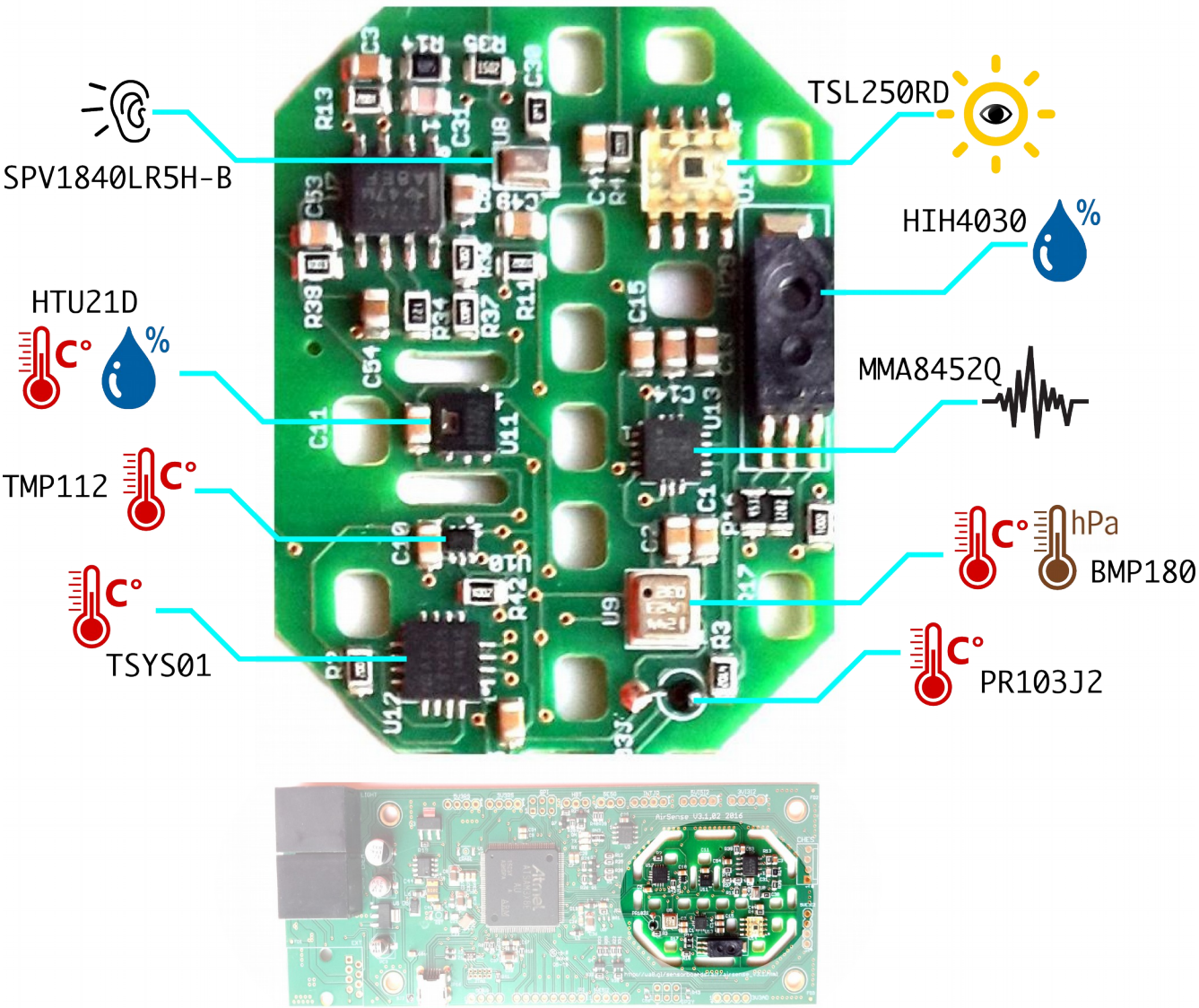
Notes:

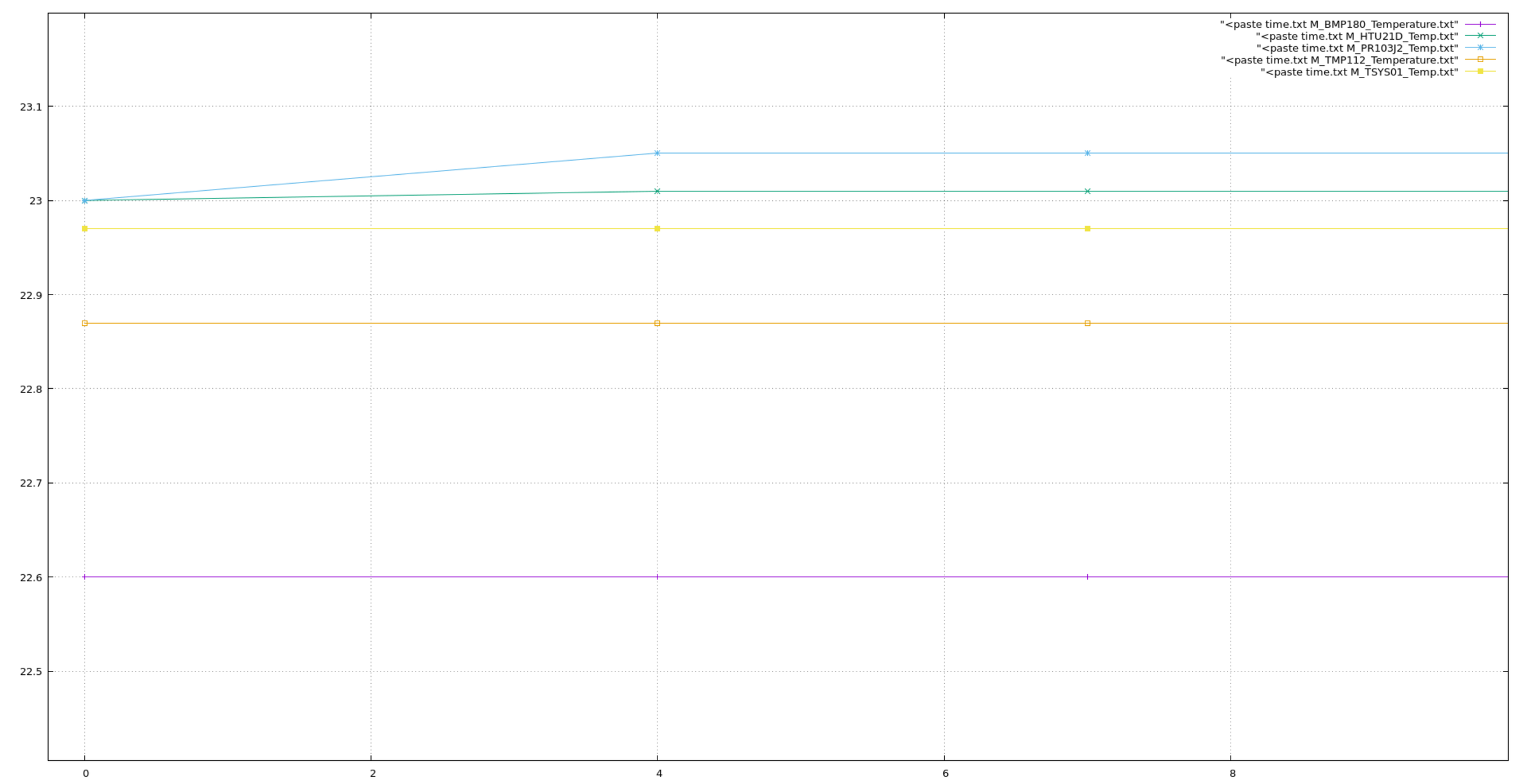
I. Only the Metsense board is used in all the graphs.
II. The Metsense board has several sensors on it, a bunch of which measure temperature, two of which measure humidity and one pressure (see figure below).
III. Below is the arrangement of sensors on the Metsense board. In the image way below, you can see that the CPU (has ATMEL written on it) is closest to TSYS and PRJ sensors. The PRJ Sensor is lifted from the board by 2 mm. The rest of the sensors are mounted on the board).

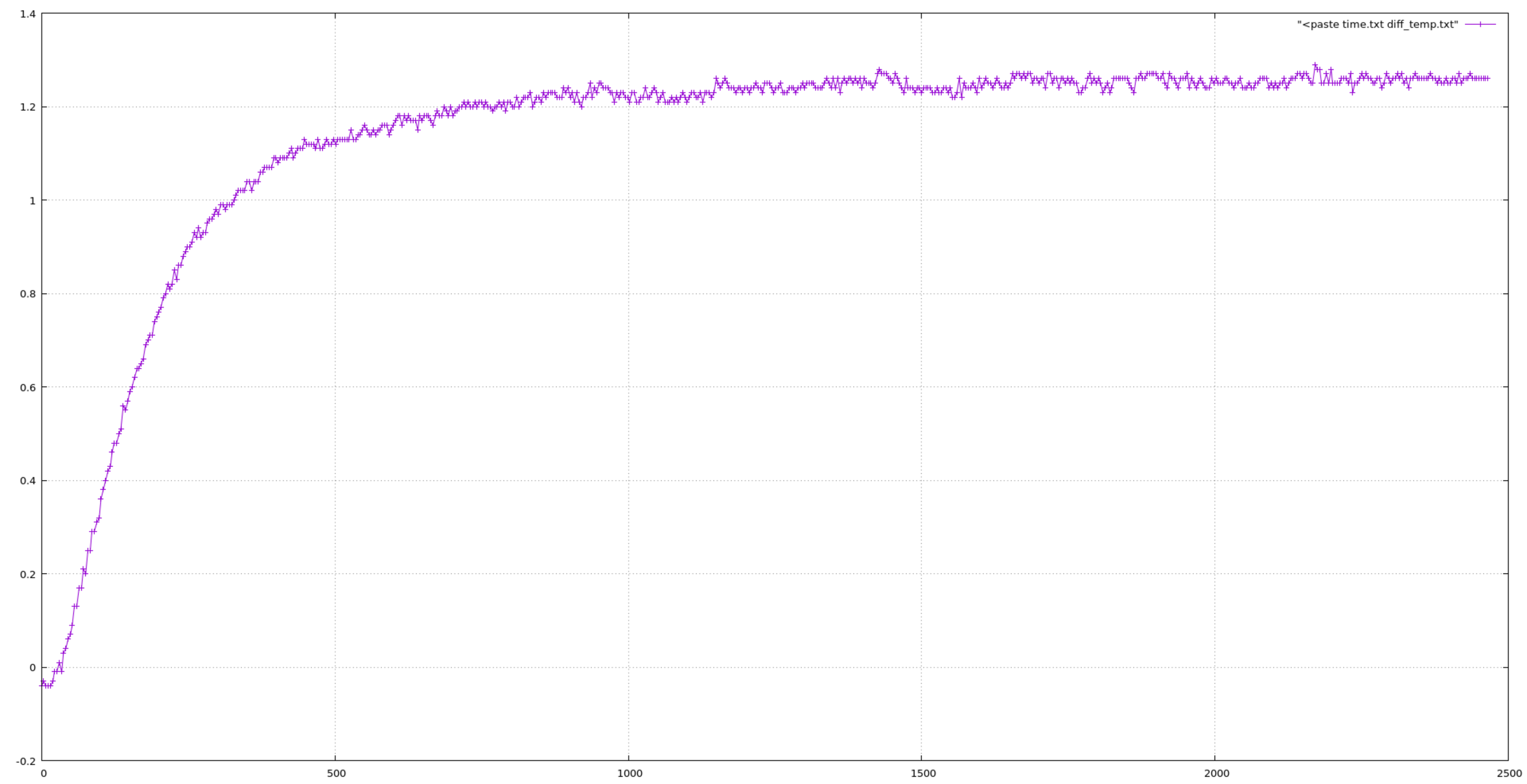
IV. Graphs and Axis:
1. In graphs with **temperature**, the Y axis unit is **Centigrade** and the X axis unit is **Seconds**.
2. In graphs with **humidity**, the Y axis unit is **%RH** and the X axis unit is **Seconds**.
3. In graphs with **Atmospheric Pressure**, the Y axis unit is **Pa** and the X axis unit is **Seconds**.

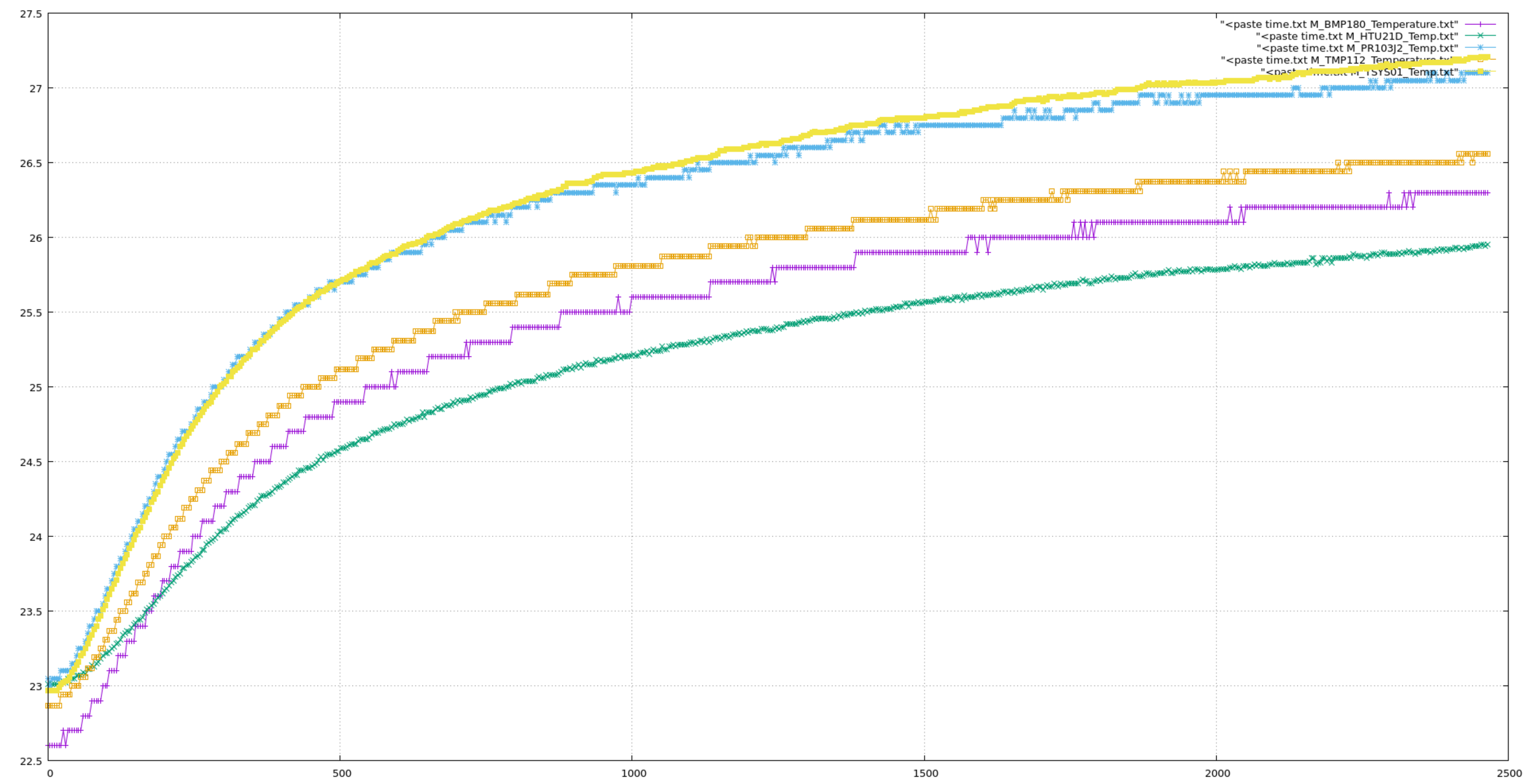


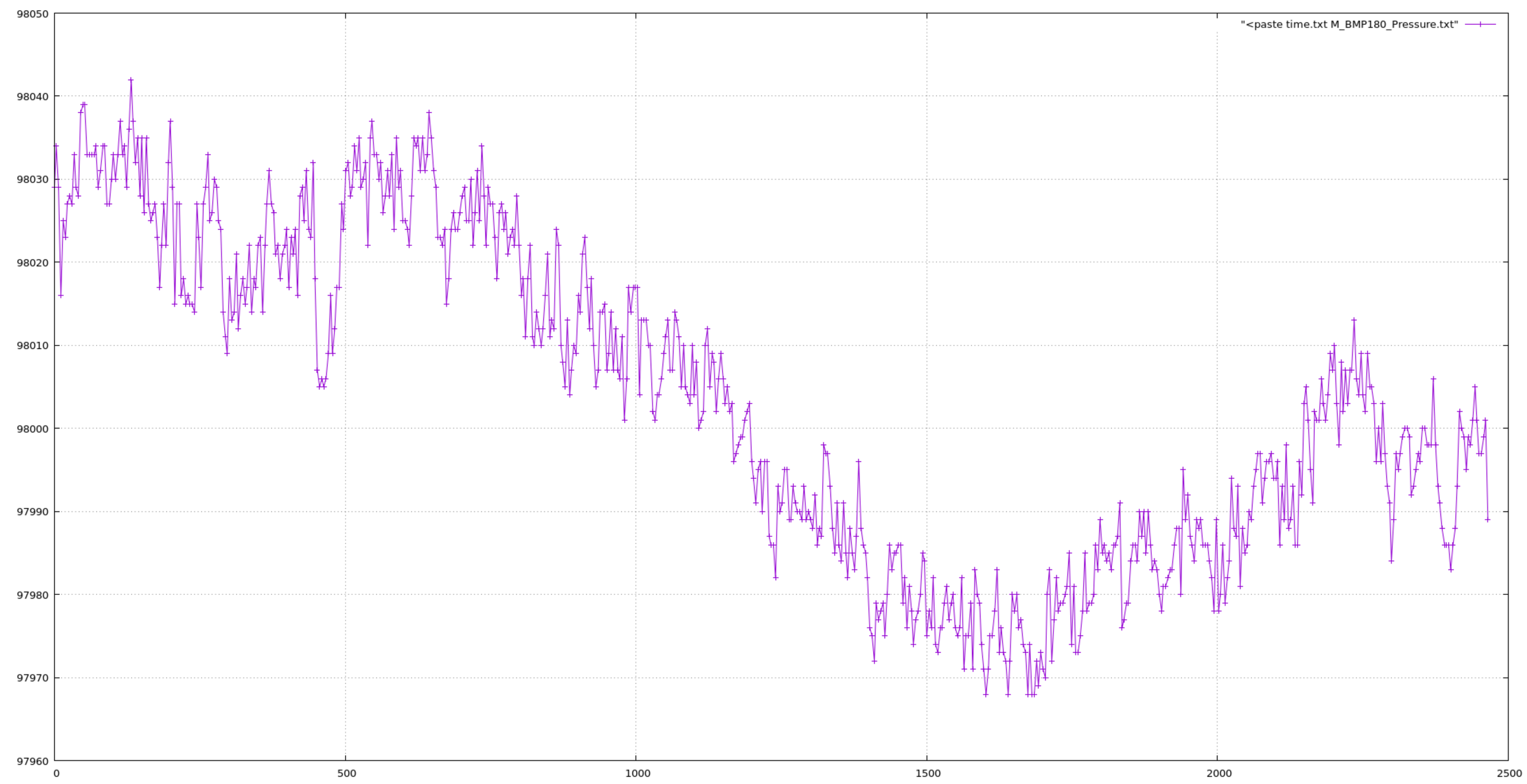
Board Test : Cold Boot Short Test

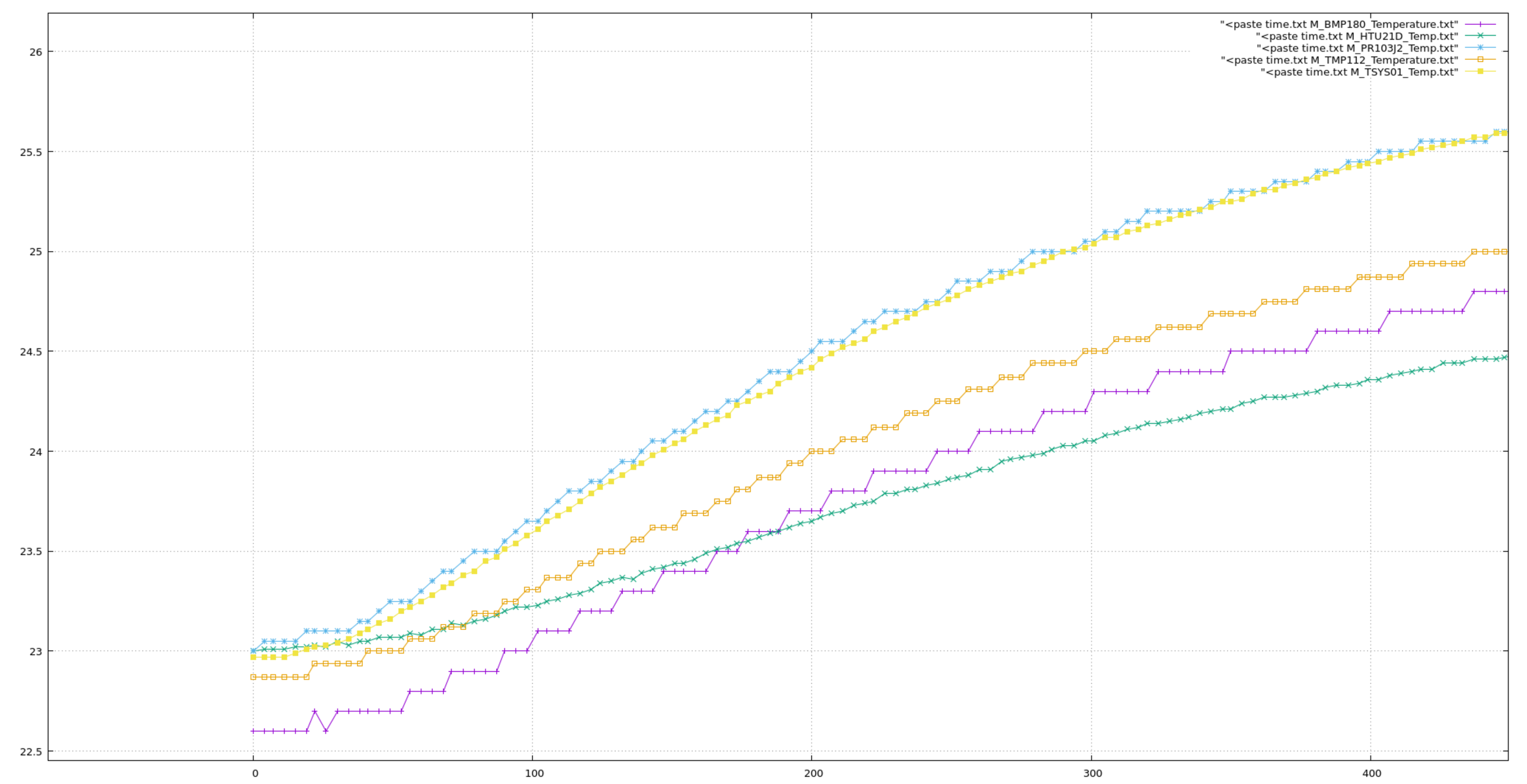
* Only Metsense board, left out in open in a room.
* No external environment changes.

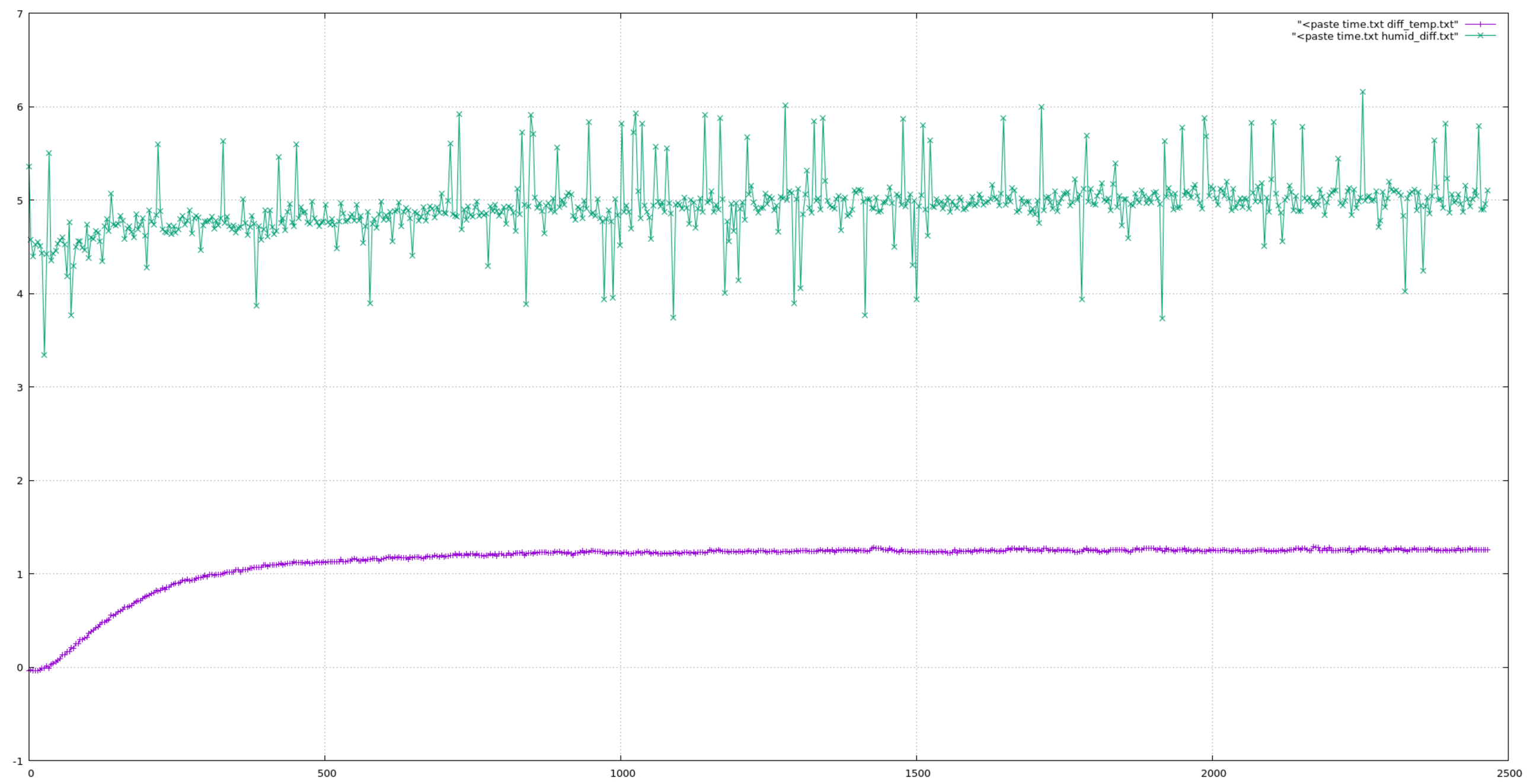

"<paste time.txt M_BMP180_Temperature.txt"
"<paste time.txt M_HTU21D_Temp.txt"
"<paste time.txt M_PR103J2_Temp.txt"
"<paste time.txt M_TMP112_Temperature.txt"
"<paste time.txt M_TSYS01_Temp.txt"
23.1
23
22.9
22.8
22.7
22.6
22.5
0
2
4
6
8

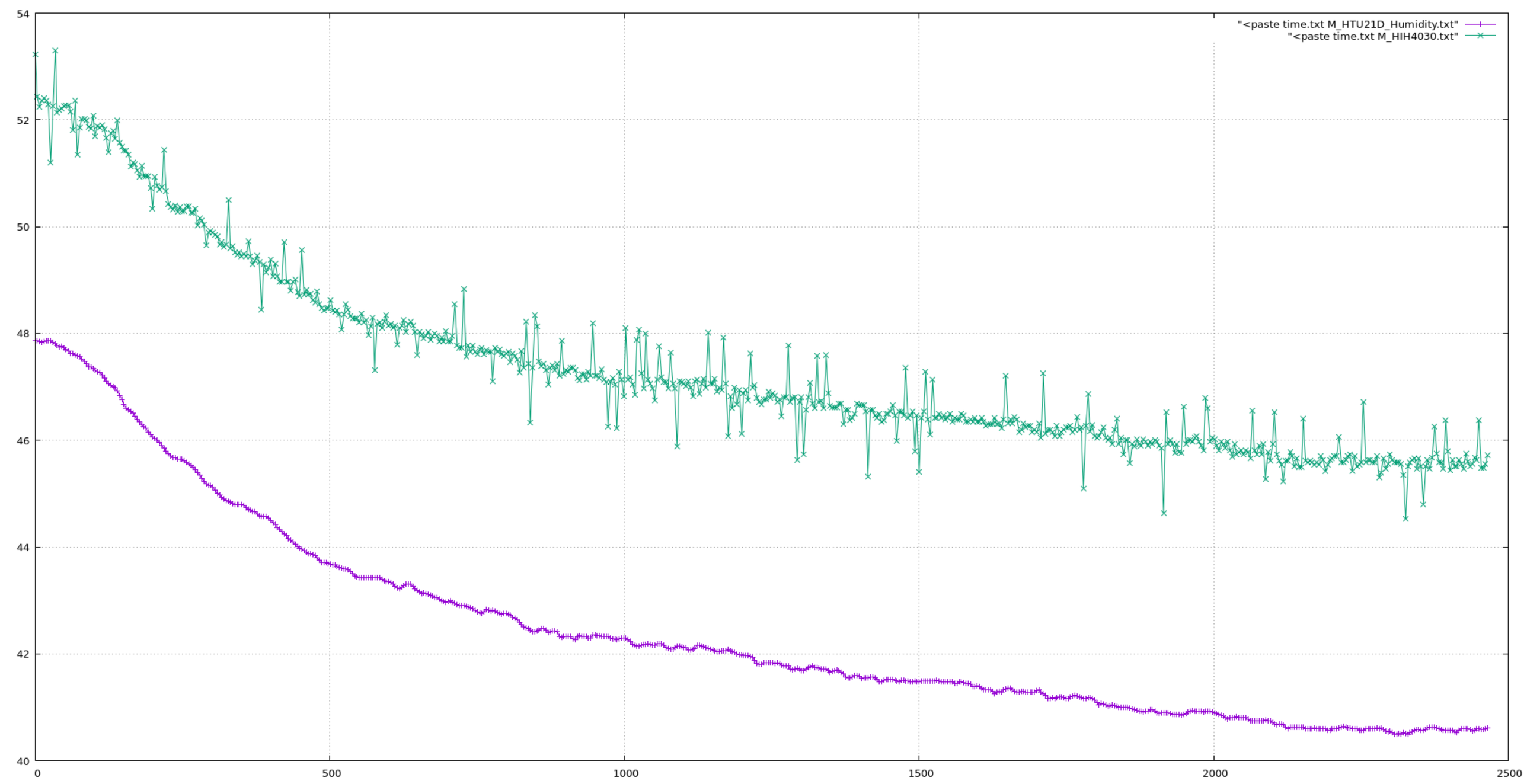

"<paste time.txt diff_temp.txt"
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
0
500
1000
1500
2000
2500


"<paste time.txt M_BMP180_Temperature.txt"
"<paste time.txt M_HTU21D_Temp.txt"
"<paste time.txt M_PR103J2_Temp.txt"
"<paste time.txt M_TMP112_Temperature.txt"
"<paste time.txt M_TSYS01_Temp.txt"
27.5
27
26.5
26
25.5
25
24.5
24
23.5
23
22.5
0
500
1000
1500
2000
2500


"<paste time.txt M_BMP180_Pressure.txt"
98050
98040
98030
98020
98010
98000
97990
97980
97970
97960
0
500
1000
1500
2000
2500

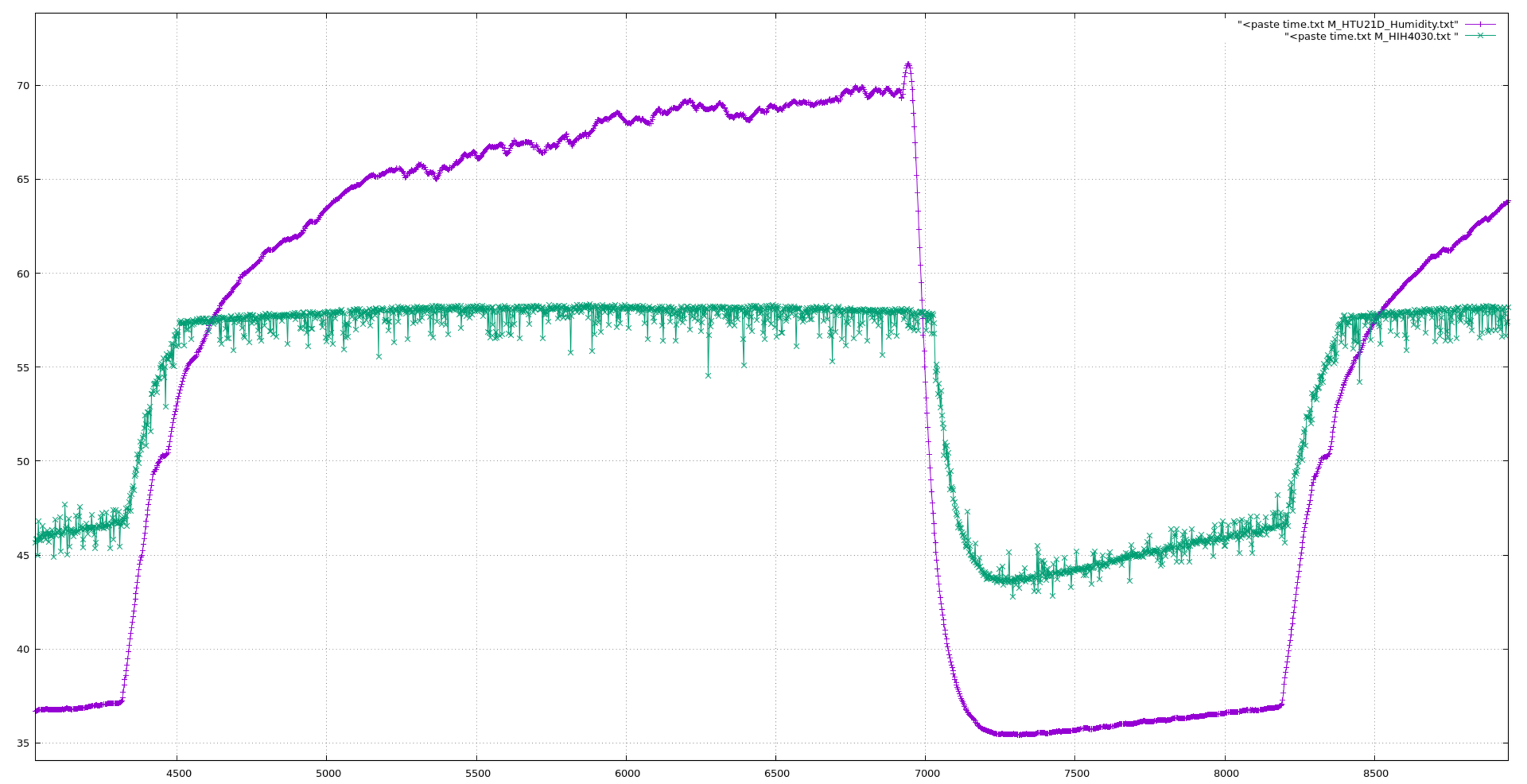

"<paste time.txt M_BMP180_Temperature.txt"
"<paste time.txt M_HTU21D_Temp.txt"
"<paste time.txt M_PR103J2_Temp.txt"
"<paste time.txt M_TMP112_Temperature.txt"
"<paste time.txt M_TSYS01_Temp.txt"
26
25.5
25
24.5
24
23.5
23
22.5
0
100
200
300
400

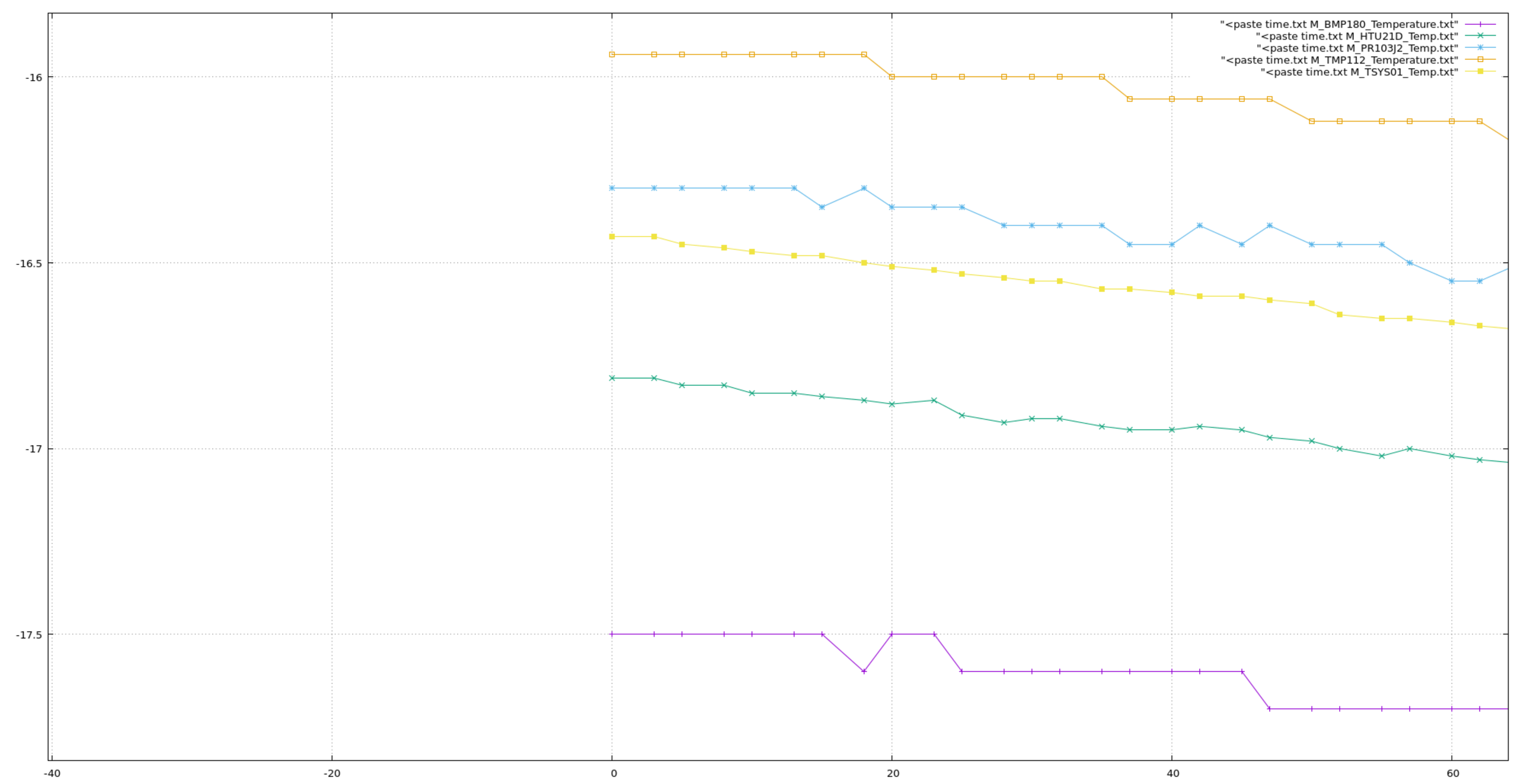

"<paste time.txt diff_temp.txt"
"<paste time.txt humid_diff.txt"
7
6
5
4
3
2
1
0
-1
0
500
1000
1500
2000
2500

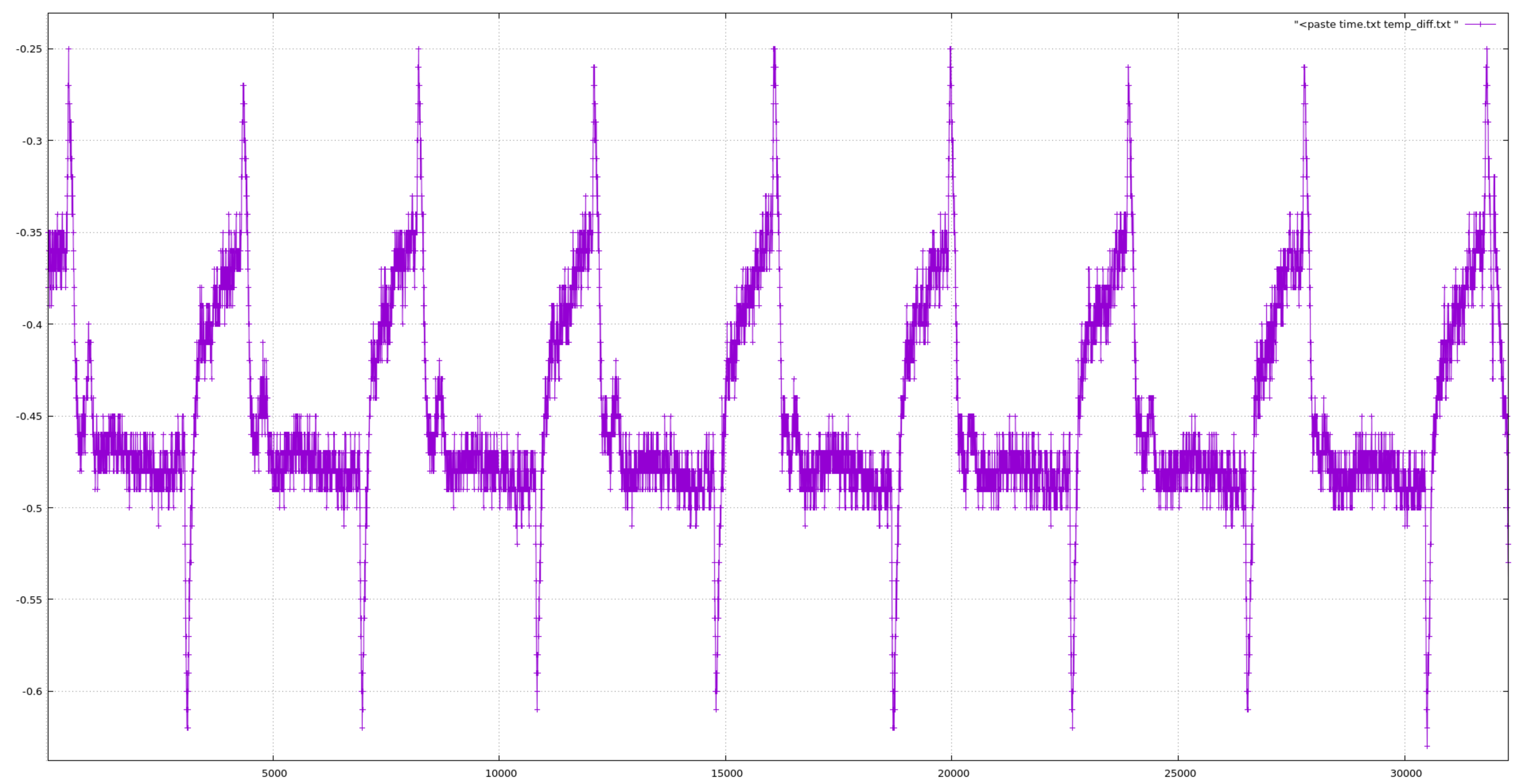

"<paste time.txt M_HTU21D_Humidity.txt"
"<paste time.txt M_HIH4030.txt"
54
52
50
48
46
44
42
40
0
500
1000
1500
2000
2500

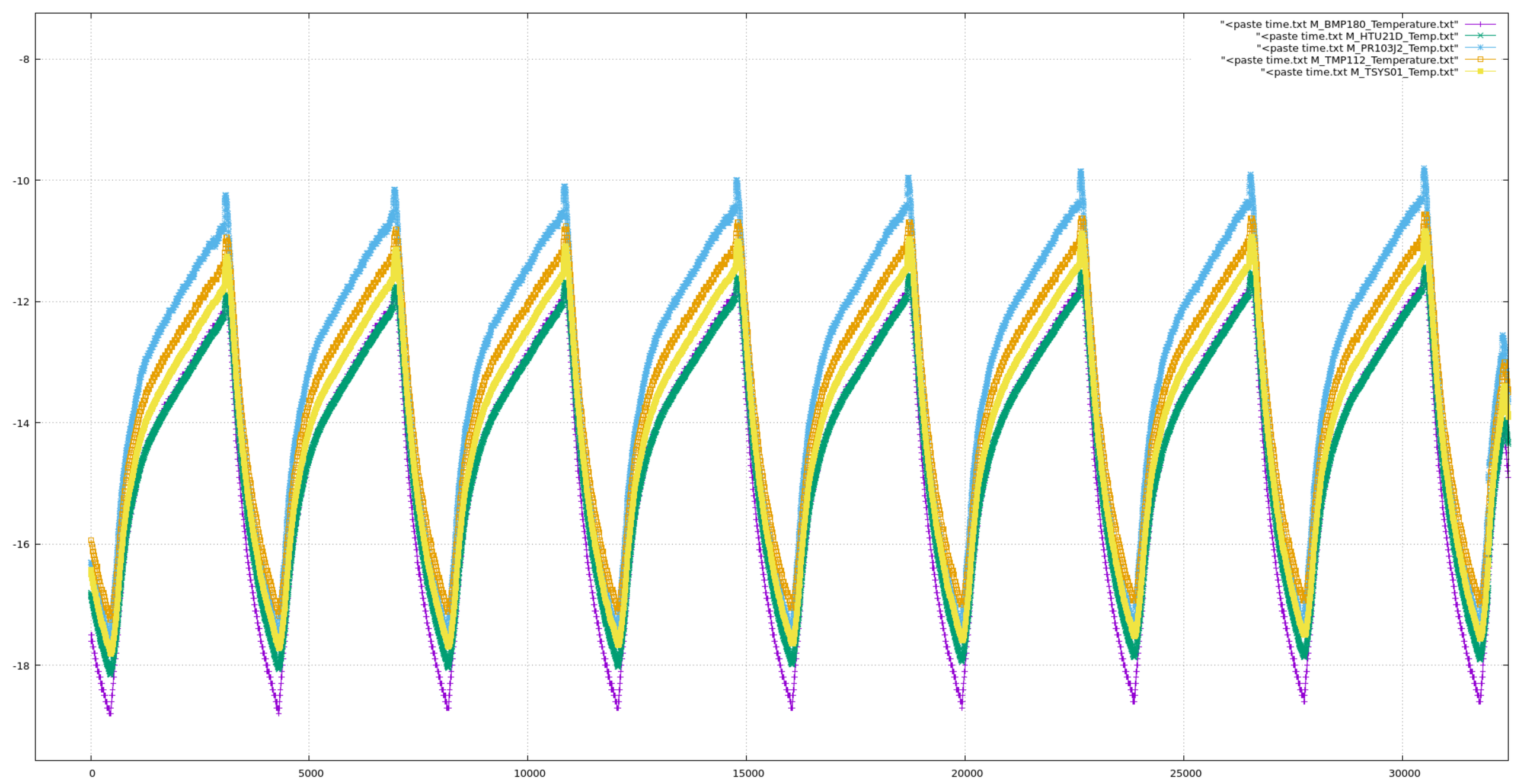
Board Test : Freeze Test

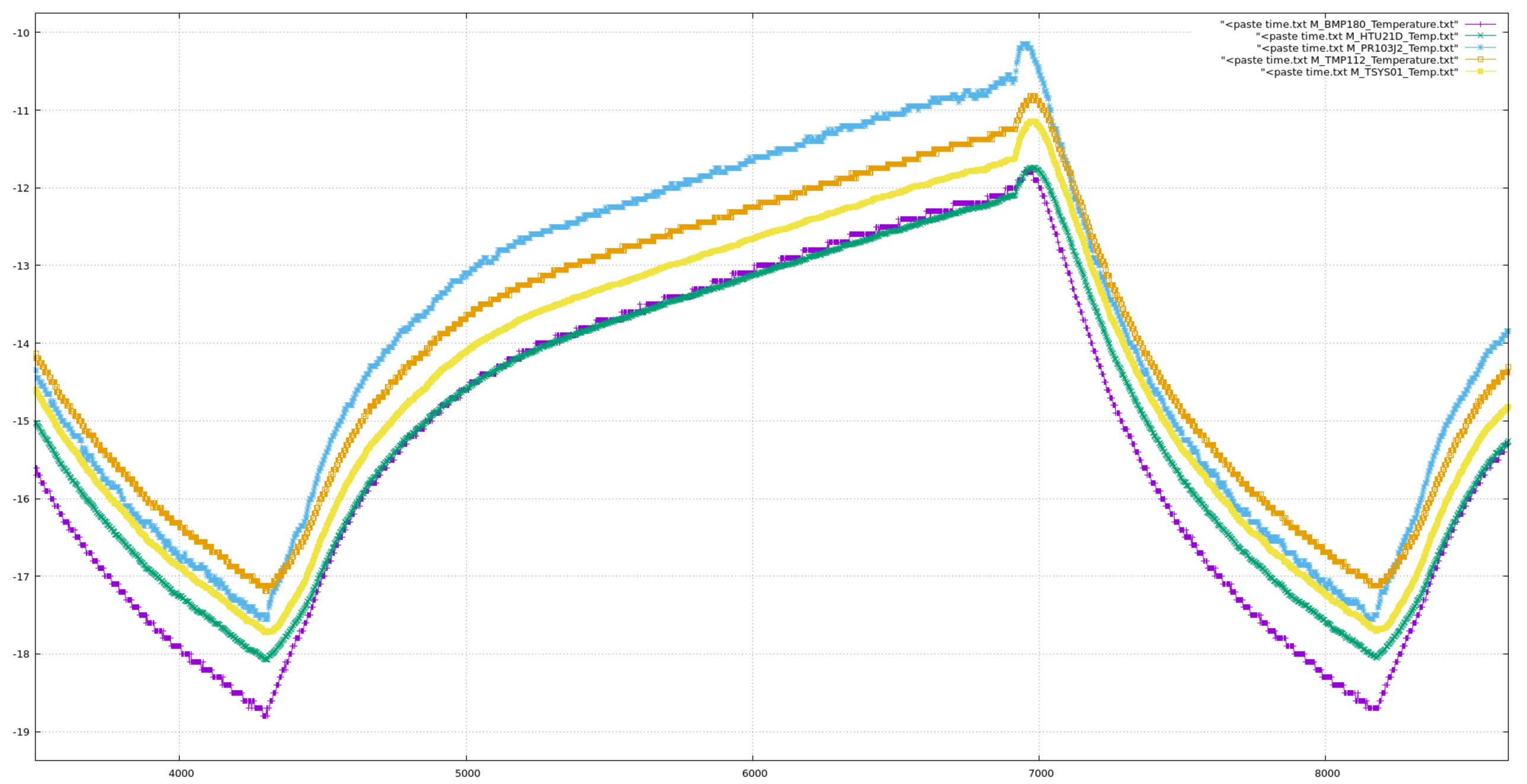
* Only Metsense board, left overnight in home freezer.


"<paste time.txt M_HTU21D_Humidity.txt"
"<paste time.txt M_HIH4030.txt "
70
65
60
55
50
45
40
35
4500
5000
5500
6000
6500
7000
7500
8000
8500


"<paste time.txt M_BMP180_Temperature.txt"
"<paste time.txt M_HTU21D_Temp.txt"
"<paste time.txt M_PR103J2_Temp.txt"
"<paste time.txt M_TMP112_Temperature.txt"
"<paste time.txt M_TSYS01_Temp.txt"
-16
-16.5
-17
-17.5
-40
-20
0
20
40
60


"<paste time.txt temp_diff.txt "
-0.25
-0.3
-0.35
-0.4
-0.45
-0.5
-0.55
-0.6
5000
10000
15000
20000
25000
30000


"<paste time.txt M_BMP180_Temperature.txt"
"<paste time.txt M_HTU21D_Temp.txt"
"<paste time.txt M_PR103J2_Temp.txt"
"<paste time.txt M_TMP112_Temperature.txt"
"<paste time.txt M_TSYS01_Temp.txt"
-8
-10
-12
-14
-16
-18
0
5000
10000
15000
20000
25000
30000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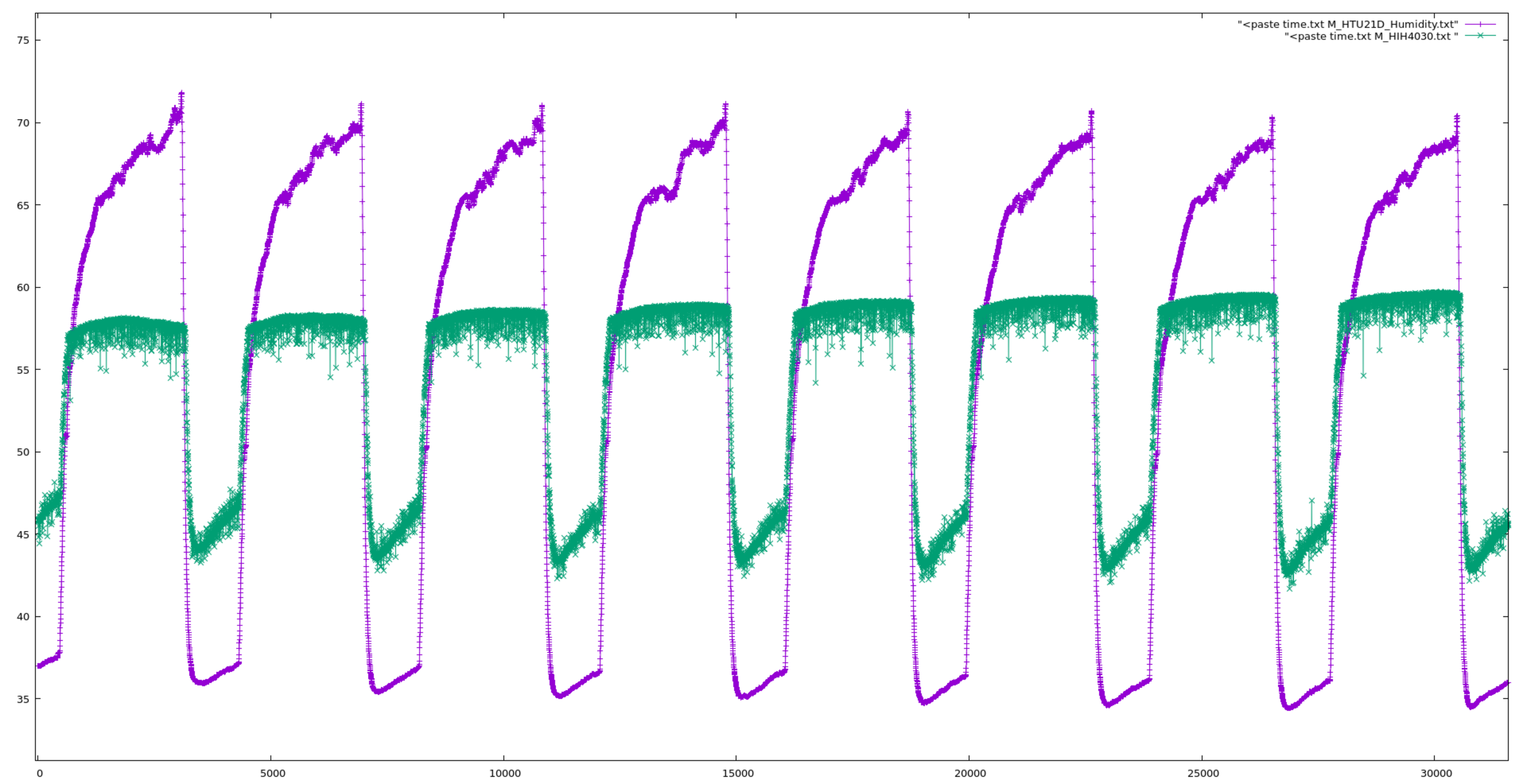
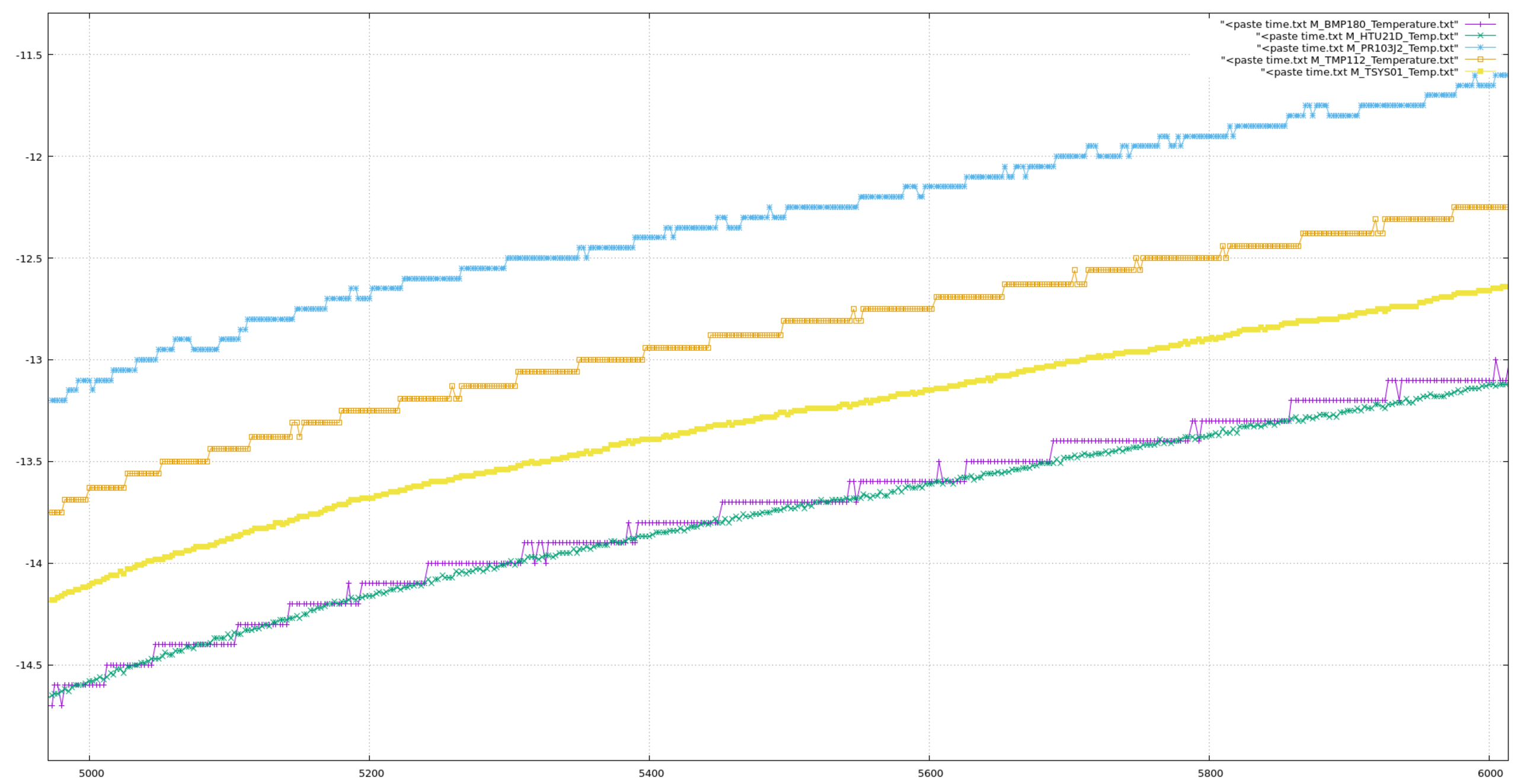
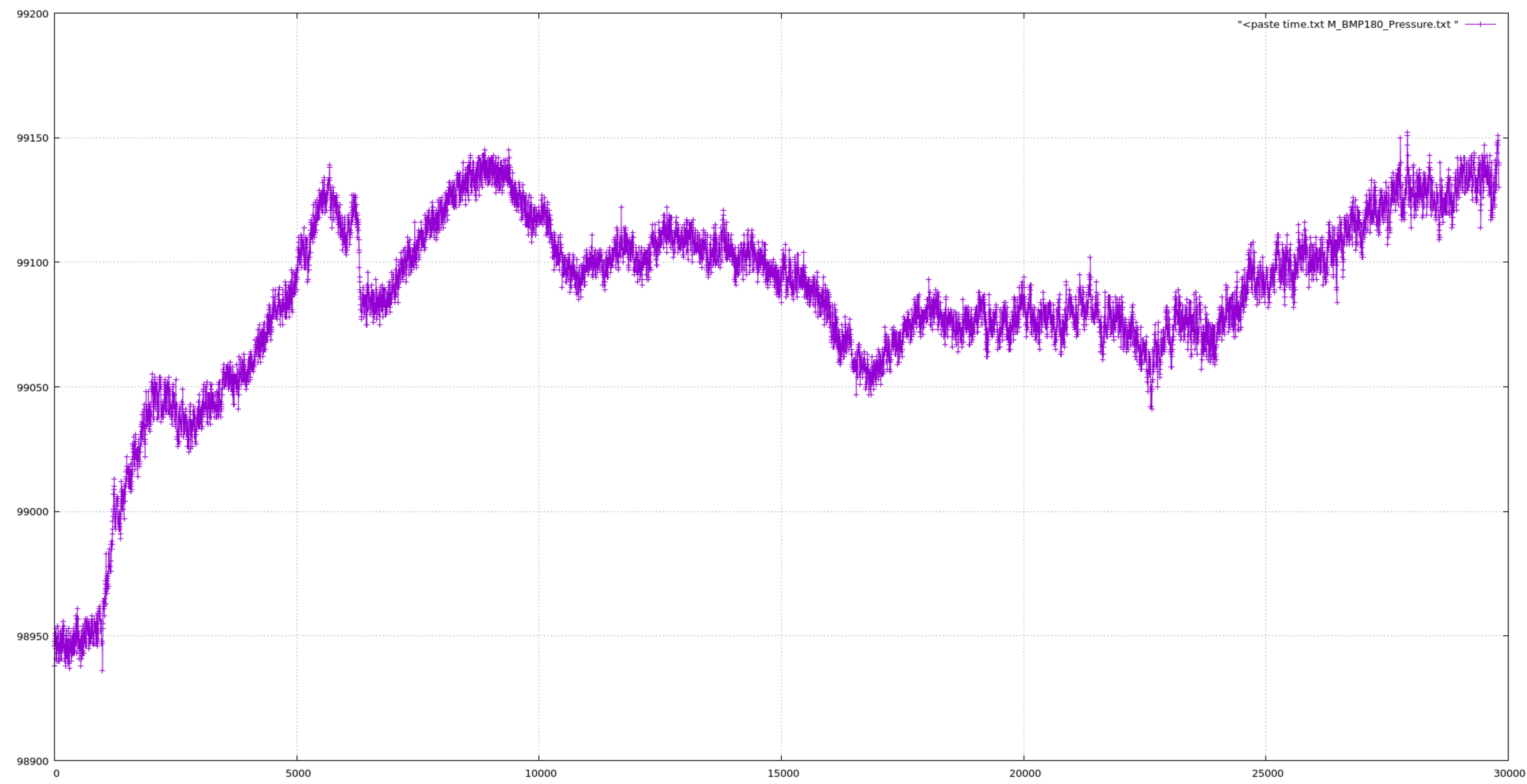
"<paste time.txt M_HTU21D_Temp.txt"
"<paste time.txt M_PR103J2_Temp.txt"
"<paste time.txt M_TMP112_Temperature.txt"
"<paste time.txt M_TSYS01_Temp.txt"
-10
-11
-12
-13
-14
-15
-16
-17
-18
-19
4000
5000
6000
7000
8000

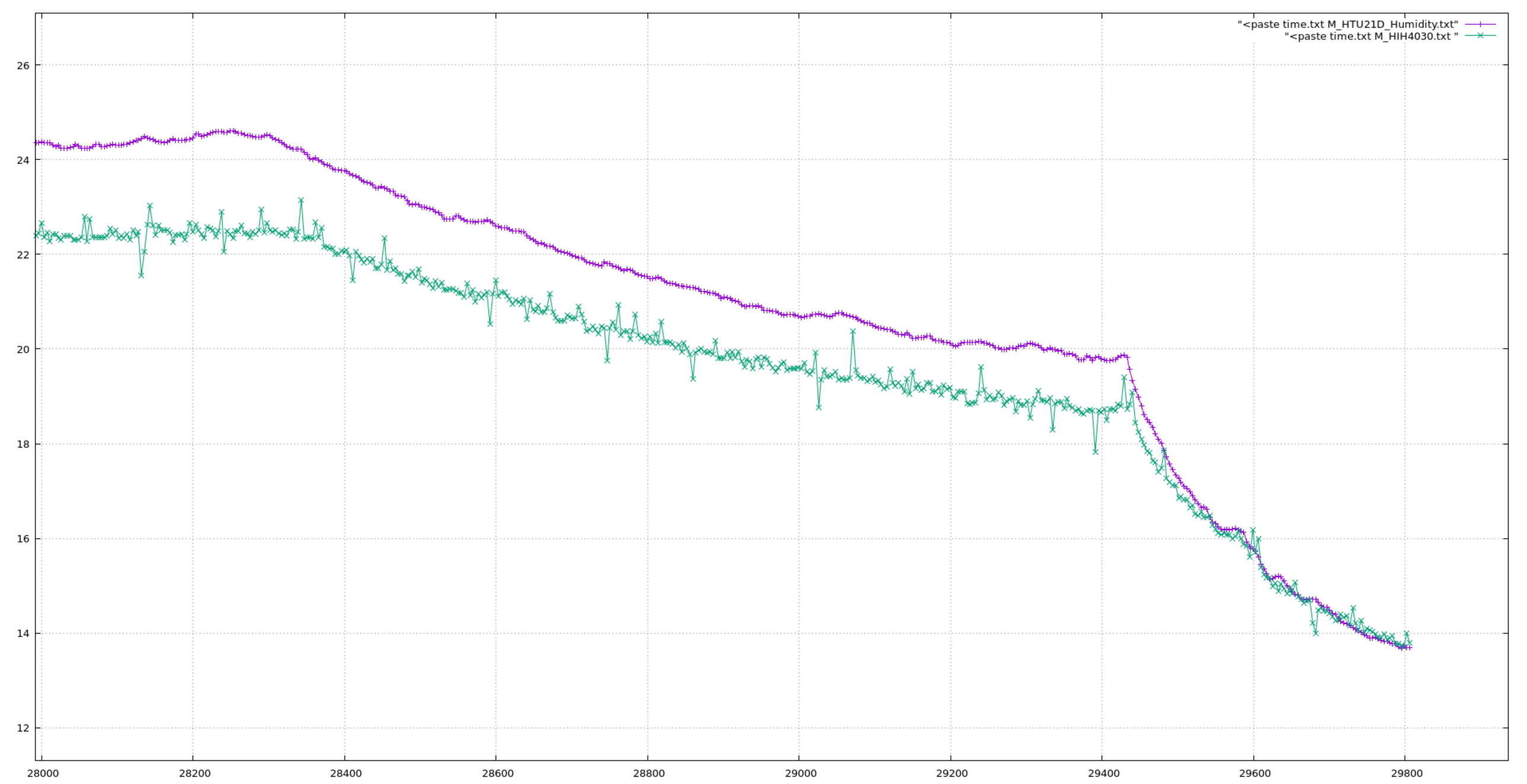

"<paste time.txt M_HTU21D_Humidity.txt"
"<paste time.txt M_HIH4030.txt "
75
70
65
60
55
50
45
40
35
0
5000
10000
15000
20000
25000
30000

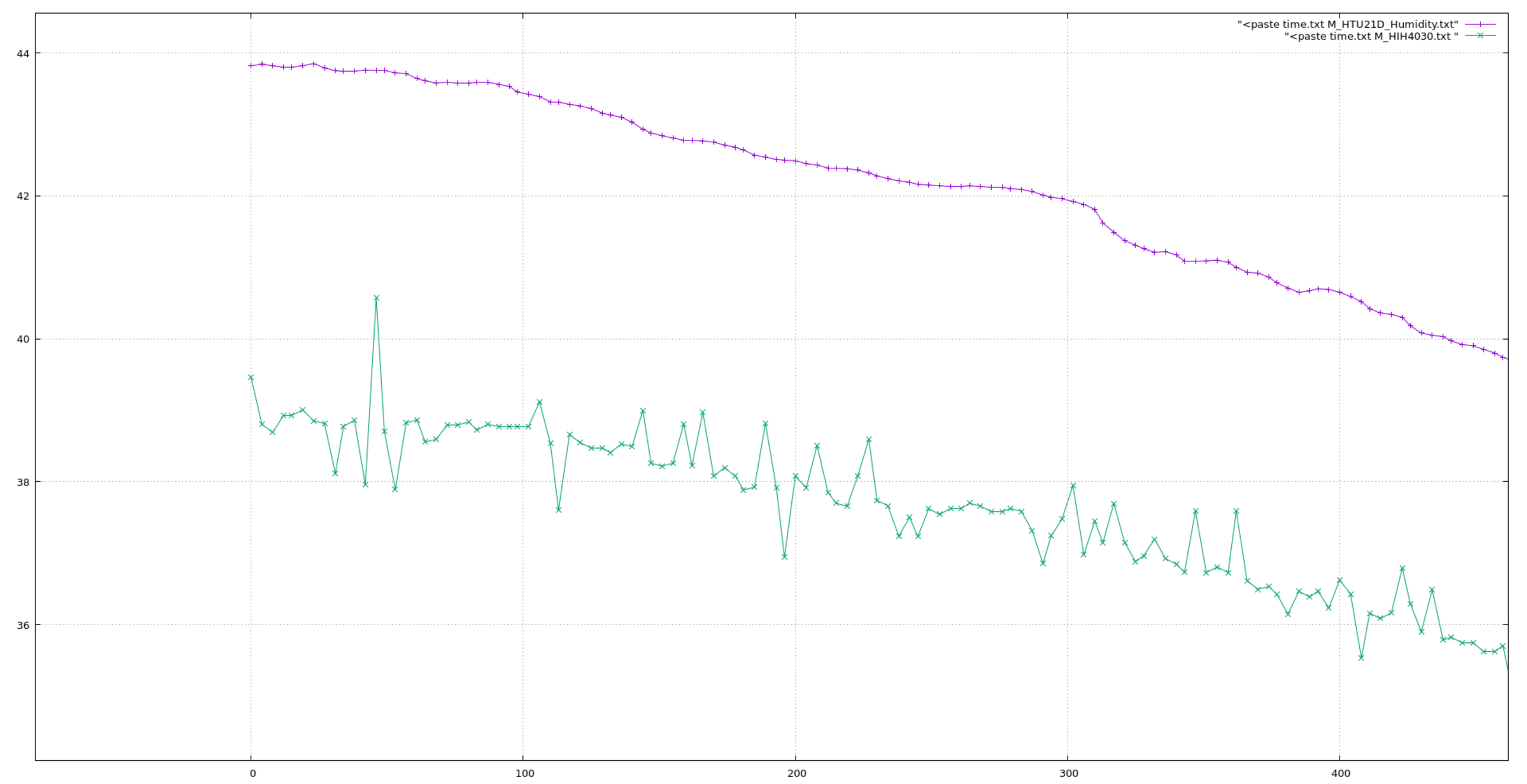

"<paste time.txt M_BMP180_Temperature.txt"
"<paste time.txt M_HTU21D_Temp.txt"
"<paste time.txt M_PR103J2_Temp.txt"
"<paste time.txt M_TMP112_Temperature.txt"
"<paste time.txt M_TSYS01_Temp.txt"
-11.5
-12
-12.5
-13
-13.5
-14
-14.5
5000
5200
5400
5600
5800
6000

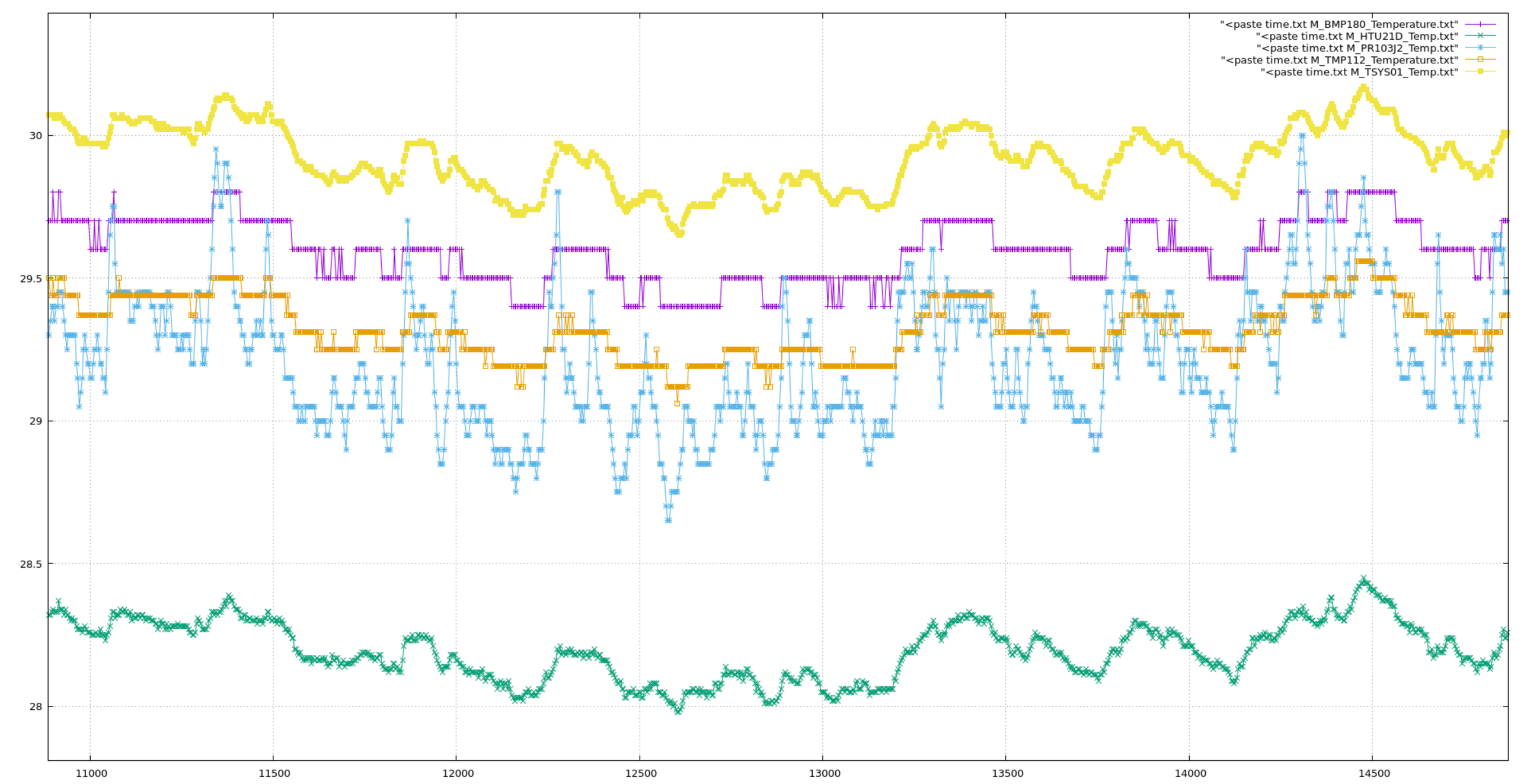
Board Test : Heater Test

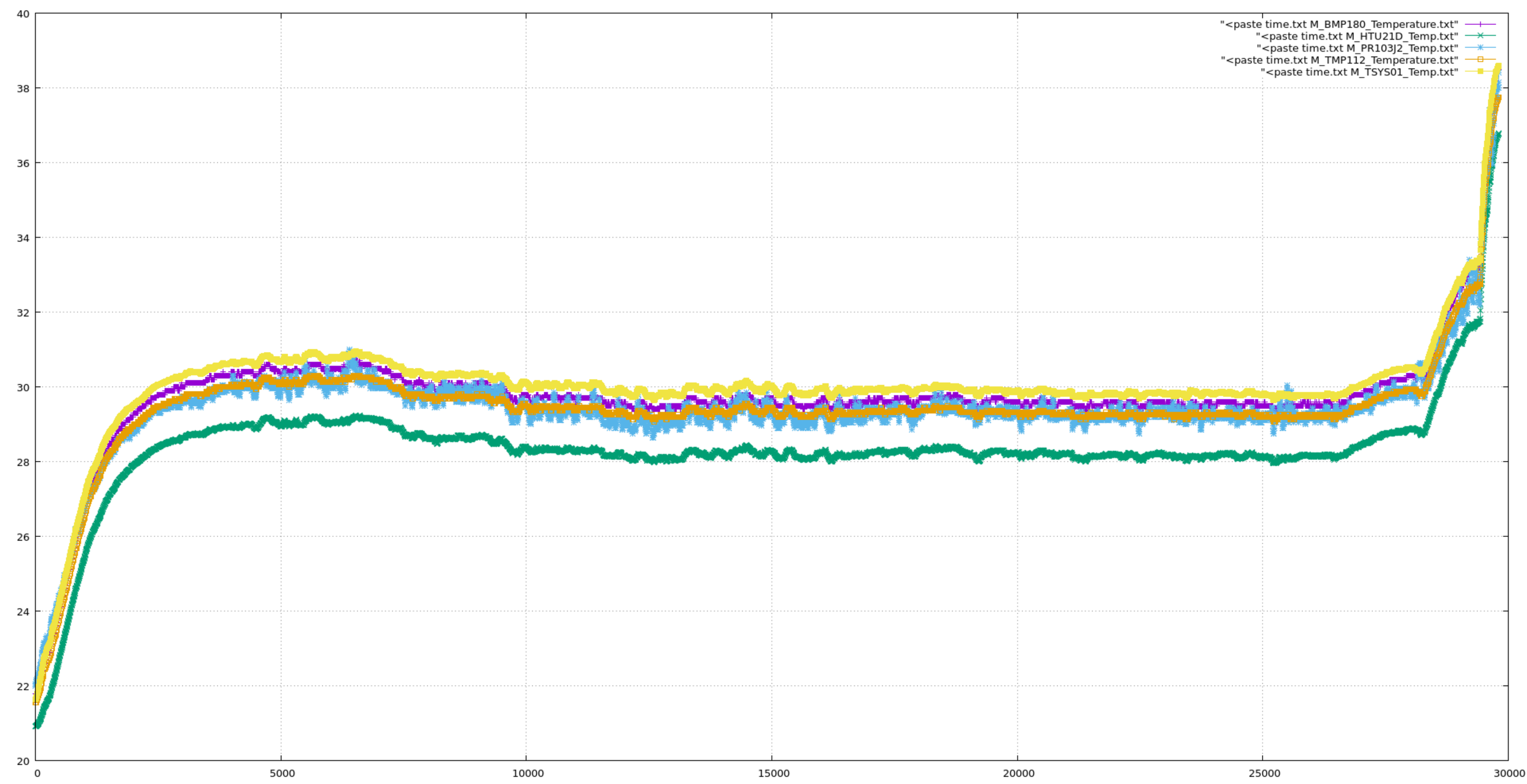
* Only Metsense board, left overnight by heater. The test was concluded by suddenly raising the heater output and moving the board closer to it.

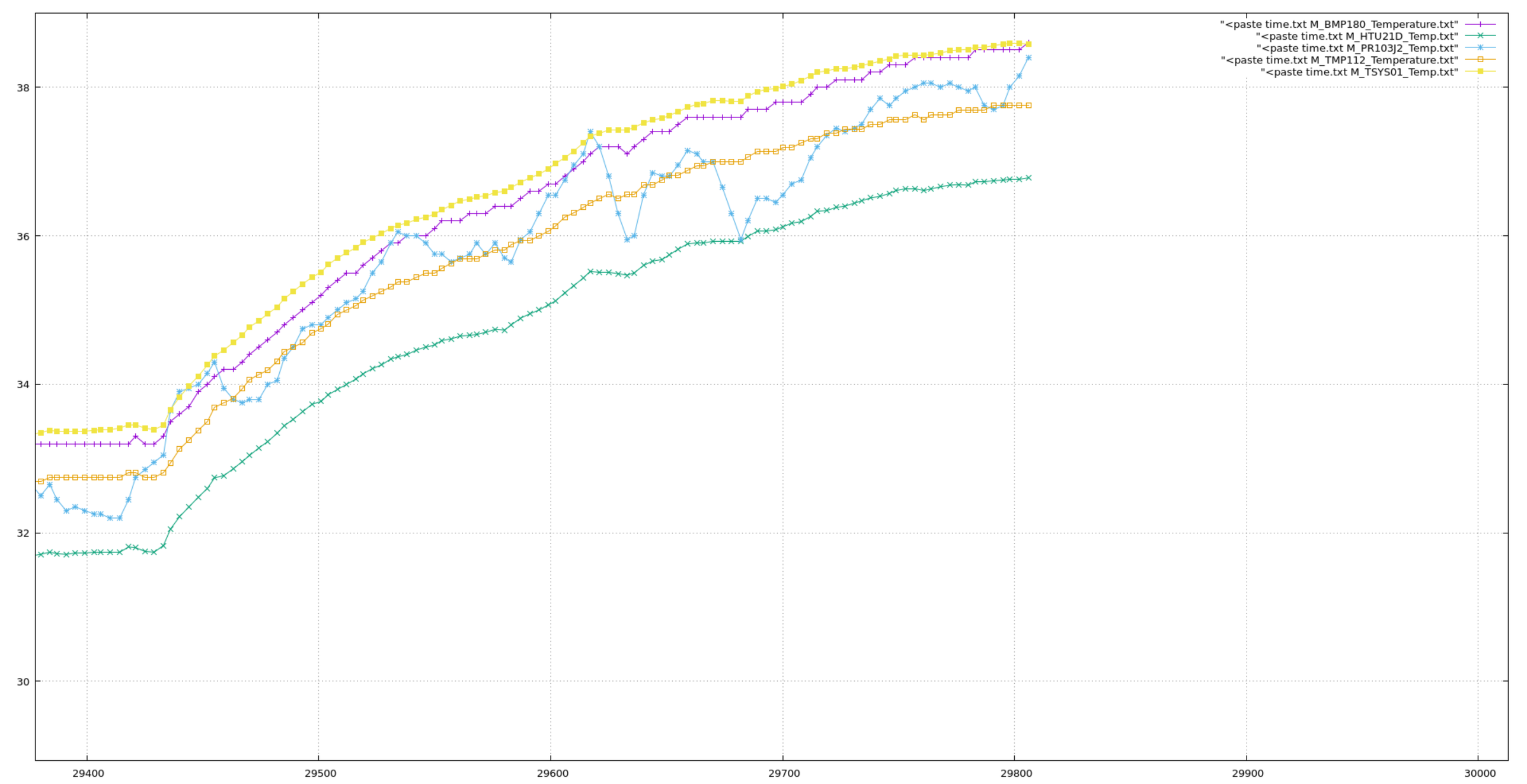

"<paste time.txt M_BMP180_Pressure.txt "
99200
99150
99100
99050
99000
98950
98900
0
5000
10000
15000
20000
25000
30000

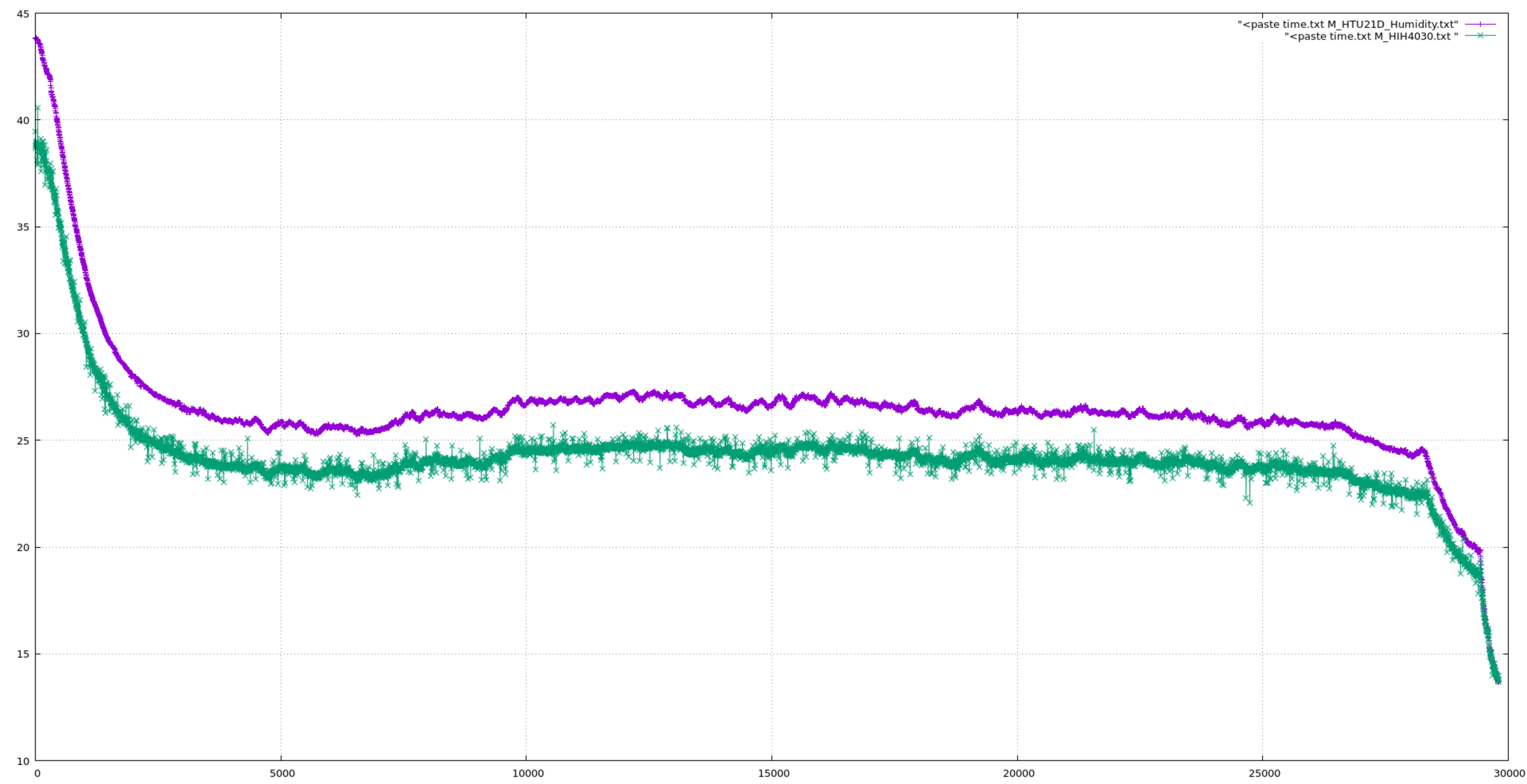

"<paste time.txt M_HTU21D_Humidity.txt"
"<paste time.txt M_HIH4030.txt "
26
24
22
20
18
16
14
12
28000
28200
28400
28600
28800
29000
29200
29400
29600
29800

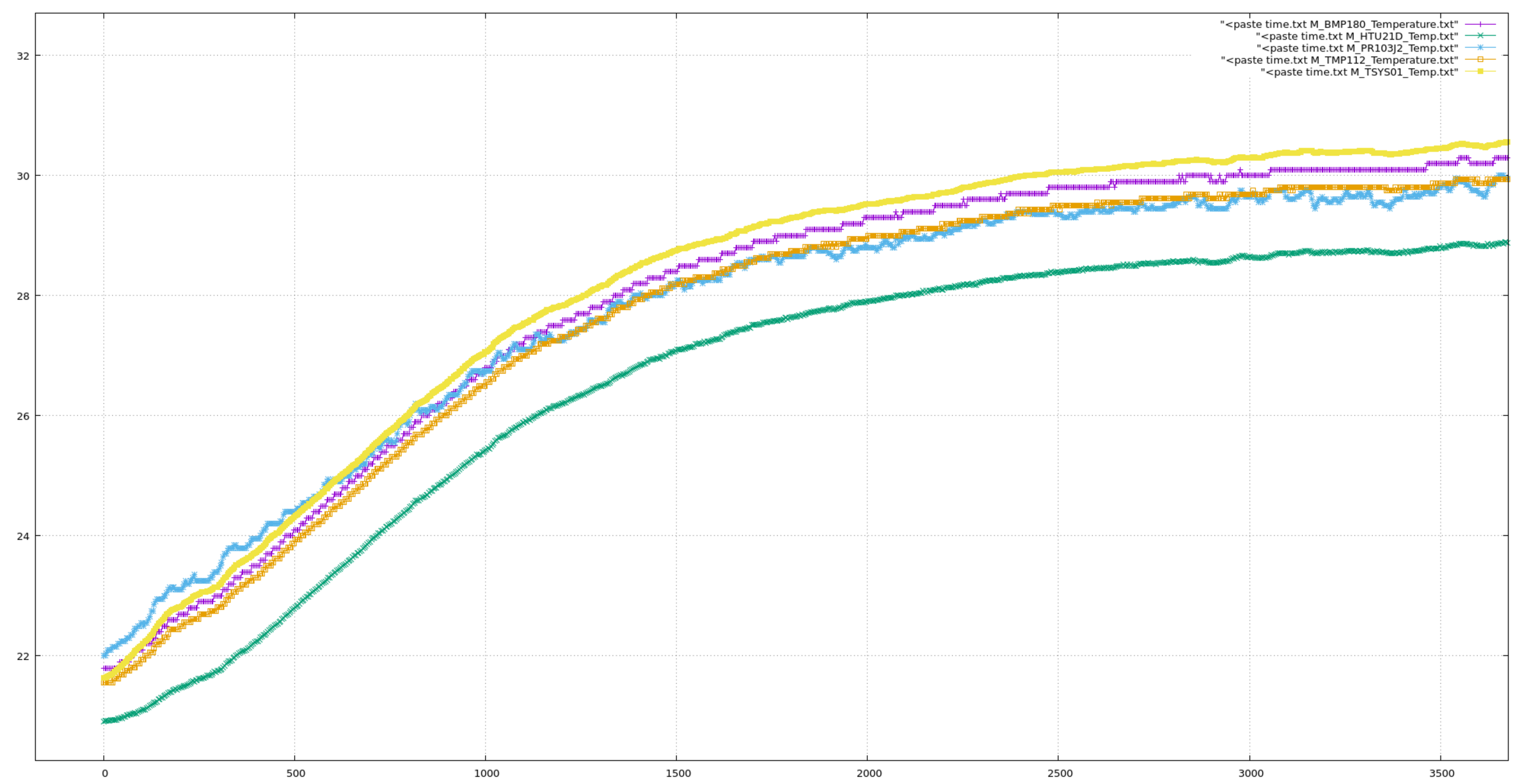

"<paste time.txt M_HTU21D_Humidity.txt"
"<paste time.txt M_HIH4030.txt "
44
42
40
38
36
0
100
200
300
400

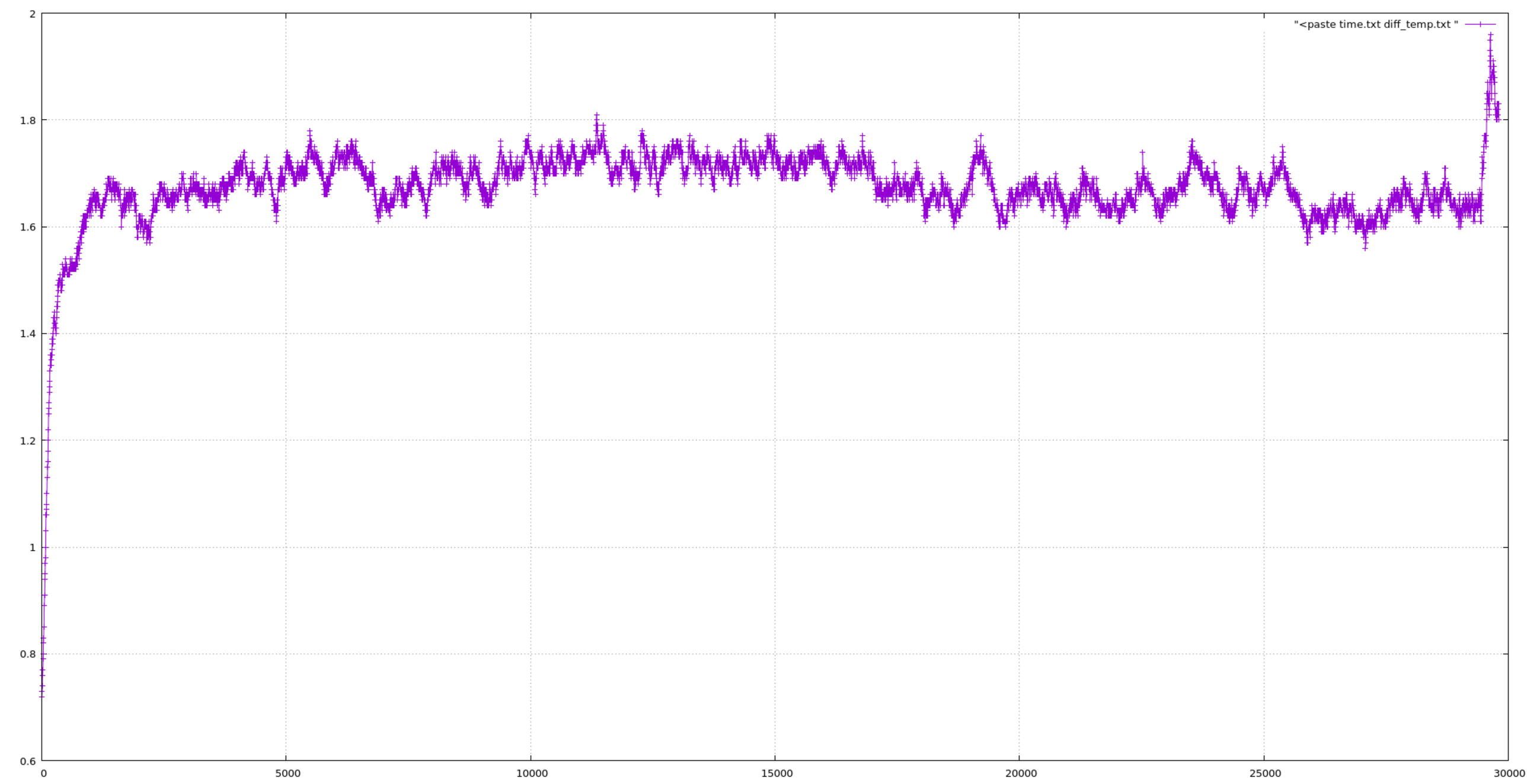

"<paste time.txt M_BMP180_Temperature.txt"
"<paste time.txt M_HTU21D_Temp.txt"
"<paste time.txt M_PR103J2_Temp.txt"
"<paste time.txt M_TMP112_Temperature.txt"
"<paste time.txt M_TSYS01_Temp.txt"
30
29.5
29
28.5
28
11000
11500
12000
12500
13000
13500
14000
14500


"<paste time.txt M_BMP180_Temperature.txt"
"<paste time.txt M_HTU21D_Temp.txt"
"<paste time.txt M_PR103J2_Temp.txt"
"<paste time.txt M_TMP112_Temperature.txt"
"<paste time.txt M_TSYS01_Temp.txt"
40
38
36
34
32
30
28
26
24
22
20
0
5000
10000
15000
20000
25000
30000


"<paste time.txt M_BMP180_Temperature.txt"
"<paste time.txt M_HTU21D_Temp.txt"
"<paste time.txt M_PR103J2_Temp.txt"
"<paste time.txt M_TMP112_Temperature.txt"
"<paste time.txt M_TSYS01_Temp.txt"
38
36
34
32
30
29400
29500
29600
29700
29800
29900
30000

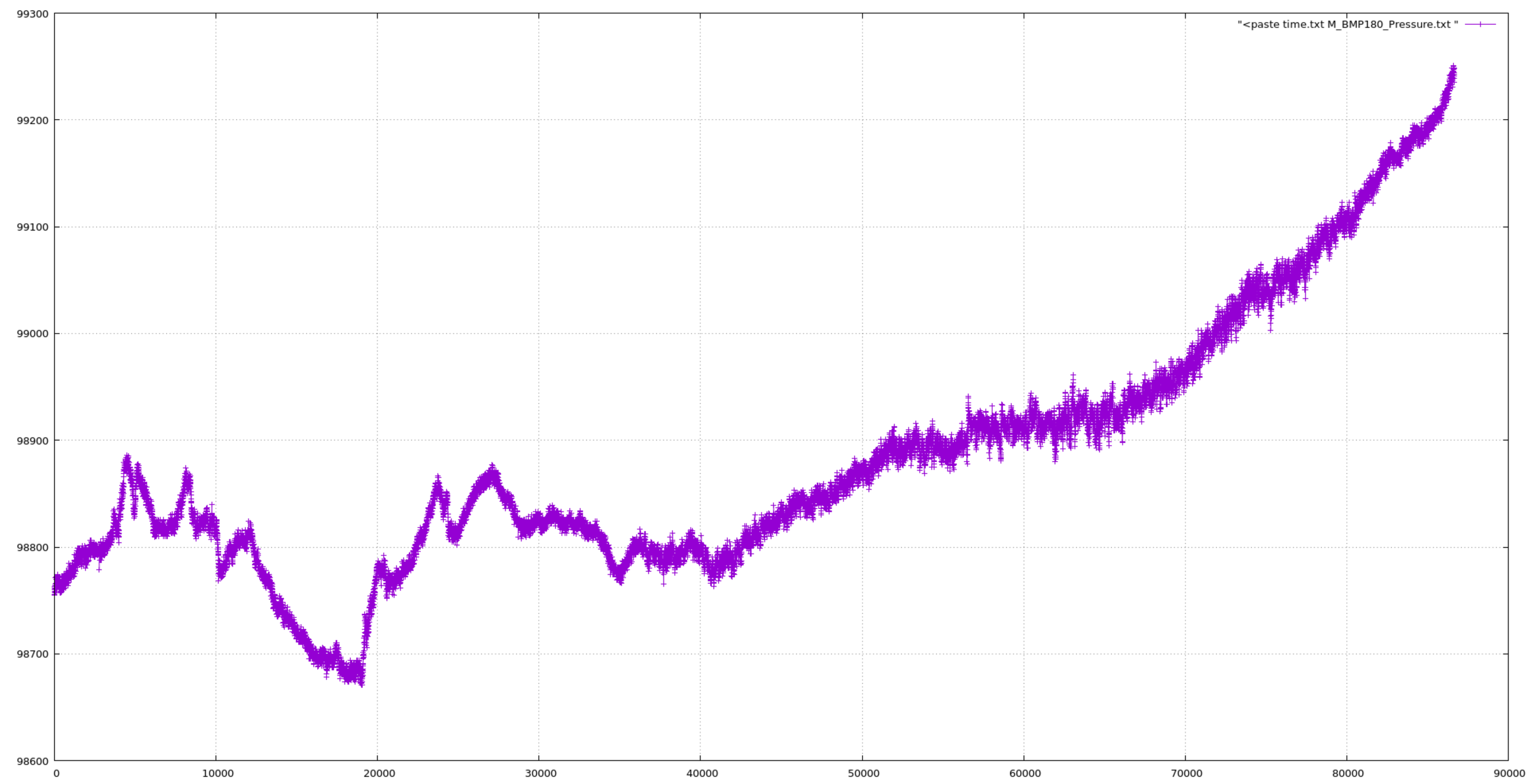

"<paste time.txt M_HTU21D_Humidity.txt"
"<paste time.txt M_HIH4030.txt "
45
40
35
30
25
20
15
10
0
5000
10000
15000
20000
25000
30000

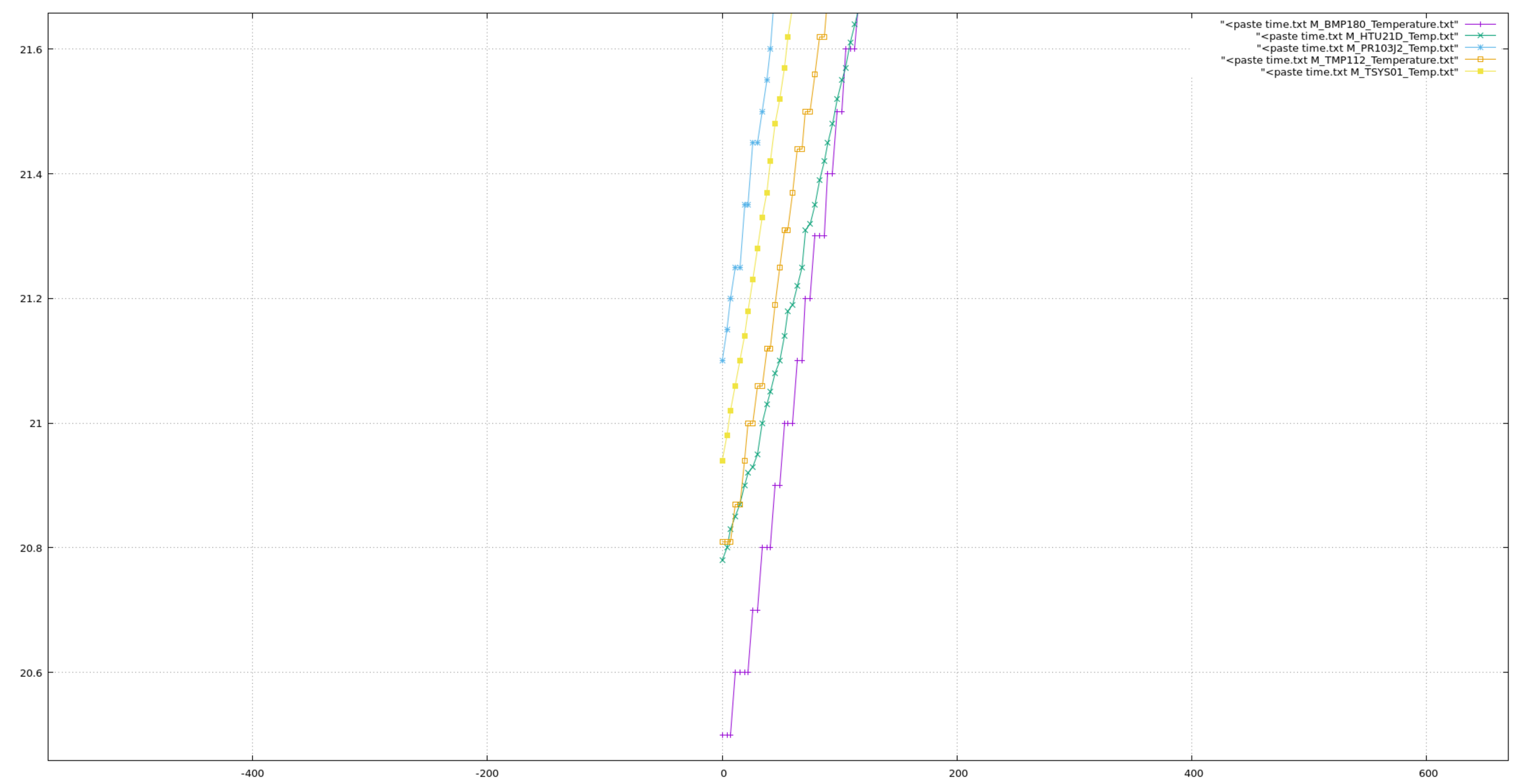

"<paste time.txt M_BMP180_Temperature.txt"
"<paste time.txt M_HTU21D_Temp.txt"
"<paste time.txt M_PR103J2_Temp.txt"
"<paste time.txt M_TMP112_Temperature.txt"
"<paste time.txt M_TSYS01_Temp.txt"
32
30
28
26
24
22
0
500
1000
1500
2000
2500
3000
3500

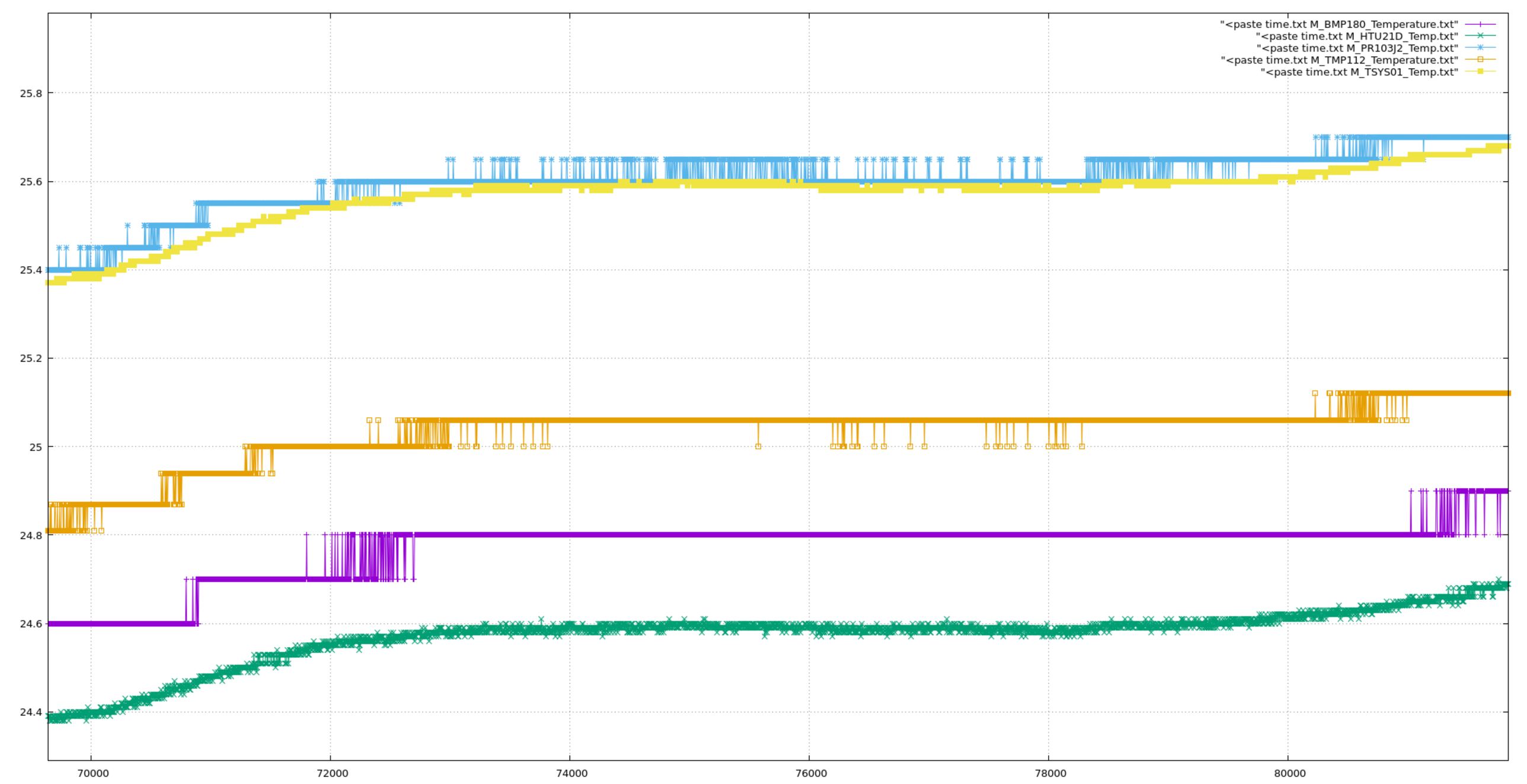

"<paste time.txt diff_temp.txt "
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0
5000
10000
15000
20000
25000
30000

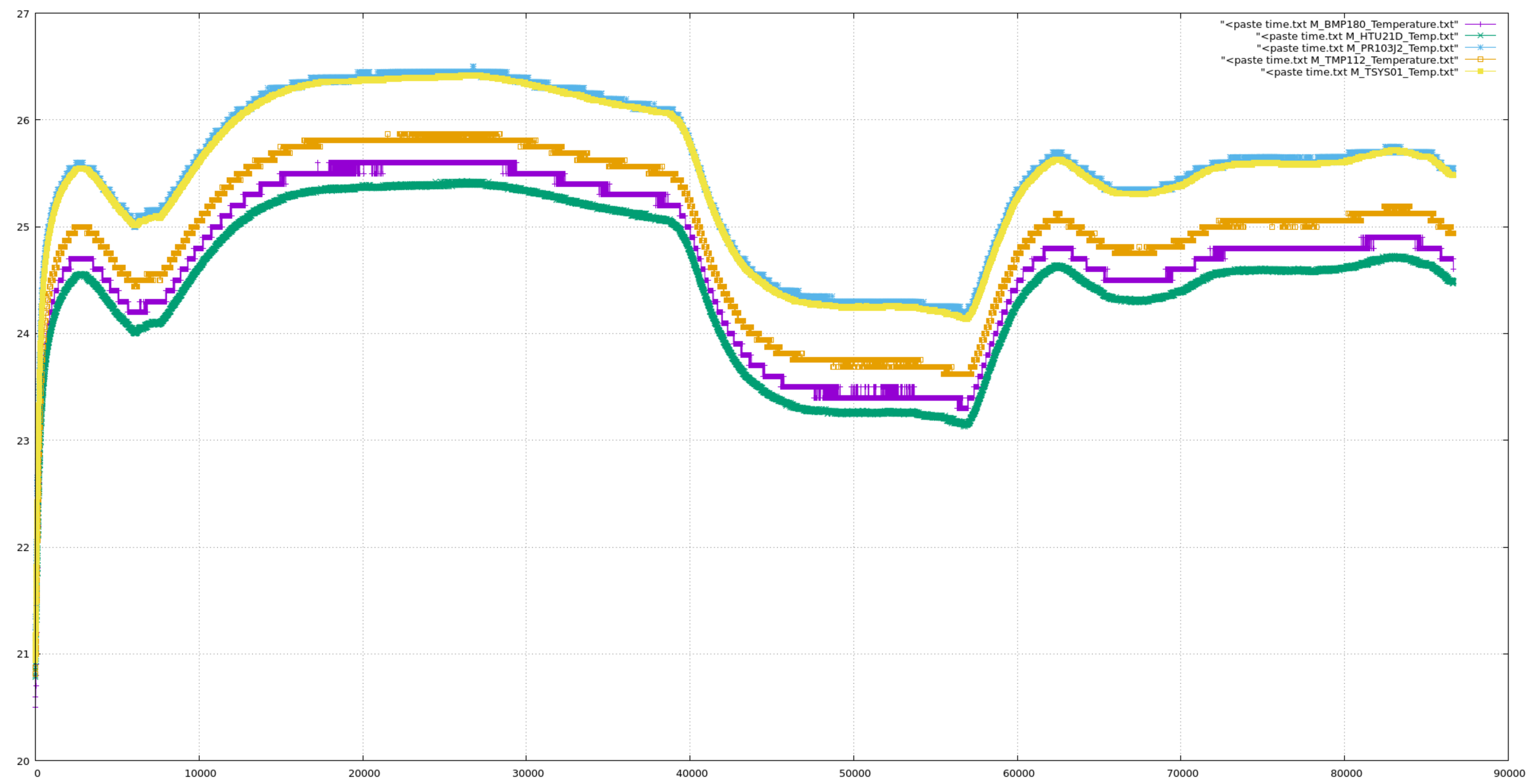
Pod Test: Longterm Cold-Boot Test

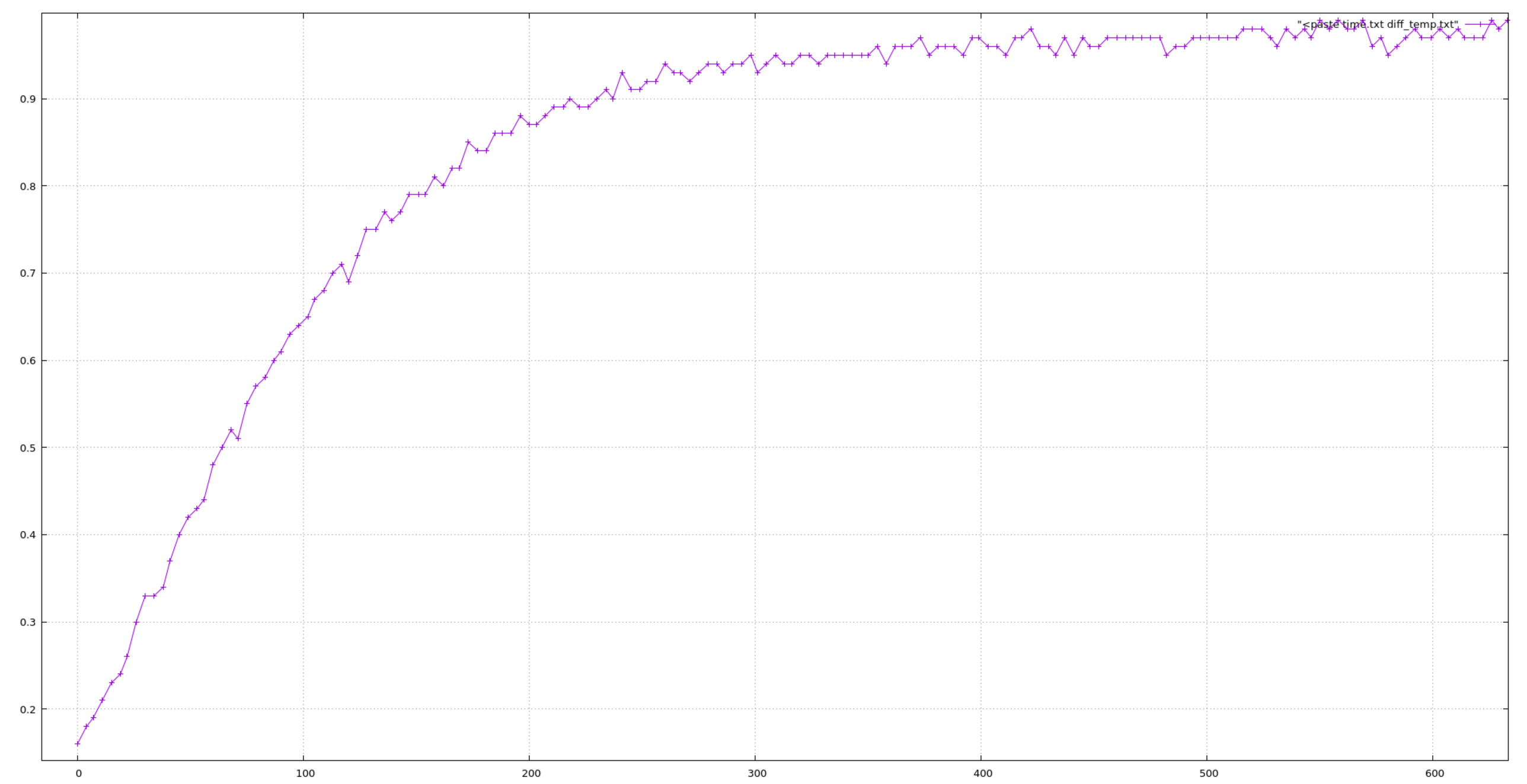
* Test performed with a pod, with goretex layers. The Pod was left overnight at TCS.

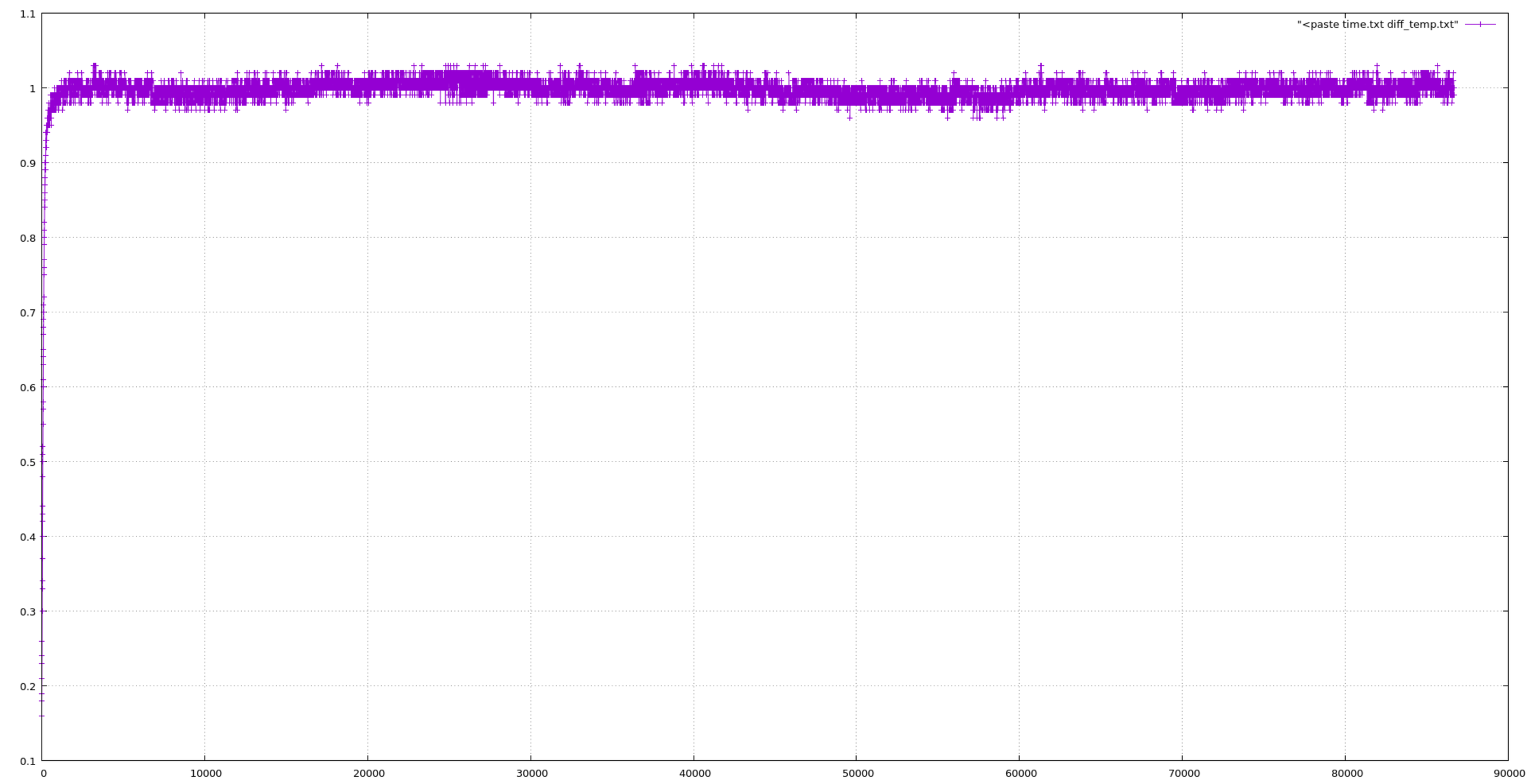

"<paste time.txt M_BMP180_Pressure.txt "
99300
99200
99100
99000
98900
98800
98700
98600
0
10000
20000
30000
40000
50000
60000
70000
80000
90000

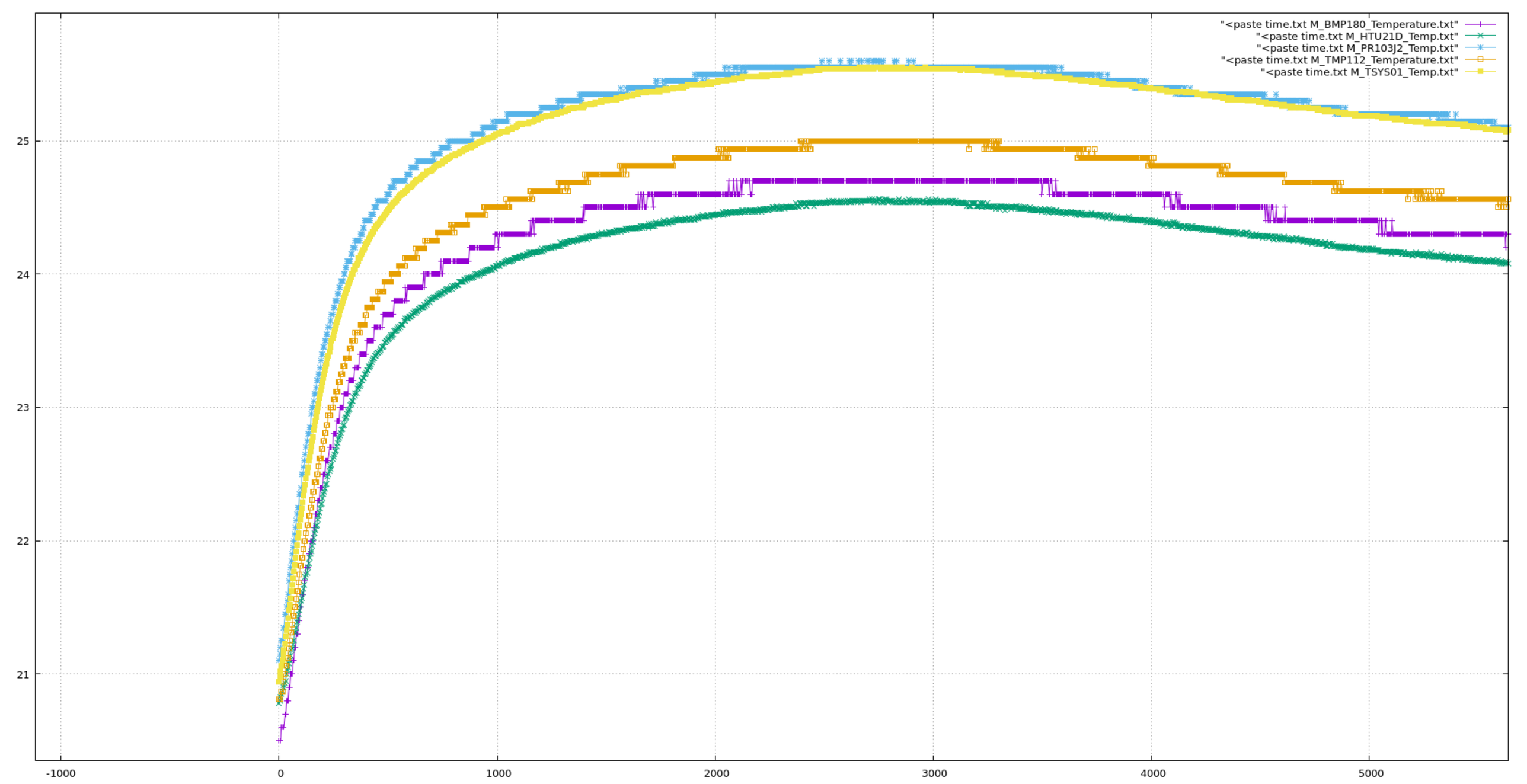

"<paste time.txt M_BMP180_Temperature.txt"
"<paste time.txt M_HTU21D_Temp.txt"
"<paste time.txt M_PR103J2_Temp.txt"
"<paste time.txt M_TMP112_Temperature.txt"
"<paste time.txt M_TSYS01_Temp.txt"
21.6
21.4
21.2
21
20.8
20.6
-400
-200
0
200
400
600

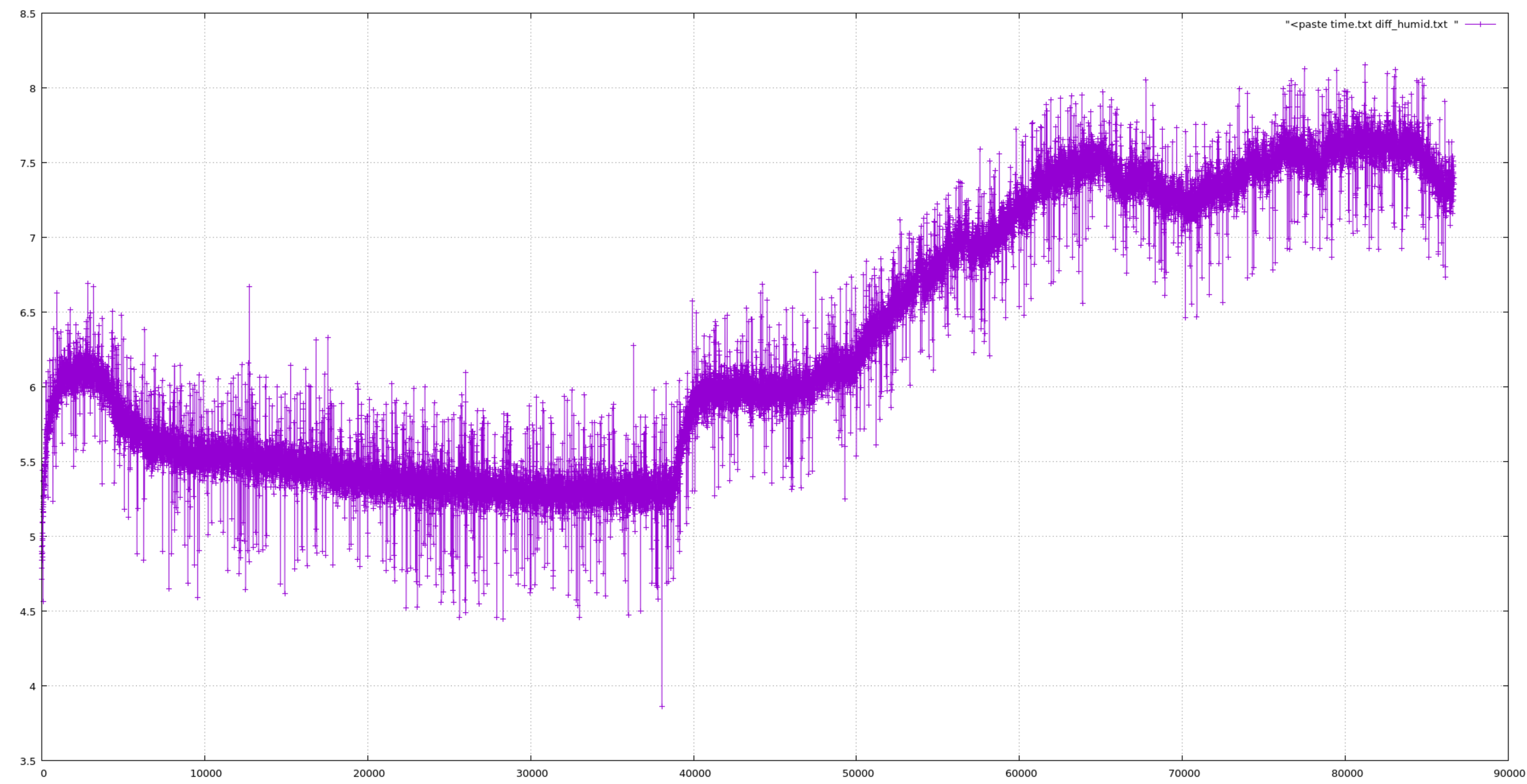

"<paste time.txt M_BMP180_Temperature.txt"
"<paste time.txt M_HTU21D_Temp.txt"
"<paste time.txt M_PR103J2_Temp.txt"
"<paste time.txt M_TMP112_Temperature.txt"
"<paste time.txt M_TSYS01_Temp.txt"
25.8
25.6
25.4
25.2
25
24.8
24.6
24.4
70000
72000
74000
76000
78000
80000

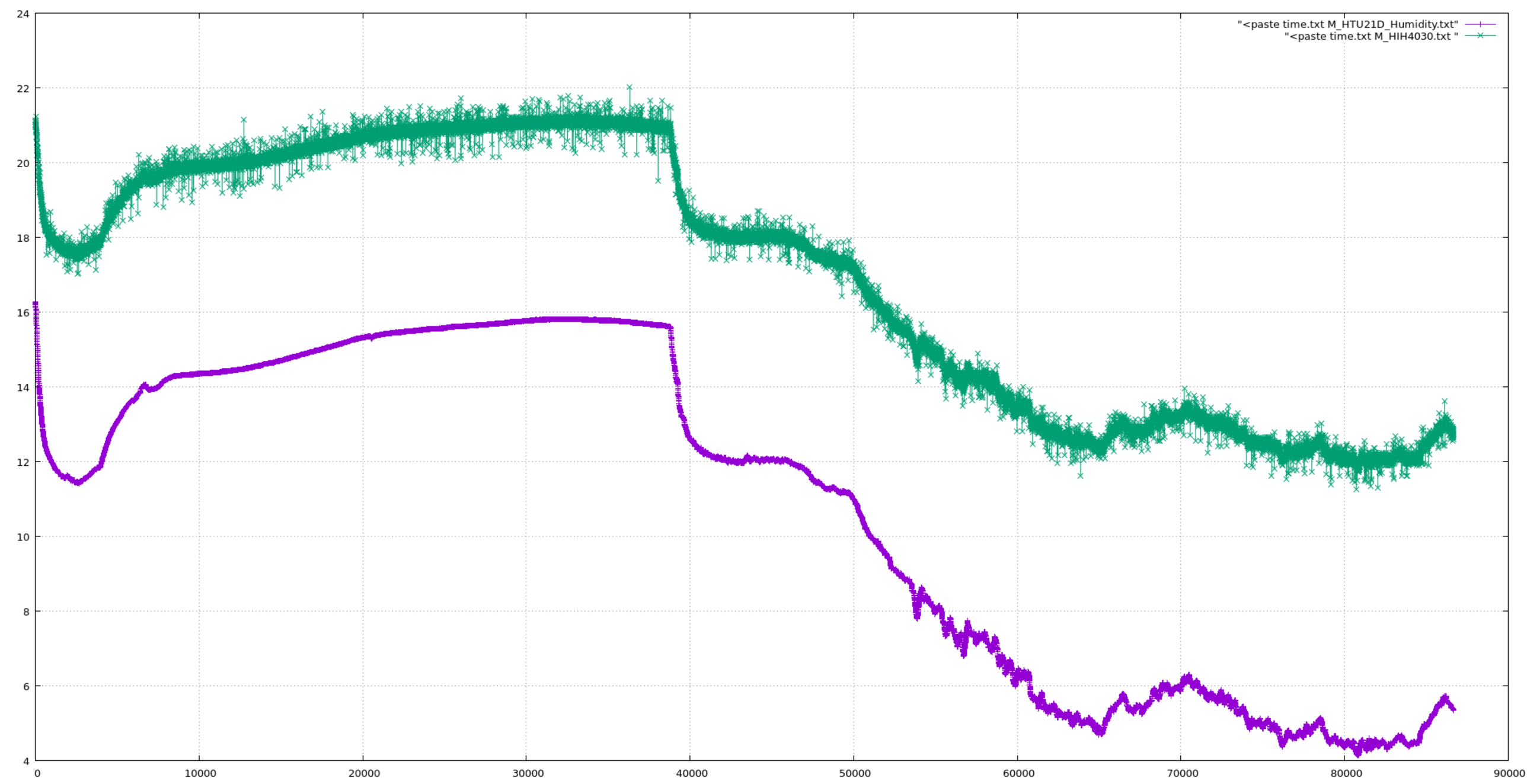

"<paste time.txt M_BMP180_Temperature.txt"
"<paste time.txt M_HTU21D_Temp.txt"
"<paste time.txt M_PR103J2_Temp.txt"
"<paste time.txt M_TMP112_Temperature.txt"
"<paste time.txt M_TSYS01_Temp.txt"
27
26
25
24
23
22
21
20
0
10000
20000
30000
40000
50000
60000
70000
80000
90000


"<paste time.txt diff_temp.txt"
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0
100
200
300
400
500
600


"<paste time.txt diff_temp.txt"
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
10000
20000
30000
40000
50000
60000
70000
80000
90000


"<paste time.txt M_BMP180_Temperature.txt"
"<paste time.txt M_HTU21D_Temp.txt"
"<paste time.txt M_PR103J2_Temp.txt"
"<paste time.txt M_TMP112_Temperature.txt"
"<paste time.txt M_TSYS01_Temp.txt"
25
24
23
22
21
-1000
0
1000
2000
3000
4000
5000


"<paste time.txt diff_humid.txt "
8.5
8
7.5
7
6.5
6
5.5
5
4.5
4
3.5
0
10000
20000
30000
40000
50000
60000
70000
80000
90000


"<paste time.txt M_HTU21D_Humidity.txt"
"<paste time.txt M_HIH4030.txt "
24
22
20
18
16
14
12
10
8
6
4
0
10000
20000
30000
40000
50000
60000
70000
80000
90000

Combined Test: Pod With Goretex

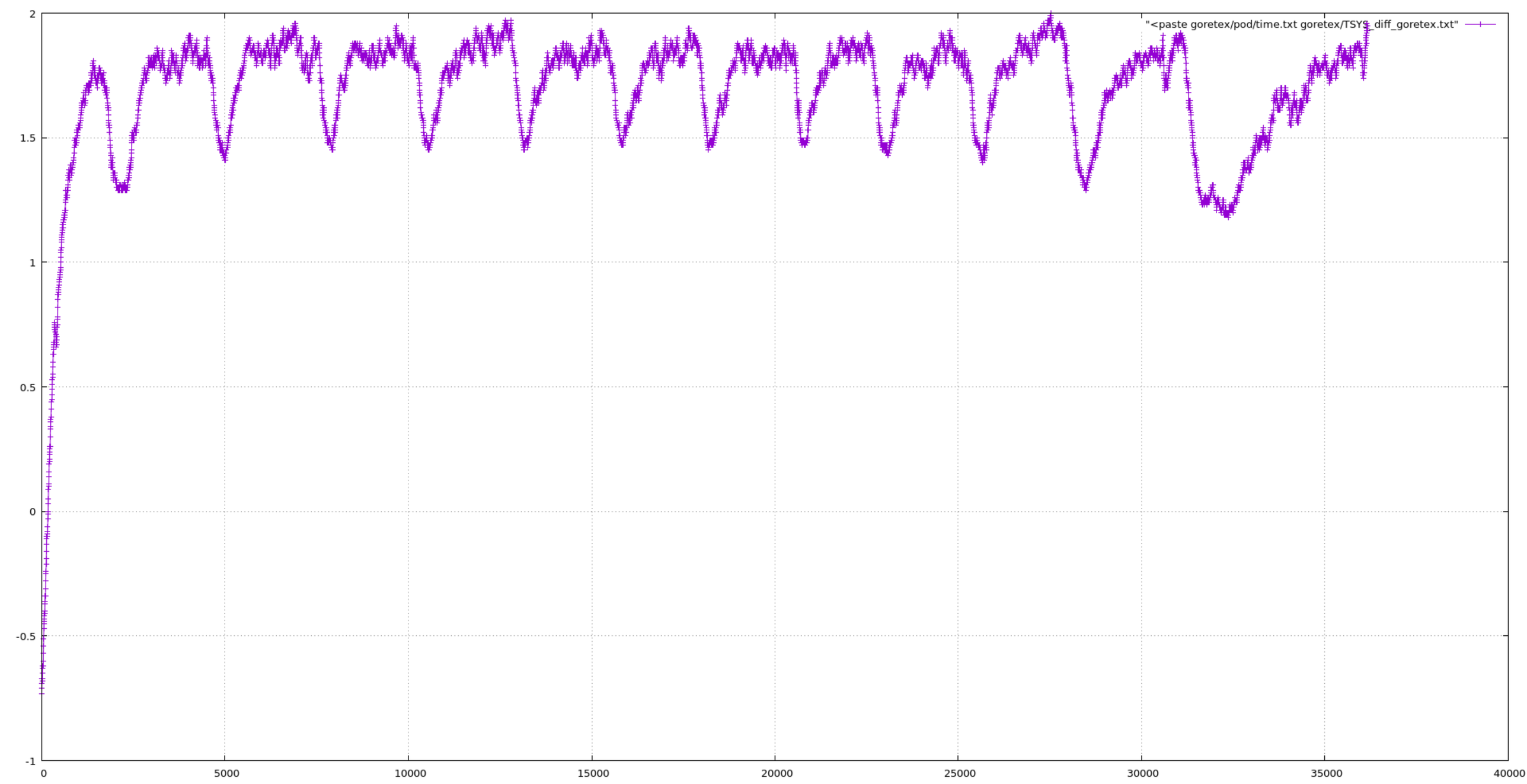
* Test performed with a pod and bare Metsense board. The two systems were left about 20 CM apart, and positioned such that the location of the Metsense board in both the cases was roughly the same.

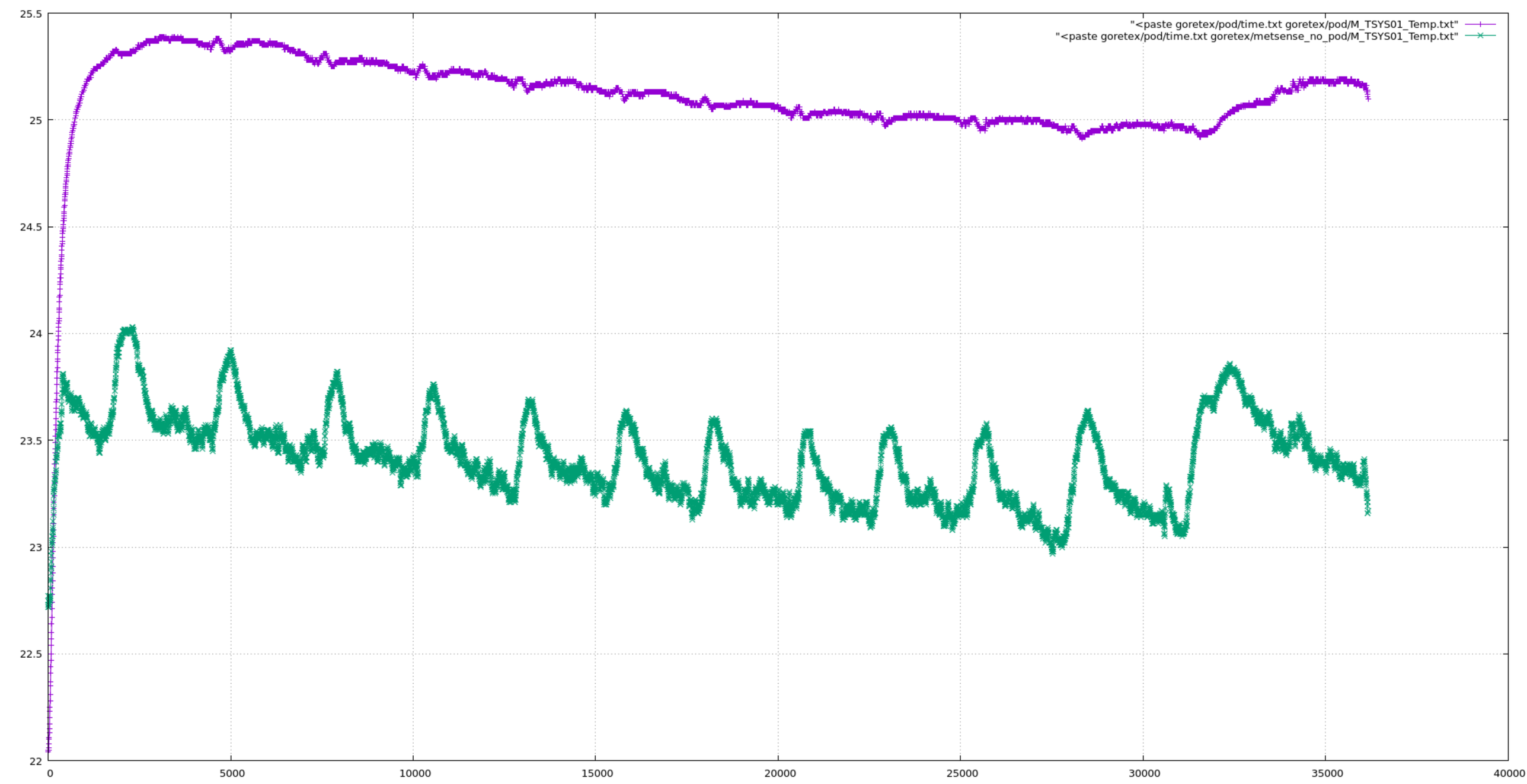
* The devices were placed in a room where the vents were closed, but the cyclic nature of the heater coming on can be seen.

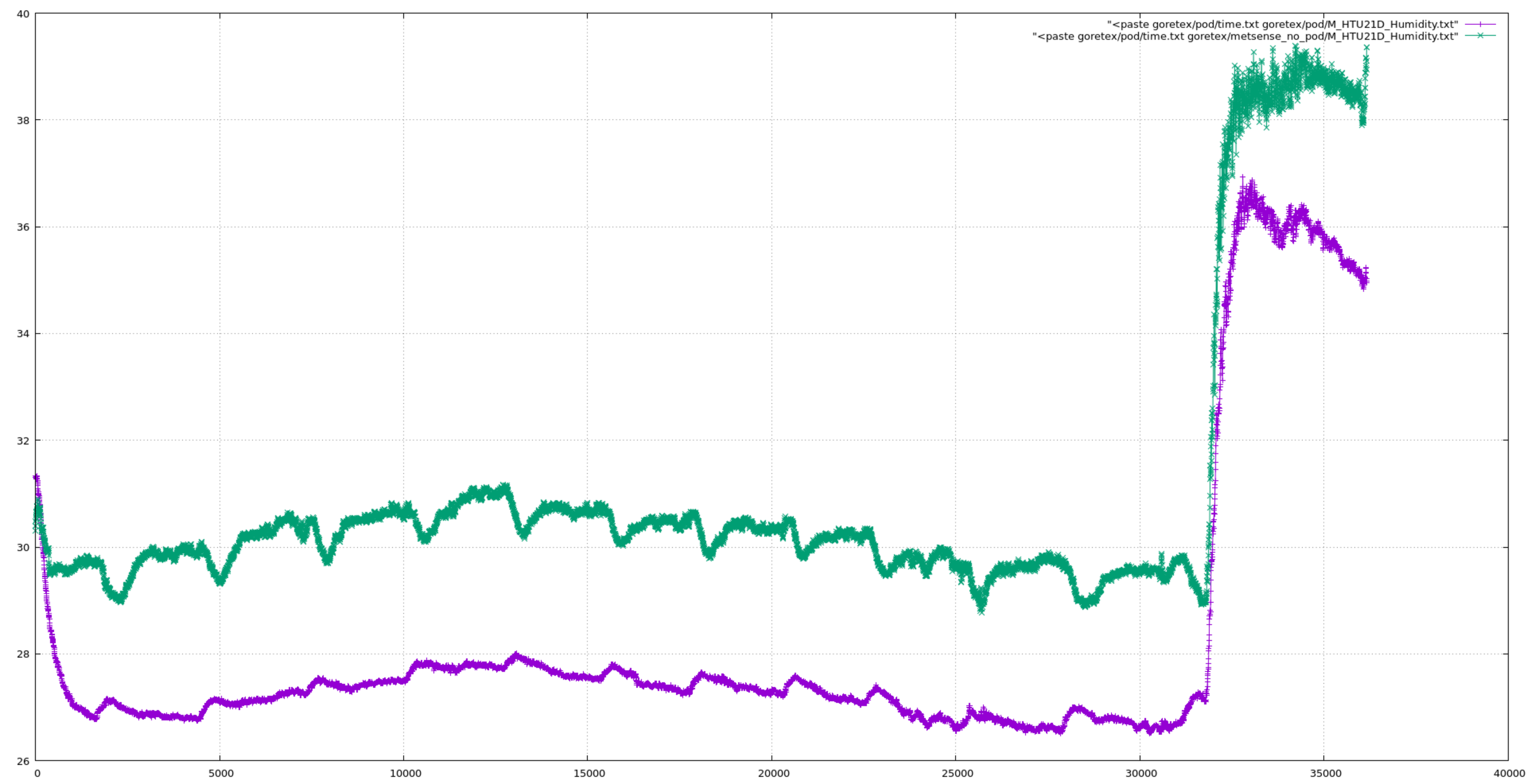
* The door to the room was left open, and brought in warm air from other rooms.

* The experiment was finished by running the shower at the end, to change RH.

* This test was performed **first** with the pair.


"<paste goretex/pod/time.txt goretex/TSYS_diff_goretex.txt"
2
1.5
1
0.5
0
-0.5
-1
0
5000
10000
15000
20000
25000
30000
35000
40000


"<paste goretex/pod/time.txt goretex/pod/M_TSYS01_Temp.txt"
"<paste goretex/pod/time.txt goretex/metsense_no_pod/M_TSYS01_Temp.txt"
25.5
25
24.5
24
23.5
23
22.5
22
0
5000
10000
15000
20000
25000
30000
35000
40000


"<paste goretex/pod/time.txt goretex/pod/M_HTU21D_Humidity.txt"
"<paste goretex/pod/time.txt goretex/metsense_no_pod/M_HTU21D_Humidity.txt"
40
38
36
34
32
30
28
26
0
5000
10000
15000
20000
25000
30000
35000
40000


"<paste goretex/pod/time.txt goretex/pod/M_BMP180_Pressure.txt"
"<paste goretex/pod/time.txt goretex/metsense_no_pod/M_BMP180_Pressure.txt "
99800
99750
99700
99650
99600
99550
99500
0
5000
10000
15000
20000
25000
30000
35000
40000

Combined Test: Pod Without Goretex

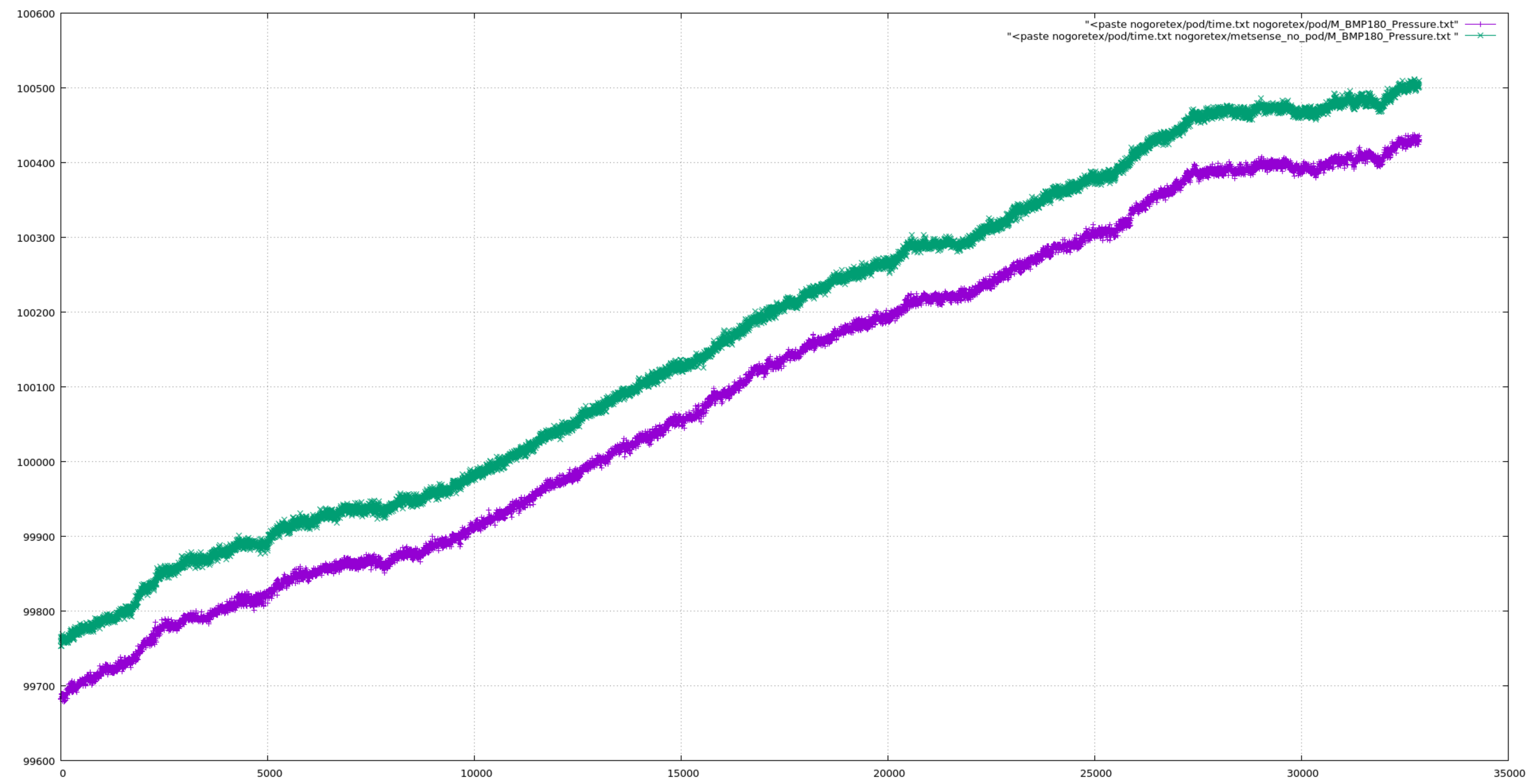
* This test was performed the **second** day, with the same pair as the goretex test, after removing the layer.

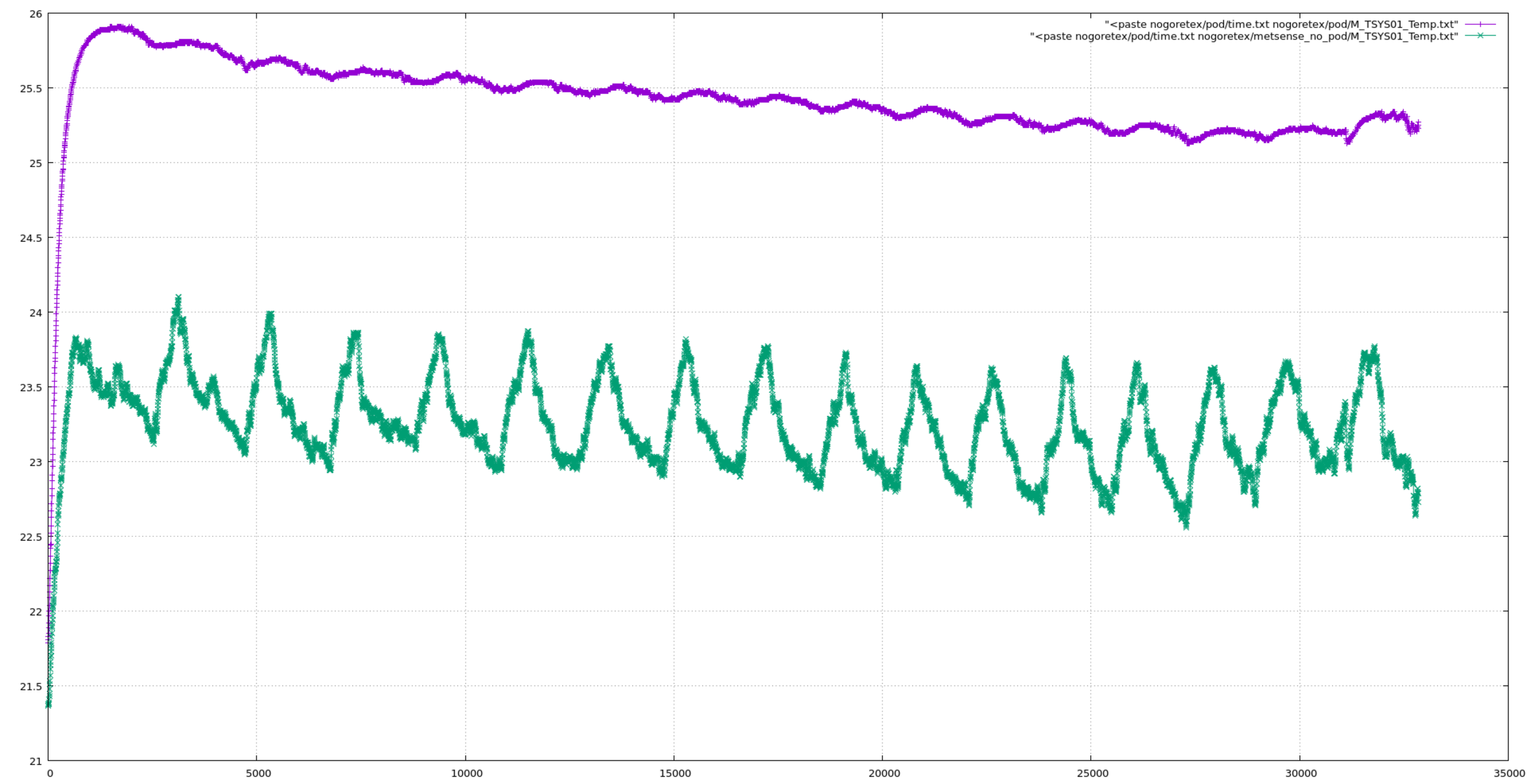
* Test performed with a pod and bare Metsense board. The two systems were left about 20 CM apart, and positioned such that the location of the Metsense board in both the cases was roughly the same.

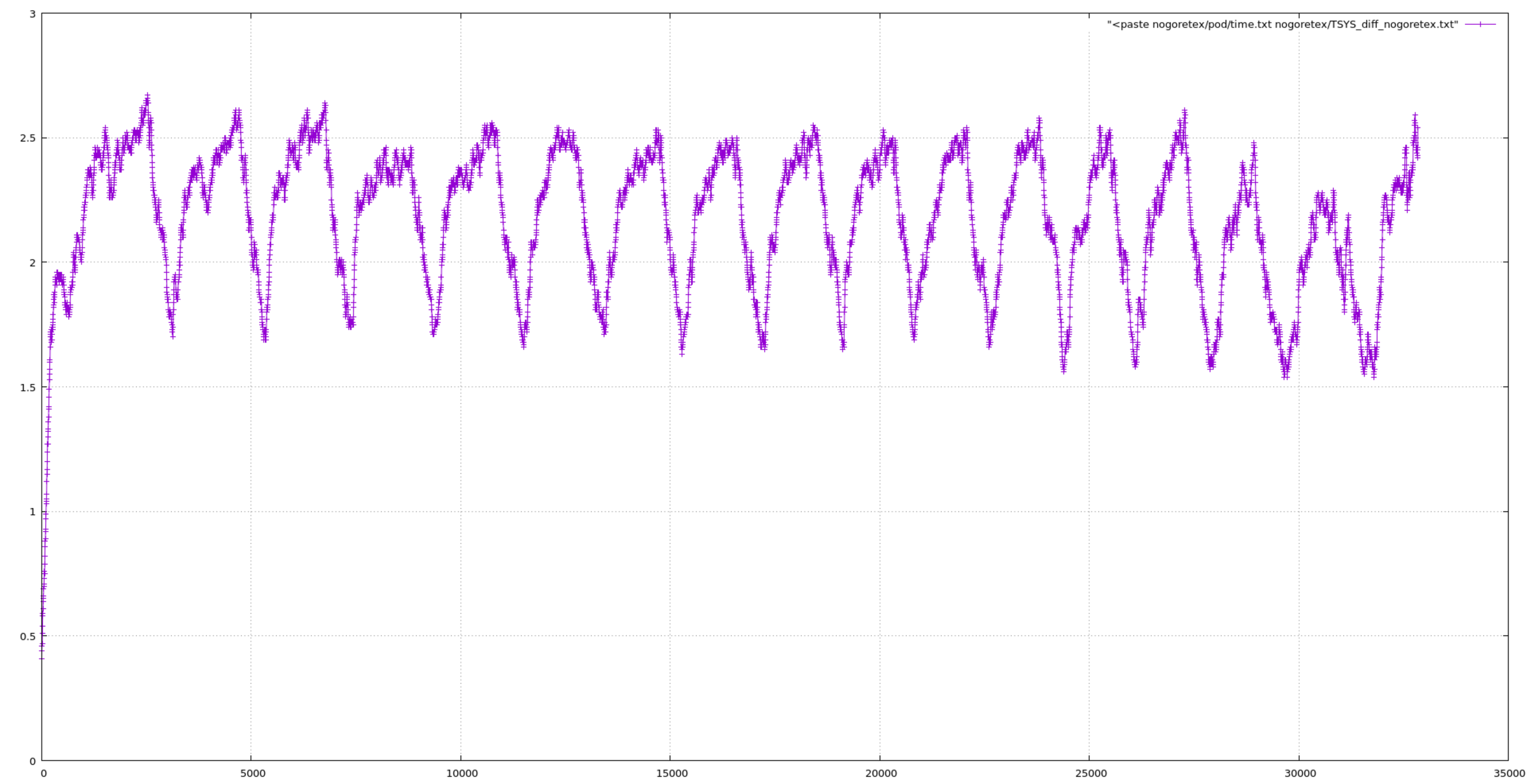
* The devices were placed in a room where the vents were closed, but the cyclic nature of the heater coming on can be seen.

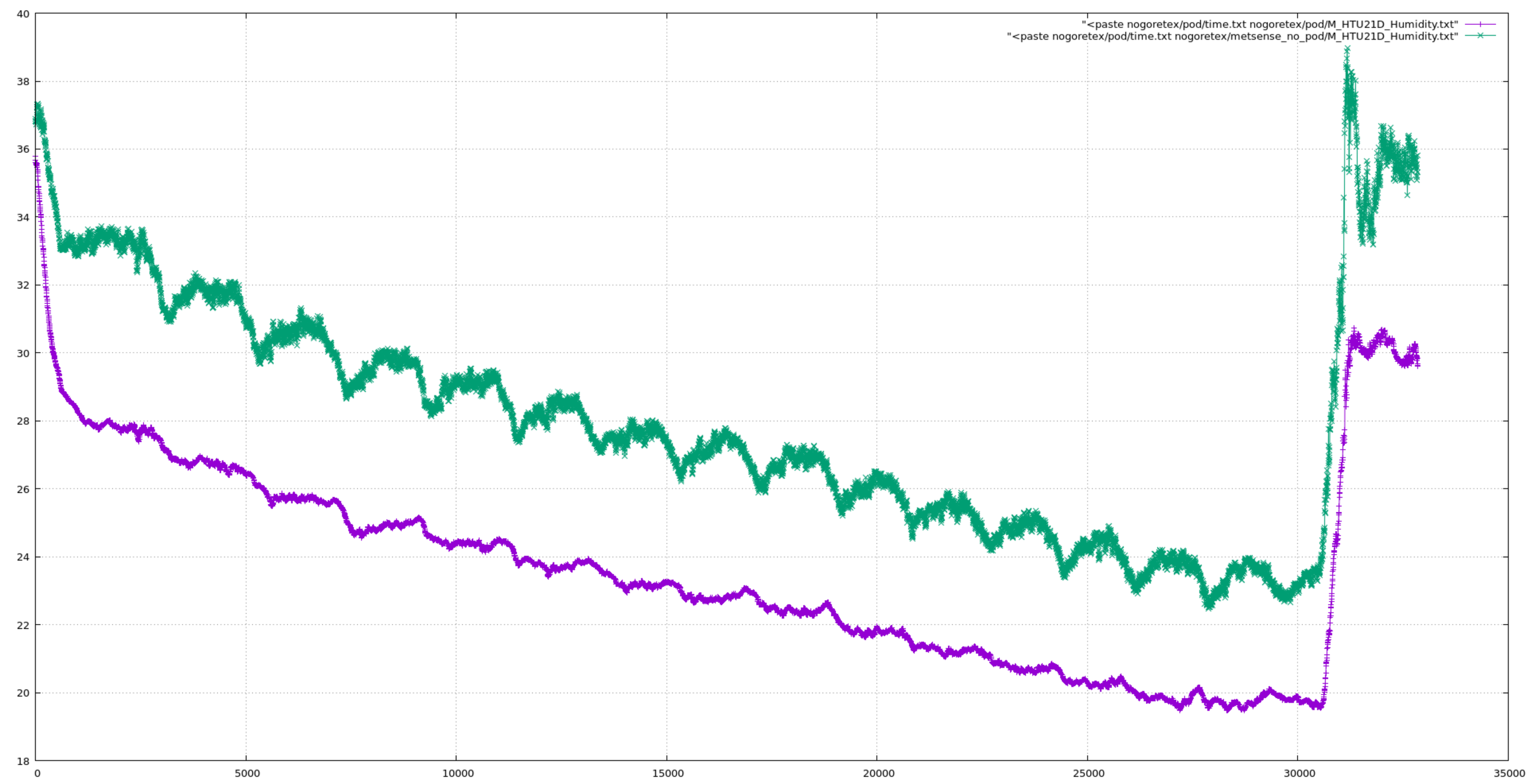
* The door to the room was left open, and brought in warm air from other rooms.

* The experiment was finished by running the shower at the end, to change RH.


"<paste nogoretex/pod/time.txt nogoretex/pod/M_BMP180_Pressure.txt"
"<paste nogoretex/pod/time.txt nogoretex/metsense_no_pod/M_BMP180_Pressure.txt "
100600
100500
100400
100300
100200
100100
100000
99900
99800
99700
99600
0
5000
10000
15000
20000
25000
30000
35000


"<paste nogoretex/pod/time.txt nogoretex/pod/M_TSYS01_Temp.txt"
"<paste nogoretex/pod/time.txt nogoretex/metsense_no_pod/M_TSYS01_Temp.txt"
26
25.5
25
24.5
24
23.5
23
22.5
22
21.5
21
0
5000
10000
15000
20000
25000
30000
35000


"<paste nogoretex/pod/time.txt nogoretex/TSYS_diff_nogoretex.txt"
3
2.5
2
1.5
1
0.5
0
0
5000
10000
15000
20000
25000
30000
35000


"<paste nogoretex/pod/time.txt nogoretex/pod/M_HTU21D_Humidity.txt"
"<paste nogoretex/pod/time.txt nogoretex/metsense_no_pod/M_HTU21D_Humidity.txt"
40
38
36
34
32
30
28
26
24
22
20
18
0
5000
10000
15000
20000
25000
30000
35000