



# Grove - High Temperature Sensor

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Wiki: [http://www.seeedstudio.com/wiki/Grove - High Temperature Sensor](http://www.seeedstudio.com/wiki/Grove_-_High_Temperature_Sensor)

Bazaar: <http://www.seeedstudio.com/depot/Grove-High-Temperature-Sensor-p-1810.html>

## Document Revision History

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Revision	Date	Author	Description
1.0	Sep 21, 2015	Victor.He	Create file

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## 1. Introduction

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Thermocouples are very sensitive, requiring a good amplifier with a cold - compensation reference. The Grove - Temperature Sensor USES a K type thermocouple Temperature detection, with a Thermistor to detect the ambient Temperature as Temperature compensation. The detectable range of this Sensor is - 50-600°C , and The accuracy is  $\pm(2.0\% + 2^{\circ}\text{C})$ .

## 2. Specification

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Voltage	3.3 ~ 5V
Max power rating at 25°C	300mW
Operating temperature range	-40 ~ +125 °C
The temperature measurement range is	-50 ~ +600°C
Amplifier output voltage range	0 ~ 3.3 V mv
Cold junction compensation (environment temperature measurement)	
Thermocouple temperature measurement accuracy	± 2.0% (+ 2 °C)

## 3. Demonstration

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Here is an example to show you how to read temperature information from the sensor.

We need a Seeeduino V3.0 and a Grove - High Temperature Sensor.

### 3.1 Hardware Installation

There's a I2C Port on Seeeduino, actually it's connect to A4 and A5 else. So we can use this port to read data from the sensor.

Let's plug this sensor to I2C port of Seeeduino.

### 3.2 Download Code and Upload

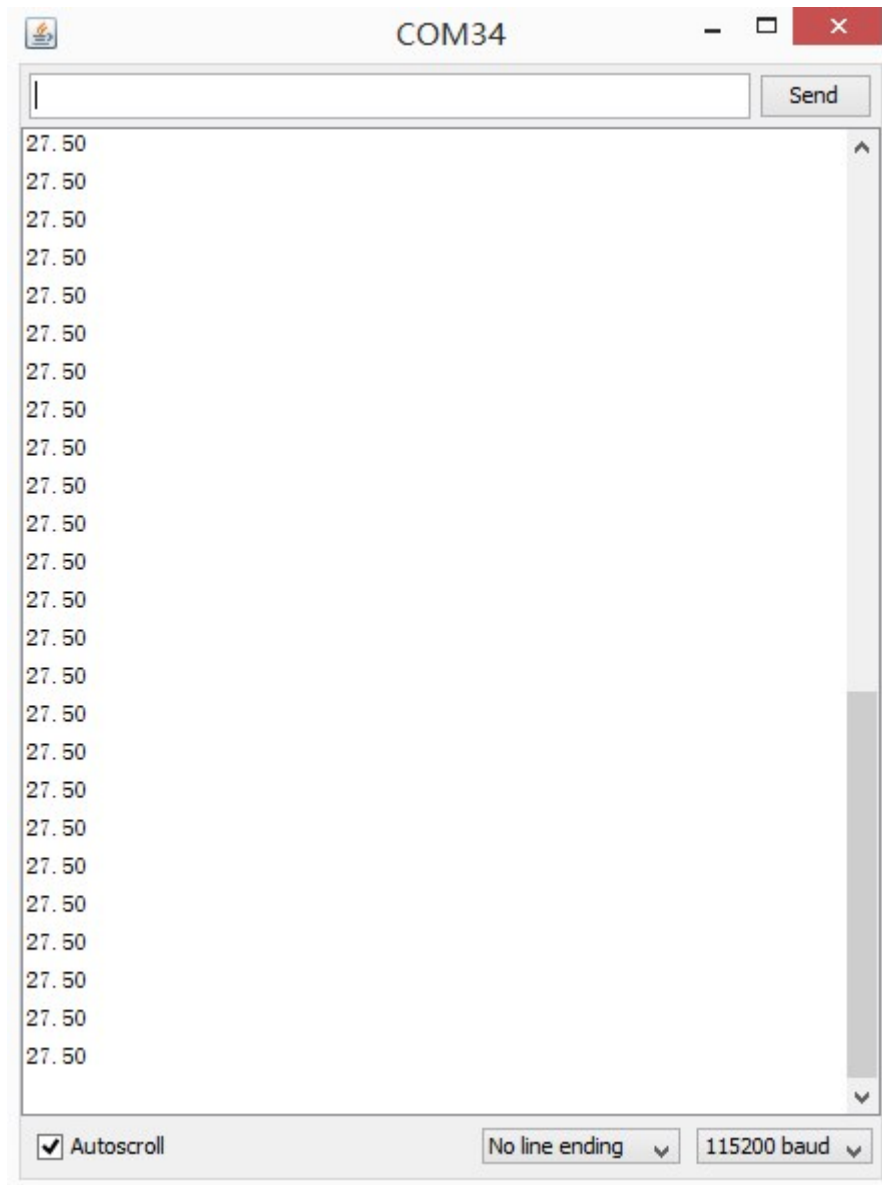
You can download the library in [here](#)

Then extract the library the Library folder of Arduino, open the demo in examples folder.

Then upload it to your Seeeduino.

### 3.3 Open Serial Monitor and Get Data

Then, open your Serial Monitor, you can find the temperature in Celsius here.





### 3.4 K type thermocouple indexing table

As a reference, the following is K type thermocouple indexing table.

0	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50	-55	-60	-65	-70	-75	-80	-85	-90	-95	-100	
-2	-5.8	-5.9	-6.0	-6.0	-6.1	-6.2	-6.2	-6.3	-6.3	-6.3	-6.4	-6.4	-6.4	-6.4	-6.4						
00	914	654	346	99	584	127	618	056	438	765	036	251	411	518	577						
-1	-3.5	-3.7	-3.8	-3.9	-4.1	-4.2	-4.4	-4.5	-4.6	-4.7	-4.9	-5.0	-5.1	-5.2	-5.3	-5.4	-5.5	-5.6	-5.7	-5.8	-5.8
00	536	046	523	969	382	761	106	416	69	927	127	289	412	496	54	542	503	422	297	128	914
0	0	-0.1	-0.3	-0.5	-0.7	-0.9	-1.1	-1.3	-1.5	-1.7	-1.8	-2.0	-2.2	-2.4	-2.5	-2.7	-2.9	-3.0	-3.2	-3.3	-3.5
		966	919	855	775	678	561	425	269	093	894	673	428	16	866	547	201	828	427	996	536
0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	
0	0	0.19	0.39	0.59	0.79	1.00	1.20	1.40	1.61	1.81	2.02	2.22	2.43	2.64	2.85	3.05	3.26	3.47	3.68	3.88	4.09
		79	69	7	81	02	33	71	18	71	31	96	65	37	12	89	66	43	19	92	62
10	4.09	4.30	4.50	4.71	4.91	5.12	5.32	5.53	5.73	5.93	6.13	6.33	6.54	6.74	6.94	7.14	7.34	7.53	7.73	7.93	8.13
0	62	29	91	47	99	44	84	17	45	67	83	95	02	06	06	04		96	91	87	85
20	8.13	8.33	8.53	8.73	8.93	9.14	9.34	9.54	9.74	9.95	10.1	10.3	10.5	10.7	10.9	11.1	11.3	11.5	11.7	12.0	12.2
0	85	84	86	91	99	11	27	47	72		534	571	613	659	709	763	821	882	947	015	086
30	12.2	12.4	12.6	12.8	13.0	13.2	13.4	13.6	13.8	14.0	14.2	14.5	14.7	14.9	15.1	15.3	15.5	15.7	15.9	16.1	16.3
0	086	159	236	315	396	48	566	654	745	837	931	028	126	226	327	431	536	642	75	86	971
40	16.3	16.6	16.8	17.0	17.2	17.4	17.6	17.8	18.0	18.3	18.5	18.7	18.9	19.1	19.3	19.5	19.7	20.0	20.2	20.4	20.6
0	971	084	198	314	431	549	669	789	911	034	158	283	409	536	663	792	921	051	181	312	443
50	20.6	20.8	21.0	21.2	21.4	21.7	21.9	22.1	22.3	22.5	22.7	22.9	23.2	23.4	23.6	23.8	24.0	24.2	24.4	24.6	24.9
0	443	574	706	838	971	103	236	368	5	632	764	896	027	158	288	418	547	675	802	929	055
60	24.9	25.1	25.3	25.5	25.7	25.9	26.1	26.3	26.6	26.8	27.0	27.2	27.4	27.6	27.8	28.0	28.2	28.4	28.7	28.9	29.1
0	055	179	303	426	547	668	786	904	02	135	249	36	471	579	686	791	895	996	096	194	29
70	29.1	29.3	29.5	29.7	29.9	30.1	30.3	30.5	30.7	31.0	31.2	31.4	31.6	31.8	32.0	32.2	32.4	32.6	32.8	33.0	33.2
0	29	384	476	565	653	739	822	904	983	06	135	207	277	345	41	474	534	593	649	703	754
80	33.2	33.4	33.6	33.8	34.0	34.2	34.5	34.7	34.9	35.1	35.3	35.5	35.7	35.9	36.1	36.3	36.5	36.7	36.9	37.1	37.3
0	754	803	849	893	934	973	01	044	075	104	131	155	177	196	212	226	238	247	254	258	259
90	37.3	37.5	37.7	37.9	38.1	38.3	38.5	38.7	38.9	39.1	39.3	39.5	39.7	39.9	40.1	40.2	40.4	40.6	40.8	41.0	41.2
0	259	258	255	249	24	229	215	199	18	159	135	109	08	049	015	978	939	897	853	806	756
10	41.2	41.4	41.6	41.8	42.0	42.2	42.4	42.6	42.8	43.0	43.2	43.4	43.5	43.7	43.9	44.1	44.3	44.5	44.7	44.9	45.1
00	756	704	649	591	531	468	403	334	263	189	112	033	951	866	777	687	593	496	396	293	187
11	45.1	45.3	45.4	45.6	45.8	46.0	46.2	46.4	46.6	46.8	46.9	47.1	47.3	47.5	47.7	47.9	48.1	48.2	48.4	48.6	48.8
00	187	078	966	851	733	611	487	359	227	093	955	813	668	52	368	213	054	892	726	556	382
12	48.8	49.0	49.2	49.3	49.5	49.7	49.9	50.1	50.2	50.4	50.6	50.8	51.0	51.1	51.3	51.5	51.7	51.8	52.0	52.2	52.4
00	382	205	024	84	651	459	263	062	858	651	439	223	003	78	552	32	085	845	602	354	103
13	52.4	52.5	52.7	52.9	53.1	53.2	53.4	53.6	53.7	53.9	54.1	54.3	54.4	54.6	54.8						
00	103	847	588	325	058	787	512	234	952	666	377	084	788	489	186						

## 4. Resource

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[Grove - High Temperature Sensor PDF](#)

[Grove - High Temperature Sensor Eagle File](#)

[High Temperature Sensor Library](#)

[Datasheet OPA333 PDF](#)

[Datasheet LMV358 PDF](#)