

Specification For Approval

Customer name : _____

Product name : NTC Thermistor (H12 Series)

Customer PN : _____

MFG PN : NSAB1104FC1-112S2M

MFG			Customer Confirmation		
Make	Check	Approval	Test	Check	Approval

(Company name)

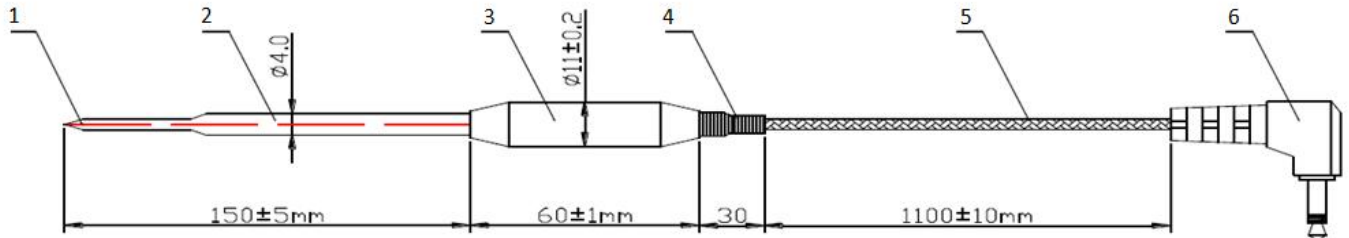
Confirm got the spec and accept as our company's warehouse accept standard.

Revision record

Version	Revise content	Forwarder	Date
A1	Just made	Terry	2016-12-20
Ao littel Technology Co.Ltd. Email : eric.lye@aolittel.com QQ # : 3217998702 http://www.aolittel.com/			

1、 Overall Dimension

(Unit: mm)



2、 Material Explanation

NO	COMPONENT	MATERIAL AND SPECIFICATIONS	Q'TY	REMARK
2-1	ELEMENT	R25:100KΩ ±1% R25/50:3950K ±1%	1 pcs	
2-2	PROBE	Stainless Steel Probe Φ4*0.3*180	1 pcs	
2-3	HANDLE	S304 Handle Φ11*60	1pcs	
2-4	SPRING	Spring 6*0.6*30	1pcs	
2-5	LEAD WIRE	AWG#26 *2P PTFE 380°C	1100mm	
2-6	CONNECTOR	2.5mm Mono Jack		

3、 Part Number :

$\frac{NSA}{1} - \frac{\times \times}{2} \frac{\times \times \times}{3} \frac{\times}{4} \frac{\times}{5} \frac{\times \times \times \times}{6} \frac{\times}{7} \quad 8$

- (1) NTC Thermistor Mark;
- (2) Head shape sign (B:Housing Type, D:Dip-Coating, M:Molding);
- (3) Series Type (0:Epoxy coating structure, 1:Epoxy coating structure(high temp)) ;
- (4) Nominal Resistance at 25°C (previous two digits are significant figures, The last digit specifies the number of zeros to follow.);
- (5) Resistance tolerance (%);
- (6) B Value constant sign In general, it is value of 25/50Deg, other conditions will remark and explain;
- (7) Length Sign (unit is mm) ;
- (8) Special code ;

4、 Electrical Performance:

NO	Item	Sign	Test Conditions	Min.	Normal value	Max.	Unit
4-1.	Resistance at 25°C	R25	Ta=25±0.1°C P _T ≤0.1mw	99	100	101	kΩ
4-2.	B Value	B25/50	$B=LN \frac{R_{T1}}{R_{T2}} / \left(\frac{1}{T1} - \frac{1}{T2} \right)$	3910.5	3950	3989.5	k
4-3.	Dissipation Coefficient	σ	In the air	2.5		/	mw/°C
4-4.	Time constant	τ	In the air	/	/	8	sec
4-5.	Insulation resistance	/	500VDC	100	/	/	MΩ
4-6.	Withstand voltage	/	1500V AC	5	/	/	Sec
4-7.	Operating temp.range	/	/	-40	/	+350	°C

5、 Reliability Test

NO	Item	Technical requirements	Test conditions and method
5-1.	High temp. Test	ΔR/R25≤±3%	105±5°C, 1000±24 hrs
5-2.	Low temp. tes		-20±5°C, 1000±24 hrs
5-3.	Endure moisture test	ΔB/B≤±3%	Store in environment 65±2°C,90%-95%RH for 1000±24 hrs
5-4.	Temp. cycle test	No change with withstand voltage、 Insalution performance。 Appearance without damage.	Place the sample in -20°C for 10 min, in 25°C for 2 min and in 80 °C for 10 min.and repeat for 500 times.
5-5	Tensile tests	After tensile test, the sensor should be no damage and no falling.zero power resistance change rate should be less than ±1% in 25°C	Clamp wire at 50mm away from the inner edge of the connector terminal, then put 10N static tension between terminal and wire for 1min, along axial direction.after the test, check if there is any borken wire, falling off or damage and measure zero-power re.
5-6	Drop test	No technical damage. zero power resistance change rate should be less than ±1% in 25°C	Drop the sensor from a meter high through axial and lateral direction to cement floor, each direction for 5 times.then check the appearance and measure zero-power resistance in 25°C
5-7	Vibration test		Frequency range: 10-500HZ, accelerated speed:10g, frequency sweep time: both X and Y for 30 min。 recover for 4 hours after test, visual inspect the appearance of the sensor and measure zero- power resistance in 25°C

6、 Storage Method

- 6.1 In the process of storage and transportation, per stack height is not more than 4 CTN products.
- 6.2 Available with all transport method, but avoid the rain, snow of direct or indirect leaching and mechanical damage.
- 6.3 Products should be stored in the temperature of environment - 10 °C / + 40 °C, relative humidity is not more than 80%, environment should not have acid, alkali and corrosion gas or radioactive source.

Manufacturer info :

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7、 R—T TABLE



R—T CONVERSION TABLE
 $R_{25}=100K\Omega\pm 1\%$ $B_{25/50}=3950K\pm 1\%$

T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
-40	3084.1903	3225.4617	3372.8667	-2	352.0661	360.2090	368.5034
-39	2895.6440	3026.3501	3162.6398	-1	334.5897	342.1524	349.8510
-38	2718.7384	2839.6504	2965.6432	0	318.0565	325.0790	332.2234
-37	2552.8882	2664.7295	2781.1924	1	302.8802	309.4148	316.0588
-36	2397.5050	2500.9521	2608.6019	2	288.4623	294.5407	300.7171
-35	2252.0131	2347.6975	2447.2026	3	274.7667	280.4187	286.1583
-34	2115.8407	2204.3501	2296.3324	4	261.7587	267.0123	272.3441
-33	1988.4357	2070.3164	2155.3533	5	249.4047	254.2861	259.2371
-32	1869.2662	1945.0251	2023.6520	6	237.6724	242.2063	246.8020
-31	1757.8175	1827.9241	1900.6367	7	226.5311	230.7405	235.0046
-30	1653.6010	1718.4900	1785.7467	8	215.9510	219.8576	223.8125
-29	1554.2128	1614.1907	1676.3155	9	205.9038	209.5278	213.1942
-28	1462.0586	1517.5430	1574.9755	10	196.3626	199.7229	203.1204
-27	1376.4612	1427.8268	1480.9611	11	187.3014	190.4157	193.5625
-26	1296.8256	1344.4099	1393.6008	12	178.6955	181.5805	184.4936
-25	1222.6231	1266.7306	1312.2980	13	170.5216	173.1927	175.8880
-24	1153.3849	1194.2910	1236.5242	14	162.7573	165.2289	167.7213
-23	1088.6931	1126.6478	1165.8091	15	155.3811	157.6669	159.9703
-22	1028.1766	1063.4070	1099.7346	16	148.3732	150.4857	152.6130
-21	971.5010	1004.2141	1037.9250	17	141.7141	143.6651	145.6284
-20	918.3673	948.7521	980.0442	18	135.3856	137.1862	138.9968
-19	868.0720	896.2827	925.3176	19	129.3706	131.0310	132.6995
-18	820.9090	847.1088	874.0574	20	123.6525	125.1824	126.7185
-17	776.6631	801.0024	826.0218	21	118.2158	119.6241	121.0370
-16	735.1344	757.7515	780.9864	22	113.0459	114.3409	115.6392
-15	696.1377	717.1601	738.7435	23	108.1286	109.3182	110.5098
-14	659.4999	679.0449	699.0993	24	103.4508	104.5422	105.6345
-13	625.0604	643.2362	661.8744	25	99.0000	100.0000	101.0000
-12	592.6708	609.5771	626.9029	26	94.6806	95.6792	96.6787
-11	562.1926	577.9212	594.0304	27	90.5728	91.5683	92.5655
-10	533.4974	548.1330	563.1138	28	86.6652	87.6560	88.6493
-9	506.0745	519.6807	533.5994	29	82.9475	83.9322	84.9201
-8	480.1760	492.8244	505.7554	30	79.4094	80.3868	81.3681
-7	455.7096	467.4665	479.4788	31	76.0416	77.0106	77.9842
-6	432.5898	443.5169	454.6746	32	72.8352	73.7948	74.7596
-5	410.7369	420.8916	431.2542	33	69.7815	70.7309	71.6860
-4	390.0774	399.5130	409.1359	34	66.8729	67.8113	68.7560
-3	370.5419	379.3080	388.2427	35	64.1016	65.0283	65.9618

R—T CONVERSION TABLE

R ₂₅ =100KΩ±1%				B _{25/50} =3950K±1%			
T/°C	R _{min}	R _{cen}	R _{max}	T/°C	R _{min}	R _{cen}	R _{max}
36	61.4605	62.3750	63.2968	74	14.6502	15.0808	15.5225
37	58.9430	59.8448	60.7544	75	14.1597	14.5808	15.0129
38	56.5424	57.4312	58.3281	76	13.6876	14.0994	14.5221
39	54.2531	55.1284	56.0122	77	13.2334	13.6361	14.0496
40	52.0691	52.9307	53.8012	78	12.7960	13.1898	13.5943
41	49.9851	50.8328	51.6897	79	12.3750	12.7600	13.1557
42	47.9961	48.8297	49.6728	80	11.9695	12.3460	12.7330
43	46.0972	46.9166	47.7457	81	11.5789	11.9470	12.3256
44	44.2841	45.0891	45.9042	82	11.2026	11.5625	11.9328
45	42.5521	43.3428	44.1437	83	10.8400	11.1919	11.5541
46	40.8973	41.6736	42.4604	84	10.4905	10.8346	11.1889
47	39.3160	40.0779	40.8505	85	10.1536	10.4900	10.8365
48	37.8044	38.5520	39.3104	86	9.8247	10.1536	10.4924
49	36.3591	37.0924	37.8367	87	9.5081	9.8295	10.1608
50	34.9769	35.6960	36.4263	88	9.2033	9.5175	9.8414
51	33.6545	34.3596	35.0759	89	8.9098	9.2169	9.5337
52	32.3893	33.0804	33.7829	90	8.6271	8.9273	9.2371
53	31.1783	31.8556	32.5443	91	8.3548	8.6483	8.9512
54	30.0190	30.6826	31.3577	92	8.0926	8.3795	8.6758
55	28.9089	29.5590	30.2207	93	7.8400	8.1205	8.4102
56	27.8456	28.4823	29.1307	94	7.5966	7.8709	8.1543
57	26.8268	27.4504	28.0857	95	7.3620	7.6302	7.9074
58	25.8506	26.4612	27.0835	96	7.1361	7.3983	7.6694
59	24.9148	25.5126	26.1221	97	6.9182	7.1746	7.4398
60	24.0177	24.6029	25.1998	98	6.7081	6.9589	7.2183
61	23.1573	23.7301	24.3146	99	6.5056	6.7509	7.0047
62	22.3320	22.8926	23.4649	100	6.3103	6.5502	6.7985
63	21.5402	22.0888	22.6491	101	6.1220	6.3566	6.5995
64	20.7803	21.3172	21.8657	102	5.9402	6.1697	6.4074
65	20.0509	20.5762	21.1131	103	5.7649	5.9894	6.2220
66	19.3506	19.8645	20.3900	104	5.5957	5.8153	6.0429
67	18.6780	19.1808	19.6952	105	5.4322	5.6471	5.8699
68	18.0319	18.5238	19.0272	106	5.2746	5.4848	5.7028
69	17.4113	17.8924	18.3850	107	5.1222	5.3279	5.5413
70	16.8148	17.2854	17.7674	108	4.9751	5.1764	5.3853
71	16.2414	16.7017	17.1733	109	4.8329	5.0299	5.2344
72	15.6901	16.1403	16.6017	110	4.6955	4.8883	5.0885
73	15.1600	15.6003	16.0518	111	4.5627	4.7514	4.9474

R—T CONVERSION TABLE

		R25=100KΩ±1%			B25/50=3950K±1%		
T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
112	4.4343	4.6190	4.8109	150	1.5821	1.6649	1.7518
113	4.3101	4.4909	4.6788	151	1.5435	1.6247	1.7100
114	4.1900	4.3669	4.5509	152	1.5062	1.5858	1.6694
115	4.0738	4.2470	4.4271	153	1.4700	1.5480	1.6300
116	3.9612	4.1308	4.3072	154	1.4349	1.5114	1.5919
117	3.8523	4.0183	4.1911	155	1.4008	1.4759	1.5548
118	3.7469	3.9094	4.0786	156	1.3678	1.4415	1.5190
119	3.6446	3.8038	3.9695	157	1.3357	1.4080	1.4840
120	3.5457	3.7015	3.8638	158	1.3047	1.3756	1.4502
121	3.4496	3.6022	3.7612	159	1.2745	1.3441	1.4173
122	3.3566	3.5060	3.6617	160	1.2453	1.3136	1.3855
123	3.2664	3.4127	3.5652	161	1.2169	1.2839	1.3545
124	3.1788	3.3221	3.4715	162	1.1893	1.2551	1.3244
125	3.0939	3.2342	3.3806	163	1.1625	1.2271	1.2951
126	3.0069	3.1442	3.2874	164	1.1364	1.1998	1.2666
127	2.9228	3.0571	3.1973	165	1.1111	1.1733	1.2389
128	2.8412	2.9726	3.1098	166	1.0865	1.1476	1.2120
129	2.7623	2.8908	3.0250	167	1.0625	1.1225	1.1858
130	2.6858	2.8116	2.9430	168	1.0392	1.0981	1.1603
131	2.6118	2.7349	2.8635	169	1.0164	1.0743	1.1354
132	2.5402	2.6606	2.7864	170	0.9943	1.0512	1.1112
133	2.4709	2.5887	2.7119	171	0.9728	1.0286	1.0875
134	2.4038	2.5191	2.6397	172	0.9517	1.0066	1.0645
135	2.3388	2.4517	2.5698	173	0.9313	0.9852	1.0421
136	2.2760	2.3865	2.5021	174	0.9114	0.9643	1.0202
137	2.2152	2.3234	2.4366	175	0.8919	0.9439	0.9988
138	2.1564	2.2623	2.3732	176	0.8715	0.9225	0.9764
139	2.0995	2.2032	2.3118	177	0.8515	0.9016	0.9545
140	2.0445	2.1460	2.2523	178	0.8322	0.8813	0.9332
141	1.9912	2.0906	2.1948	179	0.8133	0.8615	0.9125
142	1.9395	2.0369	2.1390	180	0.7950	0.8423	0.8923
143	1.8896	1.9850	2.0850	181	0.7772	0.8236	0.8727
144	1.8414	1.9348	2.0328	182	0.7597	0.8053	0.8535
145	1.7945	1.8861	1.9821	183	0.7430	0.7877	0.8351
146	1.7493	1.8390	1.9331	184	0.7266	0.7705	0.8170
147	1.7055	1.7934	1.8857	185	0.7106	0.7537	0.7994
148	1.6630	1.7492	1.8396	186	0.6951	0.7375	0.7824
149	1.6219	1.7064	1.7951	187	0.6800	0.7216	0.7657

R—T CONVERSION TABLE

		R25=100KΩ±1%			B25/50=3950K±1%		
T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
188	0.6654	0.7063	0.7496	226	0.3216	0.3438	0.3675
189	0.6512	0.6913	0.7338	227	0.3155	0.3374	0.3607
190	0.6374	0.6768	0.7186	228	0.3097	0.3312	0.3542
191	0.6240	0.6627	0.7038	229	0.3040	0.3252	0.3478
192	0.6109	0.6489	0.6893	230	0.2984	0.3192	0.3415
193	0.5982	0.6356	0.6753	231	0.2929	0.3134	0.3353
194	0.5858	0.6226	0.6616	232	0.2875	0.3077	0.3293
195	0.5739	0.6100	0.6483	233	0.2822	0.3021	0.3233
196	0.5622	0.5977	0.6354	234	0.2770	0.2966	0.3175
197	0.5509	0.5858	0.6229	235	0.2720	0.2913	0.3119
198	0.5399	0.5742	0.6107	236	0.2670	0.2860	0.3063
199	0.5291	0.5629	0.5988	237	0.2622	0.2809	0.3009
200	0.5187	0.5519	0.5872	238	0.2575	0.2759	0.2956
201	0.5085	0.5412	0.5759	239	0.2529	0.2710	0.2904
202	0.4987	0.5308	0.5649	240	0.2484	0.2662	0.2853
203	0.4891	0.5207	0.5543	241	0.2439	0.2615	0.2803
204	0.4797	0.5108	0.5439	242	0.2396	0.2569	0.2754
205	0.4706	0.5012	0.5337	243	0.2354	0.2524	0.2706
206	0.4617	0.4918	0.5238	244	0.2312	0.2480	0.2660
207	0.4531	0.4827	0.5142	245	0.2272	0.2437	0.2614
208	0.4446	0.4738	0.5048	246	0.2232	0.2395	0.2569
209	0.4364	0.4651	0.4957	247	0.2194	0.2354	0.2526
210	0.4283	0.4566	0.4867	248	0.2156	0.2314	0.2483
211	0.4205	0.4484	0.4780	249	0.2119	0.2275	0.2442
212	0.4129	0.4403	0.4695	250	0.2083	0.2236	0.2400
213	0.4054	0.4324	0.4612	251	0.2048	0.2199	0.2361
214	0.3981	0.4247	0.4530	252	0.2013	0.2162	0.2322
215	0.3910	0.4172	0.4451	253	0.1979	0.2126	0.2284
216	0.3841	0.4099	0.4374	254	0.1945	0.2090	0.2245
217	0.3773	0.4027	0.4298	255	0.1913	0.2056	0.2209
218	0.3706	0.3956	0.4223	256	0.1881	0.2022	0.2173
219	0.3640	0.3887	0.4150	257	0.1850	0.1989	0.2138
220	0.3577	0.3820	0.4079	258	0.1820	0.1957	0.2104
221	0.3515	0.3754	0.4009	259	0.1790	0.1925	0.2070
222	0.3453	0.3689	0.3941	260	0.1761	0.1894	0.2037
223	0.3394	0.3626	0.3874	261	0.1733	0.1864	0.2005
224	0.3334	0.3563	0.3807	262	0.1705	0.1834	0.1973
225	0.3276	0.3502	0.3743	263	0.1678	0.1805	0.1942

R—T CONVERSION TABLE

		R ₂₅ =100KΩ±1%		B _{25/50} =3950K±1%			
T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
264	0.1650	0.1776	0.1911				
265	0.1624	0.1748	0.1881				
266	0.1598	0.1720	0.1851				
267	0.1573	0.1694	0.1824				
268	0.1548	0.1667	0.1795				
269	0.1524	0.1641	0.1767				
270	0.1500	0.1616	0.1741				
271	0.1477	0.1591	0.1714				
272	0.1453	0.1566	0.1687				
273	0.1431	0.1542	0.1662				
274	0.1409	0.1519	0.1637				
275	0.1388	0.1496	0.1613				
276	0.1366	0.1473	0.1588				
277	0.1346	0.1451	0.1564				
278	0.1325	0.1429	0.1541				
279	0.1304	0.1407	0.1518				
280	0.1285	0.1386	0.1495				
281	0.1265	0.1365	0.1473				
282	0.1246	0.1345	0.1451				
283	0.1227	0.1324	0.1429				
284	0.1208	0.1304	0.1407				
285	0.1190	0.1285	0.1387				
286	0.1172	0.1266	0.1367				
287	0.1155	0.1247	0.1347				
288	0.1137	0.1228	0.1326				
289	0.1120	0.1210	0.1307				
290	0.1103	0.1192	0.1288				
291	0.1086	0.1174	0.1269				
292	0.1070	0.1156	0.1249				
293	0.1054	0.1139	0.1231				
294	0.1038	0.1122	0.1213				
295	0.1022	0.1105	0.1195				
296	0.1006	0.1088	0.1176				
297	0.0990	0.1071	0.1158				
298	0.0975	0.1055	0.1141				
299	0.0960	0.1039	0.1124				
300	0.0946	0.1023	0.1107				