Afterburner - PCB upgrades

Document Ver. 1

1) Introduction

Afterburner PCBs underwent several changes over time. The very early PCBs (versions 2 and older) did not support variable programming voltage. These are no longer actively supported, however they still work with the current Arduino sketches and PC App version 6.x. This documents focuses on PCB versions 3.0 and 3.1 and provides instructions how to partially upgrade them to allow programming of certain PLD chips.

2) PCB versions

PCB 3.0 Does **not** support:

- GAL18V10
- PEEL18CV8 (needs an extra adapter)

PCB 3.1 Does **not** support:

- PEEL18CV8 (needs an extra adapter)

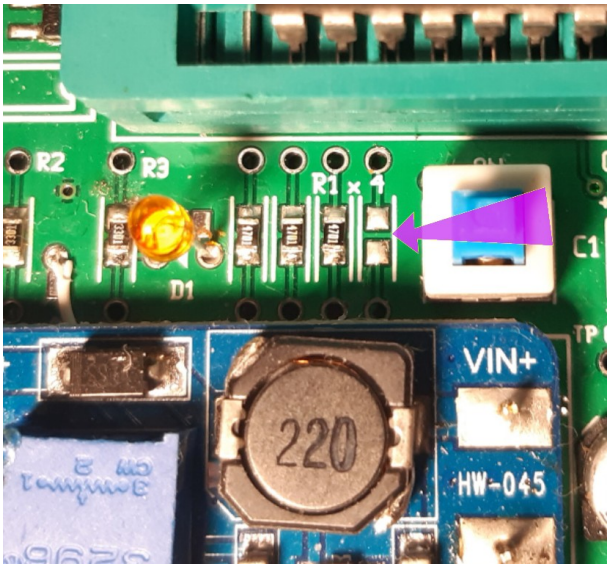
First, check which Afterburner version you have and whether you need to program the above ICs. If you don't need to program the above ICs then there is no point of upgrading your Afterburner PCB, unless you want to have the PCB fully featured.

If you have PCB 3.0 and you want to only add support for GAL18V10 then you need to do PCB 3.0 to PCB 3.1 mod. Otherwise you need the PCB 3.0 to PCB 3.2 mod, or PCB 3.1 to PCB 3.2 mod.

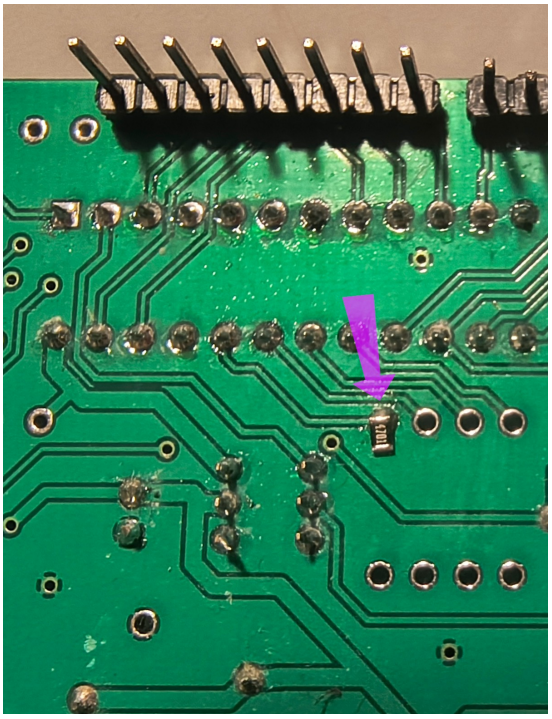
3) PCB 3.0 to PCB 3.1 mod

This mod requires to:

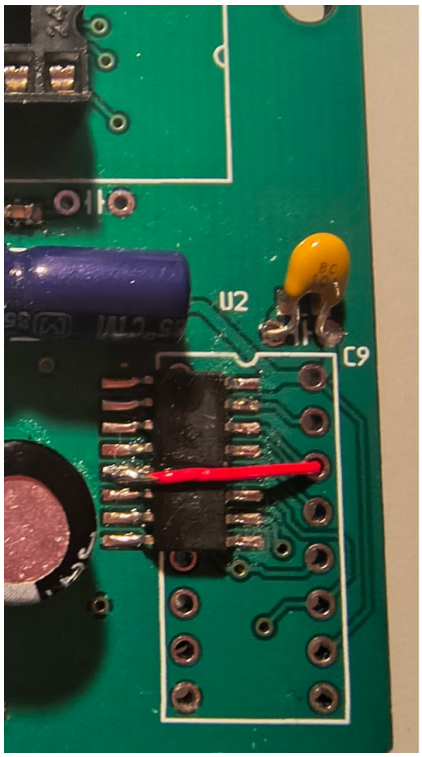
- desolder the right-most resistor of the R1 group (next to the switch)

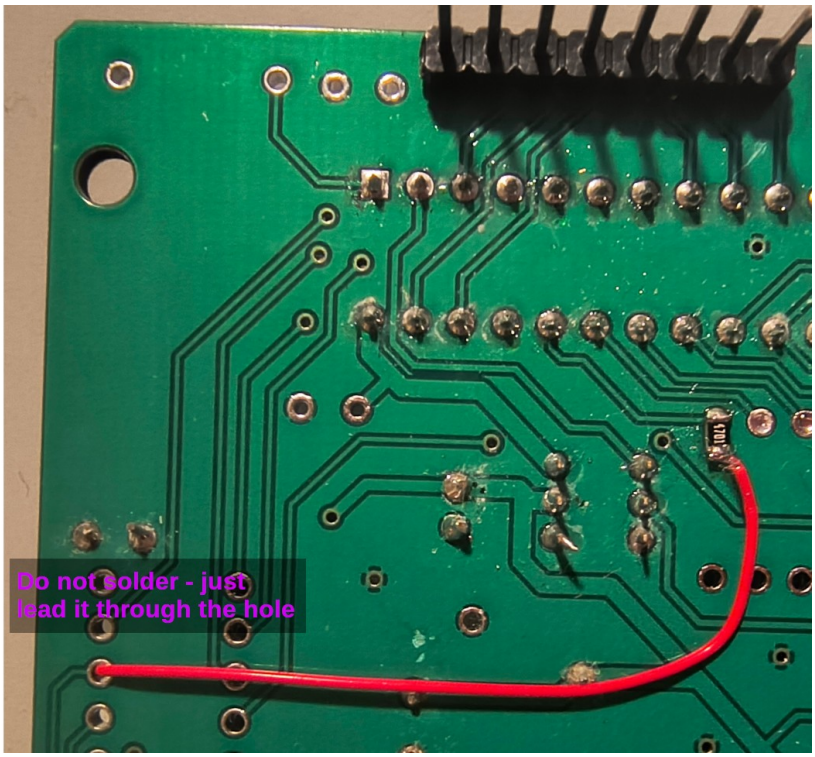


- solder the desoldered resistor on the bottom side of the PCB



- connect a thin **insulated** wire from the resistor to pin 5 of U2 (shift register 74HC595)

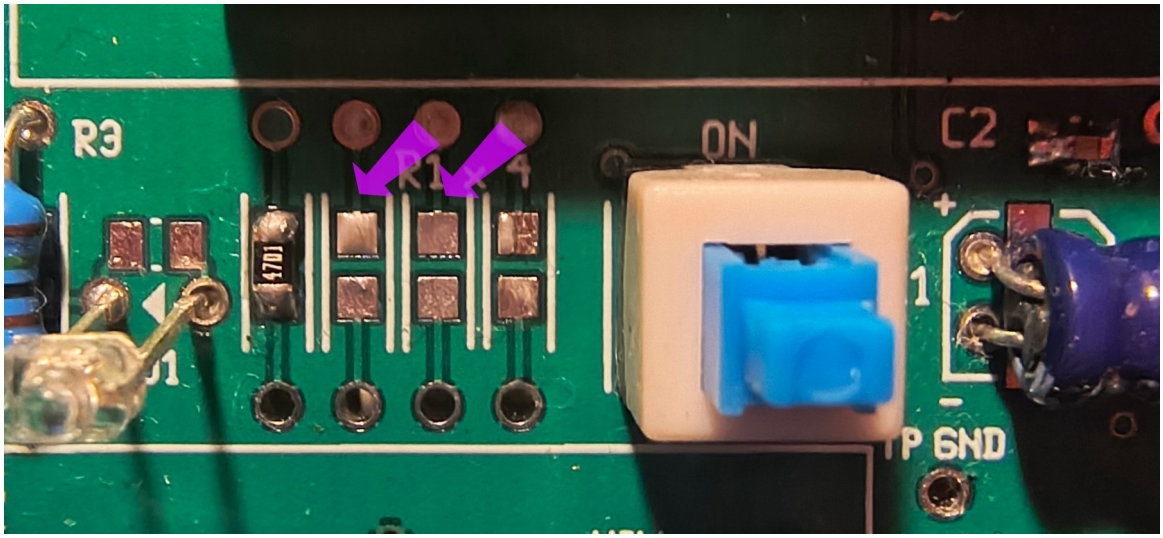




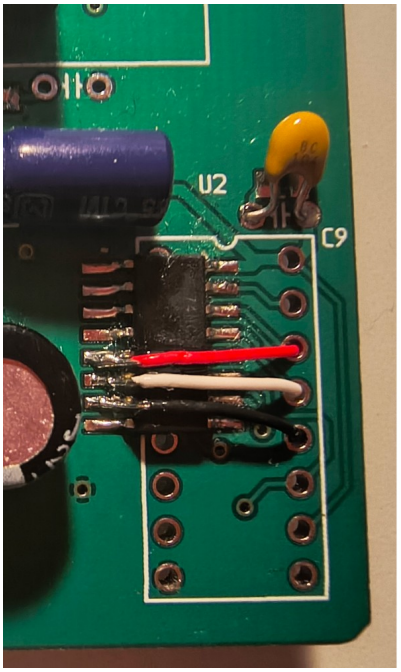
4) PCB 3.1 to PCB 3.2 mod

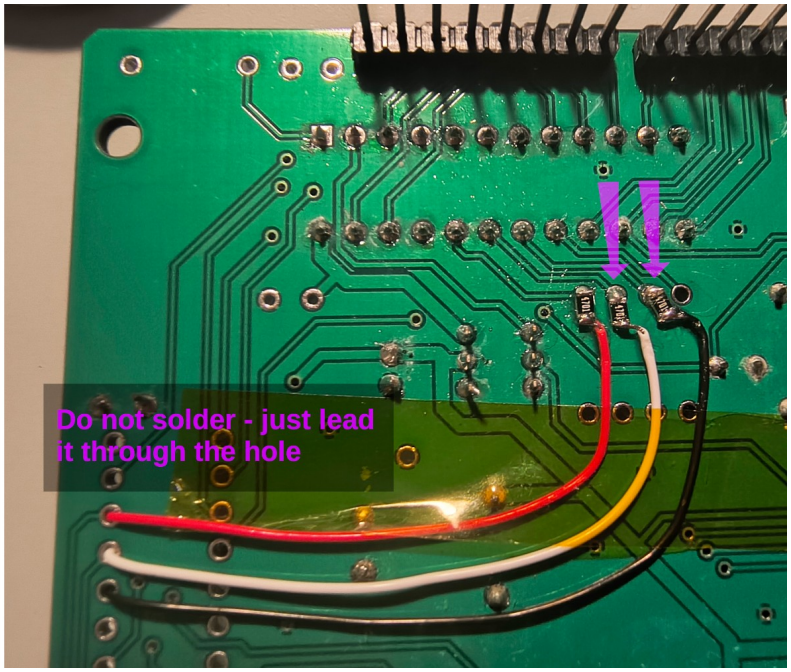
This mod requires to:

- desolder the middle 2 resistors of the R1 group (on PCB 3.1 keep the 1st and the 4th resistor soldered)



- solder the desoldered resistors on the bottom side of the PCB
- connect a thin **insulated** wire from each resistor to its appropriate pin (6 and 7) of U2 (shift register 74HC595).





Before plugging the PCB to Arduino ensure that the soldered wires are not bridged between each other and also they are not shorted to ground. Use multimeter in continuity mode to check that.

Notes:

- on PCB 3.1 there is no need to do the Red wire and its resistor mod - the board already has the mod in the design. Just do the white and black wire mod with its resistors.

- if you want to upgrade from PCB 3.0 to PCB 3.2 then do both of the mods.

- if you use Through Hole resistors then the steps are the same. Ensure the resistor wires do not touch exposed holes or other pads on the bottom of the PCB. Use kapton tape to insulate the holes and resistors.

- If you use Through Hole U2 IC (595 shift register) then solder the new wires to the U2 IC on the bottom of the board. Red wire: U2 pin 5, White wire U2 pin 6, Black wire U2 pin 7.