Grove - High Temperature Sensor

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Version： 1.0

Wiki: 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

Revision	Date	Author	Description
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Disclaimer

For physical injuries and possessions loss caused by those reasons which are not related to product quality, such as operating without following manual guide, natural disasters or force majeure, we take no responsibility for that.

Under the supervision of Seeed Technology Inc., this manual has been compiled and published which covered the latest product description and specification. The content of this manual is subject to change without notice.

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1. Introduction

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℃ , and The accuracy is ±(2.0% + 2℃).

2. Specification

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

3. Demonstration

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

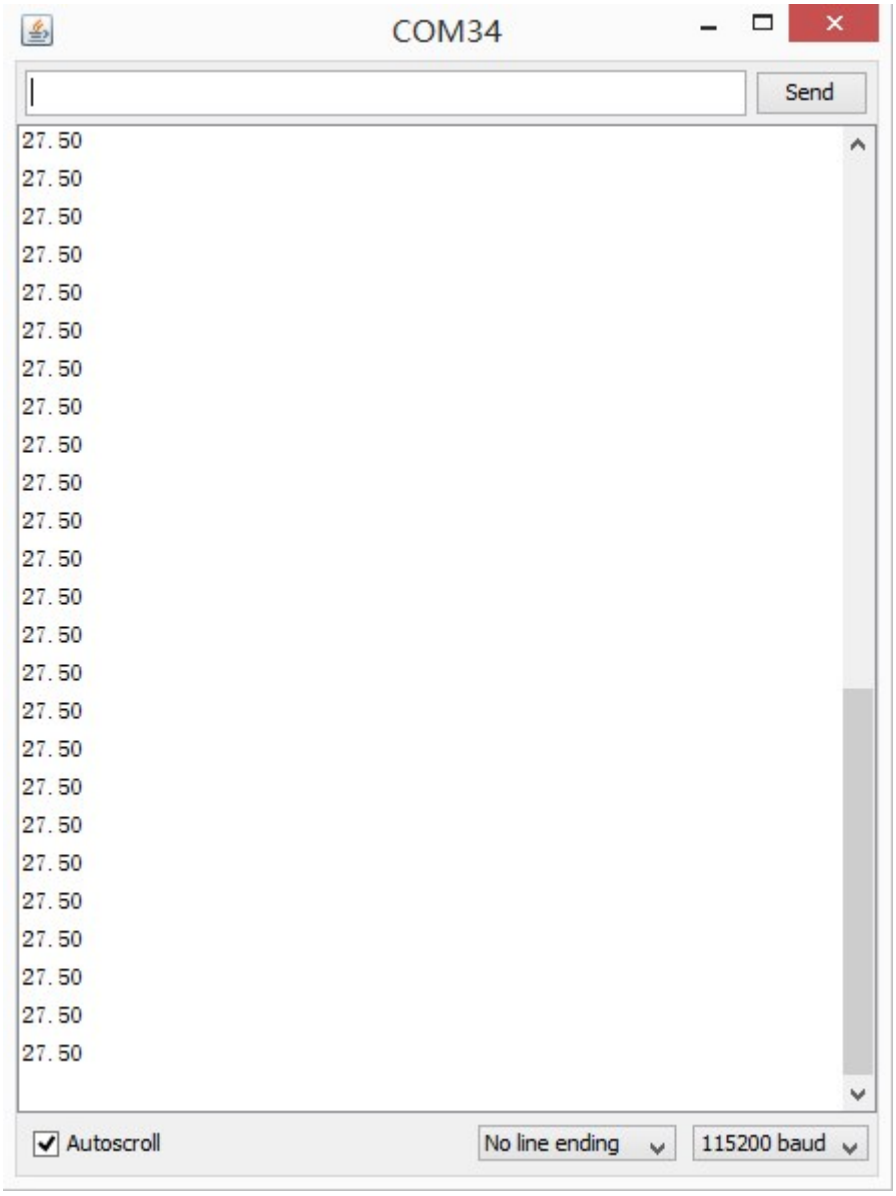
You can download the library in here

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.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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
-200	-5.8914	-5.9654	-6.0346	-6.099	-6.1584	-6.2127	-6.2618	-6.3056	-6.3438	-6.3765	-6.4036	-6.4251	-6.4411	-6.4518	-6.4577						
-100	-3.5536	-3.7046	-3.8523	-3.9969	-4.1382	-4.2761	-4.4106	-4.5416	-4.669	-4.7927	-4.9127	-5.0289	-5.1412	-5.2496	-5.354	-5.4542	-5.5503	-5.6422	-5.7297	-5.8128	-5.8914
0	0	-0.1966	-0.3919	-0.5855	-0.7775	-0.9678	-1.1561	-1.3425	-1.5269	-1.7093	-1.8894	-2.0673	-2.2428	-2.416	-2.5866	-2.7547	-2.9201	-3.0828	-3.2427	-3.3996	-3.5536
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
0	0	0.1979	0.3969	0.597	0.7981	1.0002	1.2033	1.4071	1.6118	1.8171	2.0231	2.2296	2.4365	2.6437	2.8512	3.0589	3.2666	3.4743	3.6819	3.8892	4.0962
100	4.0962	4.3029	4.5091	4.7147	4.9199	5.1244	5.3284	5.5317	5.7345	5.9367	6.1383	6.3395	6.5402	6.7406	6.9406	7.1404	7.34	7.5396	7.7391	7.9387	8.1385
200	8.1385	8.3384	8.5386	8.7391	8.9399	9.1411	9.3427	9.5447	9.7472	9.95	10.1534	10.3571	10.5613	10.7659	10.9709	11.1763	11.3821	11.5882	11.7947	12.0015	12.2086
300	12.2086	12.4159	12.6236	12.8315	13.0396	13.248	13.4566	13.6654	13.8745	14.0837	14.2931	14.5028	14.7126	14.9226	15.1327	15.3431	15.5536	15.7642	15.975	16.186	16.3971
400	16.3971	16.6084	16.8198	17.0314	17.2431	17.4549	17.6669	17.8789	18.0911	18.3034	18.5158	18.7283	18.9409	19.1536	19.3663	19.5792	19.7921	20.0051	20.2181	20.4312	20.6443
500	20.6443	20.8574	21.0706	21.2838	21.4971	21.7103	21.9236	22.1368	22.35	22.5632	22.7764	22.9896	23.2027	23.4158	23.6288	23.8418	24.0547	24.2675	24.4802	24.6929	24.9055
600	24.9055	25.1179	25.3303	25.5426	25.7547	25.9668	26.1786	26.3904	26.602	26.8135	27.0249	27.236	27.4471	27.6579	27.8686	28.0791	28.2895	28.4996	28.7096	28.9194	29.129
700	29.129	29.3384	29.5476	29.7565	29.9653	30.1739	30.3822	30.5904	30.7983	31.006	31.2135	31.4207	31.6277	31.8345	32.041	32.2474	32.4534	32.6593	32.8649	33.0703	33.2754
800	33.2754	33.4803	33.6849	33.8893	34.0934	34.2973	34.501	34.7044	34.9075	35.1104	35.3131	35.5155	35.7177	35.9196	36.1212	36.3226	36.5238	36.7247	36.9254	37.1258	37.3259
900	37.3259	37.5258	37.7255	37.9249	38.124	38.3229	38.5215	38.7199	38.918	39.1159	39.3135	39.5109	39.708	39.9049	40.1015	40.2978	40.4939	40.6897	40.8853	41.0806	41.2756
1000	41.2756	41.4704	41.6649	41.8591	42.0531	42.2468	42.4403	42.6334	42.8263	43.0189	43.2112	43.4033	43.5951	43.7866	43.9777	44.1687	44.3593	44.5496	44.7396	44.9293	45.1187
1100	45.1187	45.3078	45.4966	45.6851	45.8733	46.0611	46.2487	46.4359	46.6227	46.8093	46.9955	47.1813	47.3668	47.552	47.7368	47.9213	48.1054	48.2892	48.4726	48.6556	48.8382
1200	48.8382	49.0205	49.2024	49.384	49.5651	49.7459	49.9263	50.1062	50.2858	50.4651	50.6439	50.8223	51.0003	51.178	51.3552	51.532	51.7085	51.8845	52.0602	52.2354	52.4103
1300	52.4103	52.5847	52.7588	52.9325	53.1058	53.2787	53.4512	53.6234	53.7952	53.9666	54.1377	54.3084	54.4788	54.6489	54.8186						

4. Resource

Grove - High Temperature Sensor PDF

Grove - High Temperature Sensor Eagle File

High Temperature Sensor Library

Datasheet OPA333 PDF

Datasheet LMV358 PDF

Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
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- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
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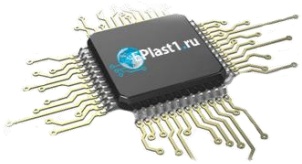
- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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