER

DISCONNECT: Arduino ISP from host computer
TYPE: ENTER

Connect the LEFT PCB USB cable to your computer and hit
ENTER or RETURN

CONNECT: Left PCB to host computer with USB
TYPE: ENTER

Flashing test firmware...done
Testing basic USB device connectivity.
Please do not touch the keyboard.
#MCU Connected OK
Detecting MCU...found.
#IO Expander found at 0x00
Testing SX1509...done.
OK: PASS.
This prototype board is ready for shipment to Keyboardio.
Thank you!

PACKAGE BOARD FOR SHIPMENT