PC Based CNC Control

User Manual
3D Print Interface CPU5B

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Document History

Version	Date	Author	Comment
1	04-01-2016	Bert Eding	Initial version

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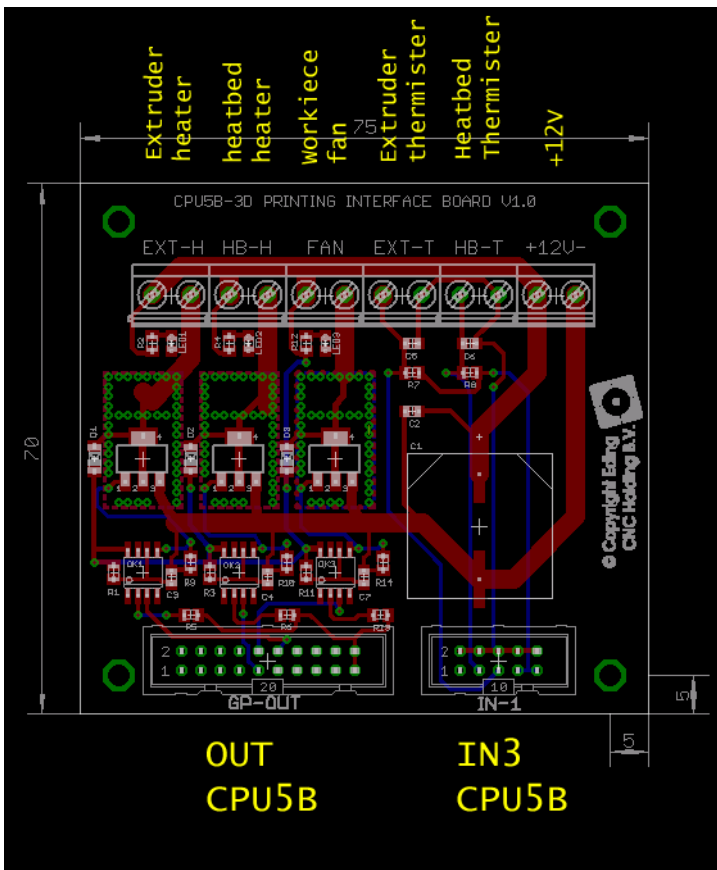
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1 Introduction and intended use

The MPG 3d printing interface is used for:
- Temperature measurement Extruder
- Temperature measurement Heat bed
- Heating control Extruder
- Heating control Heat bed
- Workpiece FAN control

2 Operating instructions

2.1 INSTALLING THE INTERFACE

2.1.1   Connections to 3D printer

1. Extruder heater resistor to upper left 2 screw connectors.
2. Heat bed heater (or SSR) to next 2 screw connectors.
3. Workpiece fan to next 2 screw connector besides head bed heater.
4. Then Extruder thermistor.
5. Then Heat bed thermistor.

2.1.2   Connections to CPU5B

1. Connect 20 Pole flat cable to OUT connector of CPU5B
2. Connect 10 pole flat cable to IN3 connector of CPU5B (Text IN-1 on interface board is wrong). The extruder thermistor is connected to ANALOG 1 of the CPU and the Heat bed thermistor to ANALOG 2, you can see the analog value read in the IO screen of the software.

2.1.3 **Thermocouple**

The board is standard designed to use 100K thermistors, these are sold by most 3D printer equipment suppliers.
A thermocouple for the extruder temperature may give better temperature readings/control-performance for the extruder.
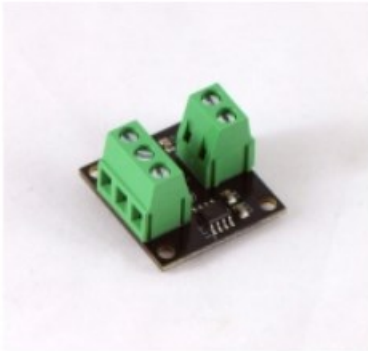
External thermocouple board v1.0

Add a thermocouple sensor to your electronics

This is a thermocouple board from reprapworld.
It can be connected to the thermistor input after removal of R7.
The left screw of the interface board is connected to the temperature output of the thermocouple board. The right screw is GND.

2.1.4 **Voltage to temperature translation**

The temperatures are determined from the input voltage via a table. If the software is started in 3D printer mode for the first time, default tables are generated in files extruderVoltTempTable.txt and heatBedVoltTempTable.txt.

The file is a list of <volt> <temperature> values.
Volt is the value read in the IO screen, analog 1 is extruder and analog 2 is head bed temperature sensor voltage. The volt value is a value between 0 and 1023. The temperature is in Degree Celsius. The maximum number of values is the table is 60. Note that for a thermocouple you will need theoretically only 2 sets of Volt-Temperature values because it is linear.