Heated Stage

## Documentation and Specifications

Build

- Base is a 9cm x 1cm round repurposed heat sink.
- Top plate is 3cm in diameter and custom machined.
- Heating is powered by a 2.6cm BK22 round peltier element embedded into the heat sink and top plate.
- Temperature is measured by a 100kΩ NTC Thermistor (B=3950).[1]
- The control is done by a Thorlabs TED200C Temperature Controller[2]
- Stage is mounted to a translation stage via 2 m4 screws.
- A layer of insulation placed between the top plate and heat sink (around the peltier element).

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1. https://www.rajguruelectronics.com/Product/1/100K%20OHM%20NTC%20Thermistors%20For%20Reprap%203D%20Printer.pdf
2. https://www.thorlabs.com/drawings/d21f504dcfaa7881-24F483D6-E778-4D9F-CC82EFCB8DEE3B76/TED200C-Manual(English).pdf

Thermistor Specifications

Below is the resistance-temperature relationship for the thermistor.
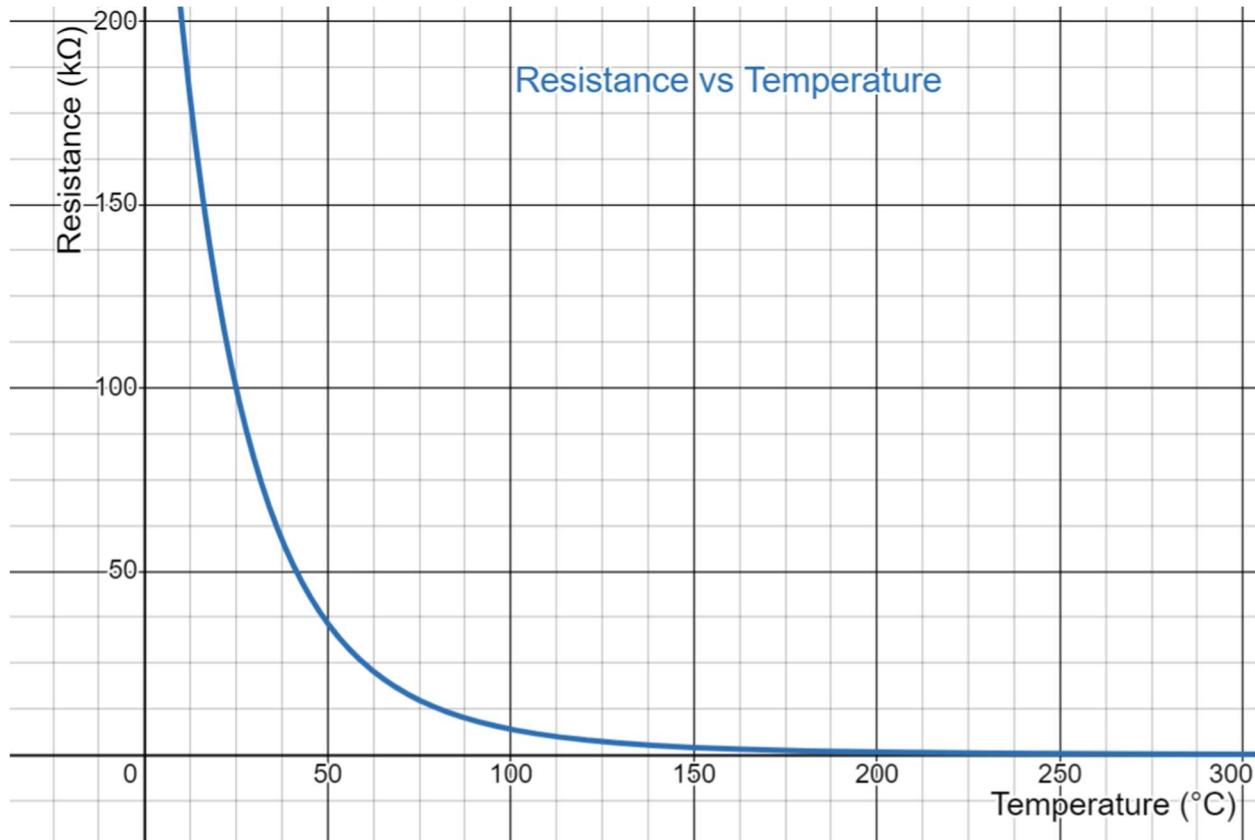
Thermistor Output Table

°F	°C	kΩ	°F	°C	kΩ
50	10	201.75	150.8	66	20.16
53.6	12	182.94	154.4	68	18.83
57.2	14	166.12	158	70	17.6
60.8	16	151.04	161.6	72	16.46
64.4	18	137.51	165.2	74	15.41
68	20	125.35	168.8	76	14.44
71.6	22	114.41	172.4	78	13.54
75.2	24	104.56	176	80	12.7
77	25	100	179.6	82	11.93
78.8	26	95.67	183.2	84	11.21
82.4	28	87.64	186.8	86	10.54
86	30	80.37	190.4	88	9.92
89.6	32	73.79	194	90	9.34
93.2	34	67.83	197.6	92	8.8
96.8	36	62.41	201.2	94	8.29
100.4	38	57.49	204.8	96	7.82
104	40	53.01	208.4	98	7.38
107.6	42	48.94	212	100	6.98
111.2	44	45.22	215.6	102	6.59
114.8	46	41.82	219.2	104	6.23
118.4	48	38.72	222.8	106	5.9
122	50	35.88	226.4	108	5.59
125.6	52	33.28	230	110	5.29
129.2	54	30.9	233.6	112	5.02
132.8	56	28.71	237.2	114	4.76
136.4	58	26.71	240.8	116	4.51
140	60	24.86	244.4	118	4.29
143.6	62	23.16	248	120	4.07
147.2	64	21.6			

Images
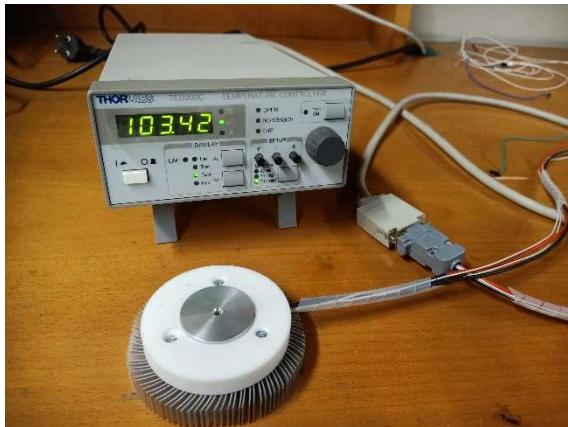
Fig 1. Stage and Temperature Controller

Fig 2. Stage top view