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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Contents

Document Revision History 2
1. Introduction 2
2. Specification 3
3. Demonstration 4
   3.1 Hardware Installation 4
   3.2 Download Code and Upload 4
   3.3 Open Serial Monitor and Get Data 4
   3.4 K type thermocouple indexing table 6
4. Resource 7

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

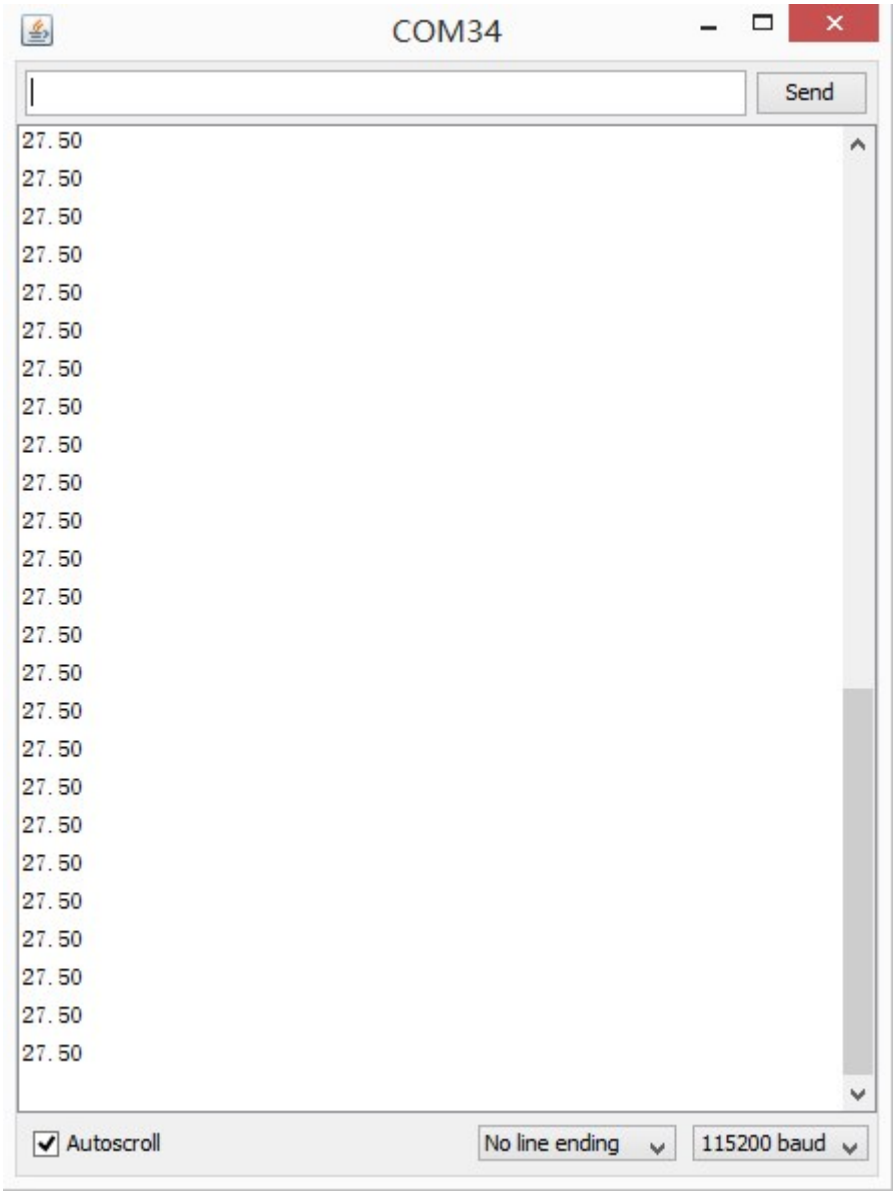
You can download the library in here

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	-5.891	-5.965	-6.035	-6.099	-6.158	-6.212	-6.262	-6.306	-6.344	-6.378	-6.404	-6.425	-6.441	-6.451	-6.456						
-100	-3.553	-3.704	-3.852	-3.969	-4.138	-4.276	-4.410	-4.541	-4.669	-4.792	-4.913	-5.028	-5.141	-5.250	-5.354	-5.454	-5.550	-5.642	-5.730	-5.814	-5.891
0	0	-0.196	-0.392	-0.588	-0.785	-0.981	-1.178	-1.374	-1.570	-1.767	-1.962	-2.158	-2.353	-2.547	-2.741	-2.934	-3.127	-3.319	-3.510	-3.700	-3.889
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
0	0	0.197	0.397	0.597	0.798	1.000	1.203	1.407	1.611	1.817	2.022	2.229	2.436	2.645	2.855	3.065	3.276	3.487	3.699	3.912	4.096
100	4.096	4.301	4.509	4.717	4.919	5.125	5.327	5.533	5.735	5.937	6.138	6.338	6.540	6.741	6.941	7.141	7.340	7.539	7.737	7.934	8.138
200	8.138	8.335	8.539	8.737	8.938	9.141	9.343	9.546	9.747	9.950	10.151	10.354	10.555	10.757	10.960	11.162	11.366	11.571	11.775	11.982	12.209
300	12.209	12.416	12.624	12.833	13.043	13.254	13.465	13.676	13.887	14.099	14.310	14.522	14.733	14.945	15.157	15.369	15.581	15.793	16.005	16.217	16.428
400	16.428	16.640	16.850	17.060	17.271	17.481	17.691	17.900	18.110	18.318	18.527	18.736	18.944	19.153	19.363	19.573	19.784	19.995	20.206	20.417	20.629
500	20.629	20.841	21.053	21.266	21.478	21.691	21.904	22.117	22.330	22.543	22.756	22.969	23.181	23.393	23.604	23.815	24.025	24.235	24.444	24.653	24.861
600	24.861	25.069	25.277	25.485	25.693	25.901	26.108	26.315	26.522	26.728	26.934	27.140	27.345	27.549	27.754	27.957	28.161	28.364	28.567	28.770	28.972
700	28.972	29.174	29.376	29.577	29.779	29.980	30.181	30.382	30.583	30.783	30.984	31.184	31.384	31.583	31.783	31.982	32.181	32.380	32.579	32.778	32.976
800	32.976	33.174	33.372	33.570	33.767	33.964	34.161	34.358	34.555	34.751	34.947	35.143	35.339	35.534	35.729	35.924	36.119	36.314	36.508	36.702	36.896
900	36.896	37.090	37.284	37.477	37.671	37.864	38.057	38.250	38.443	38.636	38.829	39.021	39.213	39.405	39.597	39.789	39.980	40.172	40.363	40.554	40.745
1000	40.745	40.936	41.127	41.317	41.508	41.698	41.888	42.078	42.268	42.458	42.648	42.838	43.027	43.217	43.406	43.595	43.784	43.973	44.162	44.351	44.540
1100	44.540	44.729	44.918	45.107	45.296	45.485	45.674	45.863	46.052	46.241	46.431	46.620	46.810	46.999	47.189	47.379	47.569	47.759	47.949	48.139	48.329
1200	48.329	48.519	48.710	48.900	49.091	49.282	49.473	49.664	49.855	50.046	50.238	50.429	50.621	50.813	51.005	51.197	51.390	51.582	51.775	51.969	52.163
1300	52.163	52.357	52.551	52.746	52.941	53.136	53.332	53.528	53.724	53.920	54.117	54.314	54.511	54.708	54.906						

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;
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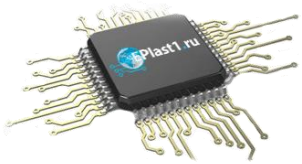
- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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