3D Printer Temperature Controller

User Manual

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Introduction

Thank you for purchasing an after market add-on for the UP Plus and Afinia printers.
The temperature controller will allow the use of a wide variety of after market filaments that work at different temperatures to the PP3DP filament.

Disclaimer

THE PRODUCTS AND KITS MAY BE USED BY ANY USERS, AT THEIR OWN RISK. TO THE FULLEST EXTENT PERMISSIBLE BY THE APPLICABLE LAW, WE HEREBY DISCLAIM ANY AND ALL RESPONSIBILITY, RISK, LIABILITY AND DAMAGES ARISING OUT OF DEATH OR PERSONAL INJURY RESULTING FROM ASSEMBLY, OR OPERATION OF OUR PRODUCTS. BY PURCHASING, AND USING OUR PRODUCTS YOU HAVE AGREED TO THE ABOVE TERMS IN THIS DISCLAIMER.

This add-on is in no way linked with the manufacturer of the printer. It is sold as a kit and shall be fitted and assessed for suitability by the user.

Safety First

The extruder on a 3D printer operates at high temperatures. If the sensing mechanisms and their fail safes fail, there is a risk of fire. Do not operate this unit unattended.

Altering the temperature of extrusion could have undesired side effects such as clogging due to low temperature, or stronger fumes due to high temperature. It is up to the user to determine what is the correct safe operating region for a given filament.

Specifications

Display:	128x64 White on Black OLED
Extrusion Temperature:	+50 to -70 Degrees C
	(Applied as an offset from the default of 200 / 270)
Offset Steps:	5 Degrees C
Display Precision:	1 Degree C
Accuracy:	Approx. +/- 7%
Operating Temperature:	0 – 75 Degrees C
Operating Voltage:	4-12V DC
Operating Current:	5-15mA

Preparation

The unit is supplied without an enclosure. Please download and print the latest enclosure from the website. This will ensure that the unit is protected against accidental damage during use.

Slot the main PCB into the printed case. It should be held in place by a small notch at the end of the groove.

Once the main PCB is in place, remove the protecting film from the OLED display and carefully slide the display into the slot.

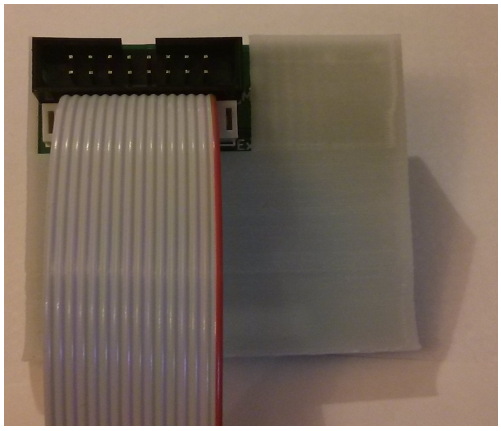
With the display in place, carefully connect the 4-pin connector from the main PCB.

Tip: You may need to clean up the slot slightly to get a good fit with the display. Do not force it, as the glass may break.

Installation

Remove the rainbow colored ribbon cable from the extruder.

Connect the removed cable to the IDC header at back of the temperature controller:



Connect the flying lead from the temperature controller to the extruder.

Carefully route the cables and ensure that the extruder head is free to move without catching.

Operation

When the printer initializes, the display should show a logo and web address.

After a second, the display will show the following:

(1) The current extruder temperature. This will always show the actual value, irrespective of any offset applied.

(2) The target temperature. This is the temperature at which the filament will be extruded.

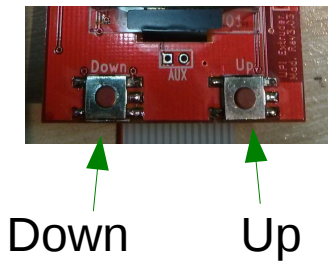
(3) External temperature (Temperature of the PCB or external sensor if fitted).

(4) The current mode. This must match the print settings (ABS or PLA) to show the correct target temperature.

(5) A graph showing the previous 5 minutes temperature history.

To control the target temperature use the “Down” and “Up” buttons.

To select between “ABS” and “PLA” modes press and hold both “Down” and “Up” for 2 seconds.

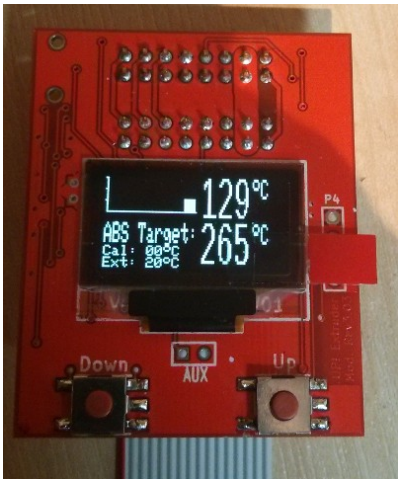


Auto Calibration Mode

The control unit supports an **experimental** mode that attempts to compensate for differing printer calibration and environmental changes. Ideally the printer should be used in 18-25 DegC surroundings (as per the manual). This isn't always possible and this mode should help to compensate.

Press and hold the “Down” button during power on (whilst the logo screen is displayed).

This will cause the display to show an additional line “Cal:”. When the temperature is near extrusion temperature and has remained stable (and incorrect) for a period of time, it will gradually try to adjust the offset to compensate and bring the target and actual temperatures to within 2 degrees.



Please note that this mode is very much experimental so take precautions should the temperature rise too high / low during operation. I.e. monitor the machine and be prepared to abort a print.