

Background

This note describes the use of a foot pedal to trigger the freezing process with the BIU device. We have implemented this approach with this pedal (C\$14 from amazon.ca)

https://www.amazon.ca/dp/B073TD8F59/ref=pe_3034960_233709270_TE_item

“Huahuiyuan Black AC 250V 10A SPDT NO NC Momentary Foot Pedal Switch for CNC Industrial With Anti-skid Rubber Surface”

But any similar pedal should work.

Pushing the pedal closes a switch between the red and white wires of the pedal. We do not use the black wire.

The pedal replaces the IR sensor at the “timing” terminal block on the Shake-it-off v0.5 circuit board.

The IR sensor connection block has three terminals: GPIO20, Gnd, and +5 V. **The pedal does not use the +5 V.** In software, GPIO20 is pulled high. Pressing the pedal connects GPIO20 to Gnd, giving a low signal on GPIO20.

There are two possible mistakes that can damage the RPi.

- (1) Accidentally connecting the +5V to GPIO20: RPi's are set to take +3.3 V as input, not +5 V)
- (2) Accidentally setting GPIO20 as output: there is no current limiting resistor in the pedal, which would lead to a large current between GPIO20 and Gnd.

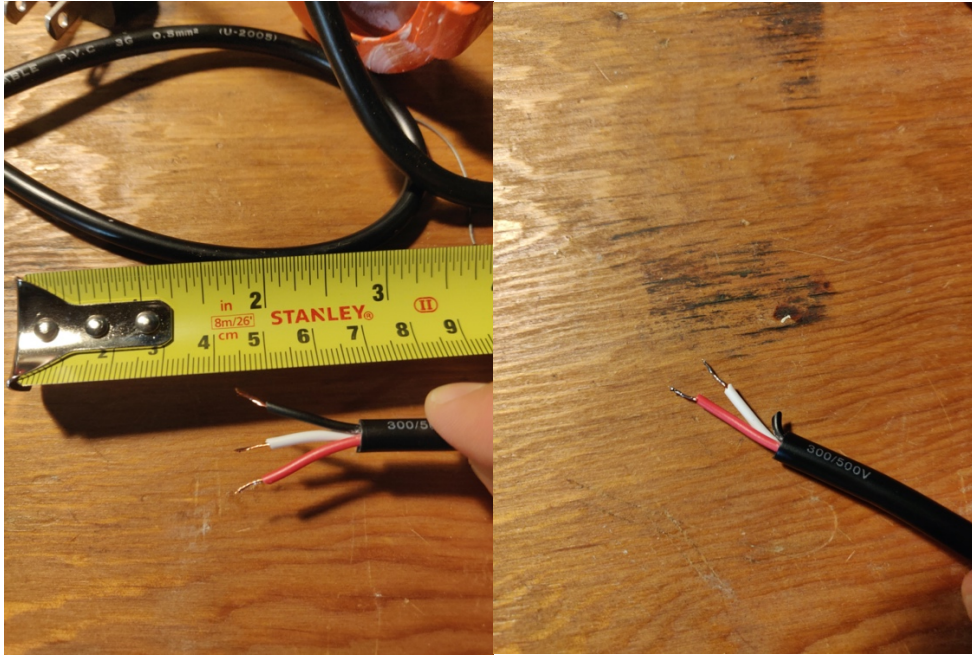
A future revision of the circuit board will address these issues but the pedal may be safely used if the correct software is installed and the following instructions are followed.

Preparing the pedal

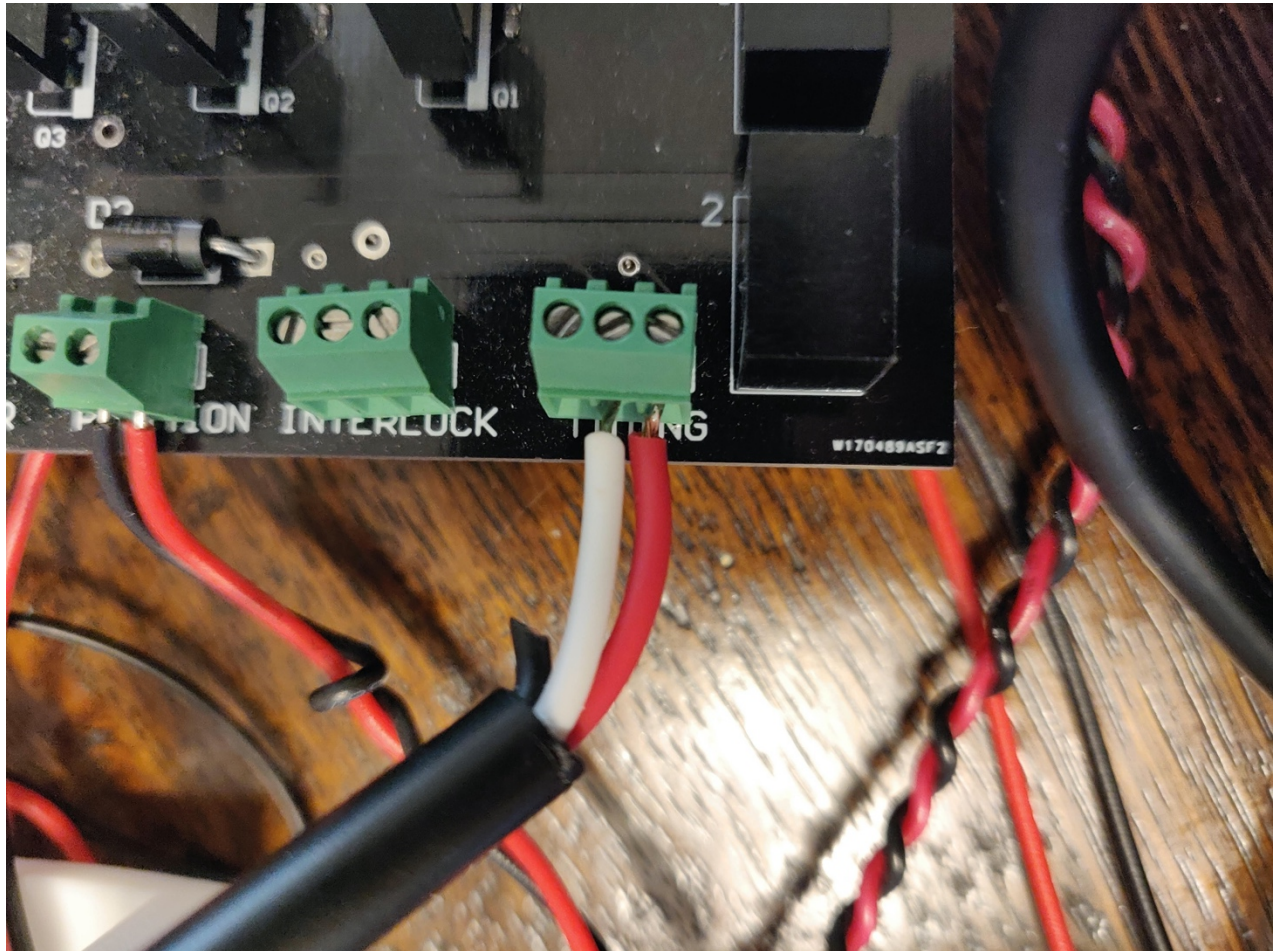
Use a razor blade (or utility knife) to remove ~2 cm of black sheath from cable



Strip ~5 mm of insulation from the 18 AWG red and white wire. Once stripped, twist the strands of copper so they don't fray. You may also add solder to the wires.



Unplug the BIU circuit board unplugged from the 24V power supply. Using a small screwdriver, insert and clamp the red and white wires of the pedal into the two bottom terminals of the “Timing” terminal block. **The red and white wires are interchangeable, but using the correct two openings of the terminal block is absolutely essential.**



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