

## Bus Pirate self-test guide

**Bus Pirate v3b Firmware v5.10**

<http://buspirate.com/tutorial/bus-pirate-self-test-guide>

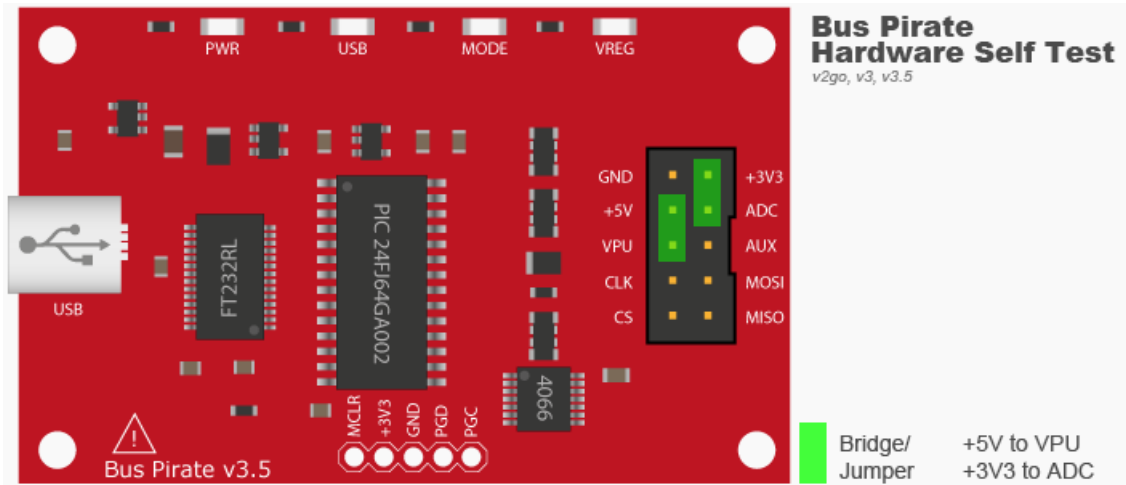
Generated 2018-10-16

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The Bus Pirate firmware has a self-test that will help determine if your Bus Pirate has a defect. If that does not help, try [[ upgrading your Bus Pirate firmware to the latest version Bus\_Pirate#Firmware\_upgrades]]

## Setup the self-test



- Disconnect any devices from the Bus Pirate I/O header pins. An external device will interfere with the test, and could be damaged by the voltages used (+5volts) on some pins.
- Make the self-test connections shown in the figure above. "Connect the Vpullup (Vpu) pin to the +5V pin. Connect the ADC pin to the +3.3V pin."

## Configuring a terminal program

- Talk to the Bus Pirate from a serial terminal set to 115200bps, 8/N/1

## Start the self-test

```
HiZ>~  
Disconnect any devices  
Connect (Vpu to +5V) and (ADC to +3.3V)  
Space to continue
```

- To begin the self test, type '~' followed by "enter" in the terminal. Self-test is available in HiZ mode only.
- You will be reminded to make the self-test connections and remove any external devices. Press any key to run the self-test.

## Reading the results

```
Space to continueCtrl
AUX OK
MODE LED OK
PULLUP H OK
PULLUP L OK
VREG OK
ADC and supply
5V(5.00) OK
VPU(5.00) OK
3.3V(3.28) OK
ADC(3.29) OK
Bus high
MOSI OK
CLK OK
MISO OK
CS OK
Bus Hi-Z 0
MOSI OK
CLK OK
MISO OK
CS OK
Bus Hi-Z 1
MOSI OK
CLK OK
MISO OK
CS OK
MODE and VREG LEDs should be on!
Any key to exit
Found 0 errors.
HiZ>
HiZ>
```

The self-test verifies that components connected to the PIC24FJ64GA002 respond as expected. This test was successful and found no errors.

## Control pin test

The self-test enables the auxiliary (AUX) pin, MODE LED, and voltage regulator control (VREG), and verifies that each pin went high. The CD4066 control pin (PULLUP) is held at 5volts with a pull-up resistor, so we test it high to see if the pull-up is working, and then low to see if the PIC pin is operating correctly.

- If pull-up high fails, check R19.
- Other errors could be a soldering defect or broken microcontroller.

## Analog pin test

The four analog voltage monitors and the two power supplies are tested. The 3.3volt and 5volt supplies are enabled and checked for the correct voltage. The ADC and Vpullup pin monitors are connected to the power supplies in order to test their function, as well as verify the results of the power supply monitors.

- If 5volt and Vpullup (or 3.3volts and ADC) both read 0volts, there could be a problem with the voltage regulator. Check VR3, VR4, C22, C24, R18.
- If one shows a voltage, but the other doesn't, there could be a problem with the voltage monitor, the PIC microcontroller, or you forgot to connect the pins for self-test mode. Check R10-R16.

## Bus pin check

The bus I/O pins and pull-up resistors are tested three ways. First, all bus pins are set high and verified without pull-up resistors. The pins then go low and the pull-up resistors are enabled to test open drain pin functionality. Finally, the pins are put in high-impedance mode to test the on-board pull-up resistors.

- Open collector high failures could indicate a problem with the on-board pull-up resistors, or you forgot to connect the 5volt and Vpullup pins. Check R19, R20-R23, IC3.
- Other errors could be a soldering defect or broken microcontroller.

## If your Bus Pirate fails the self-test...

- Make sure that no device is connected to any of the pins

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- Ensure that the +5v pin is connected to the Vpullup pin
- Check that the +3.3v pin is connected to ADC pin
- Check for poor solder connections or solder bridges
- Post the results of your test in the Bus Pirate forum (<http://dangerousprototypes.com/forum/index.php?board=4.0>)



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