



Dongguan Ampfort Electronics Co., Ltd.

东莞市安伏特电子有限公司

No.: AFT21658

Version: A/1

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Specification For Approval

Customer name : _____

Product name : Thermistor Temperature Sensor

Customer PN : _____

MFG PN : CWF502F3218-401S7C

MFG			Customer Confirmation		
Make	Check	Approval	Test	Check	Approval

(Company name)

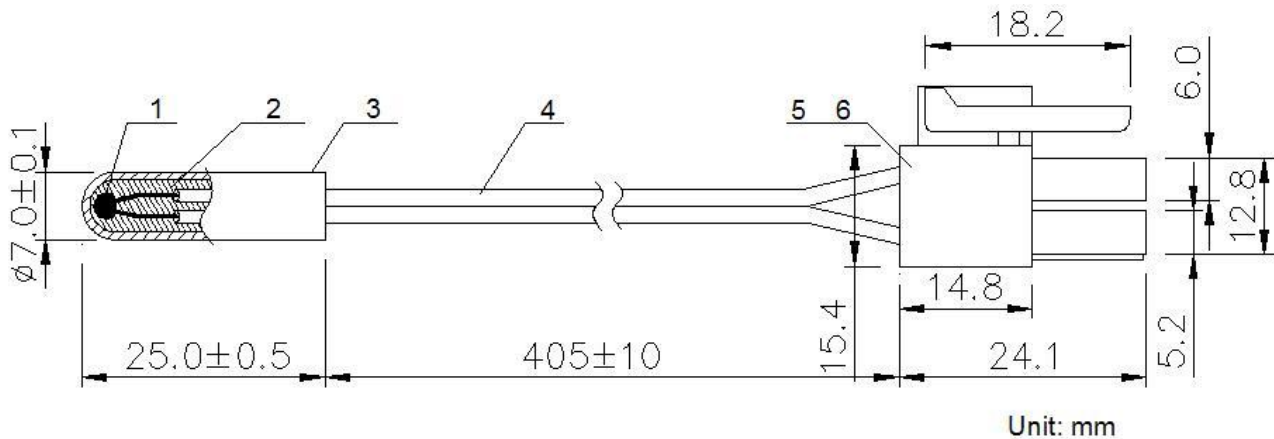
Confirm got the spec and accept as our company's warehouse accept standard.

Version	Revise content	Forwarder	Date
A/1	Just made	Wang	2017-07-03



1、Overall Dimension

(Unit: mm)



2、Material explanation

NO	Material Name	Item/PN
2-1.	Element	R0=13.251KΩ±2% B0/50=3218±1%
2-2.	Housing	Φ7×25 ABS (White)
2-3.	Coating	Epoxy
2-4.	Lead Wire	UL2651 AWG26# 105℃ 300V (Yellow)
2-5.	Terminal	Connector 35965-0200 (White/Blue)

3、Part Number :

$\frac{\text{CWF}}{1}$
 $\frac{-\times}{2}$
 $\frac{\times}{3}$
 $\frac{\times\times\times}{4}$
 $\frac{\times}{5}$
 $\frac{\times}{6}$
 $\frac{\times\times\times\times}{7}$
 $\frac{\times}{8}$

- (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℃ (previous two digits are significant figures, The last digit specifies the number of zeros to follow.);
- (5) Resistance tolerance (%);
- (6) B Value (1:25/50; 2:25/85; 3:0/100; 4:0/50; 5:50/85; 6:100/200; 7:Other);
- (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 0℃	R0	Ta=25±0.05℃ P _T ≤0.1mw	13.015	13.251	13.514	kΩ
	Resistance at 25℃	R25		4.95	5	5.05	
4-2.	B Value	B0/50	$B=LN\frac{R_{T1}}{R_{T2}} / (\frac{1}{T1} - \frac{1}{T2})$	3185.82	3218.0	3250.18	k
4-3.	Dissipation factor	σ	Ta=25±0.5℃	≤3.0			mW/℃
4-4.	Time constant	τ	Ta=25±0.5℃	≥2			sec
4-5.	Operating temp.range	/	/	-40	/	+80	℃
4-6	Insulation resistance	/	500V DC	>100			MΩ
4-7.	Withstand voltage test	/	1000V AC,1mA, 1min	No Abnormalities			Sec

5、Reliability Test

NO	Item	Technical requirements	Test conditions and method
5-1.	High temp. Test	$\Delta R/R25 \leq \pm 5\%$ $\Delta B/B \leq \pm 3\%$ No change with withstand voltage. Insulation performance. Appearance without damage.	80±5℃, power on 120±12 hrs, DC0.2mA
5-2.	Low temp. tes		-40±5℃, power on 120±12 hrs, DC0.2mA
5-3.	Endure moisture test		Store in environment 45±2℃,90%-95%RH for 120±12 hrs
5-4.	Temp. cycle test		5℃ water×10min→90℃ water ×100min/cycles, 50 cycles
5-5	Load electrify test		Power on DC1mA, 100hrs in room temp. and humid.
5-6	Drop test		Free fall into concrete floor from height 1M , 5 cycle.
5-7	Vibration test		Frequency range: 10~55HZ Total amplitude 1.52mm 1 cycle 1 min , direction and time X、Y、Z axis 2Hr each.
5-8	Bending test		Bend 90°binding site wire and epoxy resin。 Back and forth 10 times
5-9	Tensile tests		Put 2 kg of force lasts 1 min

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℃ / + 40℃, relative humidity is not more than 80%, environment should not have acid, alkali and corrosion gas or radioactive source.

7、R—T Conversion Table.



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R-T CONVERSION TABLE

R0=13.251KΩ±2% B0/50=3218±1%

T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
-40	85.953	89.360	92.894	-2	14.122	14.416	14.715
-39	81.456	84.640	87.939	-1	13.543	13.819	14.100
-38	77.225	80.200	83.281	0	13.015	13.251	13.514
-37	73.241	76.022	78.901	1	12.464	12.708	12.956
-36	69.489	72.089	74.779	2	11.962	12.191	12.424
-35	65.954	68.386	70.900	3	11.483	11.698	11.916
-34	62.621	64.896	67.247	4	11.026	11.228	11.432
-33	59.479	61.608	63.806	5	10.590	10.779	10.971
-32	56.514	58.507	60.563	6	10.173	10.351	10.531
-31	53.716	55.581	57.506	7	9.775	9.942	10.110
-30	51.075	52.821	54.622	8	9.395	9.551	9.709
-29	48.580	50.215	51.901	9	9.031	9.178	9.326
-28	46.222	47.755	49.333	10	8.687	8.824	8.963
-27	43.994	45.430	46.908	11	8.352	8.481	8.611
-26	41.887	43.233	44.617	12	8.034	8.155	8.277
-25	39.894	41.156	42.453	13	7.730	7.844	7.958
-24	38.008	39.191	40.406	14	7.440	7.546	7.653
-23	36.223	37.332	38.471	15	7.161	7.261	7.361
-22	34.533	35.573	36.641	16	6.895	6.988	7.082
-21	32.932	33.908	34.908	17	6.640	6.727	6.815
-20	31.415	32.330	33.269	18	6.396	6.477	6.559
-19	29.977	30.836	31.716	19	6.162	6.238	6.315
-18	28.613	29.419	30.245	20	5.938	6.009	6.080
-17	27.320	28.076	28.851	21	5.723	5.790	5.856
-16	26.093	26.803	27.529	22	5.518	5.579	5.641
-15	24.928	25.595	26.276	23	5.320	5.378	5.436
-14	23.822	24.448	25.088	24	5.131	5.185	5.238
-13	22.772	23.360	23.960	25	4.950	5.000	5.050
-12	21.774	22.326	22.889	26	4.772	4.822	4.872
-11	20.826	21.344	21.873	27	4.602	4.651	4.701
-10	19.925	20.411	20.908	28	4.438	4.488	4.538
-9	19.068	19.525	19.990	29	4.282	4.331	4.381
-8	18.253	18.682	19.119	30	4.131	4.180	4.230
-7	17.477	17.880	18.290	31	3.987	4.036	4.085
-6	16.739	17.117	17.502	32	3.848	3.897	3.946
-5	16.036	16.391	16.753	33	3.715	3.764	3.812



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-4	15.367	15.701	16.040	34	3.588	3.636	3.684
-3	14.729	15.043	15.361	35	3.465	3.512	3.560

R-T CONVERSION TABLE

R0=13.251KΩ±2% B0/50=3218±1%

T/°C	Rmin	Rcen	Rmax	T/°C	Rmin	Rcen	Rmax
36	3.347	3.394	3.441	74	1.019	1.045	1.072
37	3.234	3.280	3.327	75	0.990	1.016	1.043
38	3.125	3.171	3.217	76	0.963	0.988	1.014
39	3.021	3.066	3.112	77	0.936	0.961	0.987
40	2.920	2.965	3.010	78	0.910	0.935	0.960
41	2.823	2.868	2.912	79	0.885	0.910	0.934
42	2.730	2.774	2.818	80	0.861	0.885	0.909
43	2.641	2.684	2.728	81	0.838	0.861	0.885
44	2.555	2.597	2.641	82	0.815	0.838	0.862
45	2.472	2.514	2.557	83	0.793	0.816	0.839
46	2.392	2.433	2.476	84	0.772	0.794	0.817
47	2.315	2.356	2.398	85	0.751	0.773	0.796
48	2.241	2.282	2.323	86	0.731	0.753	0.775
49	2.170	2.210	2.250	87	0.712	0.733	0.755
50	2.100	2.140	2.180	88	0.693	0.714	0.736
51	2.035	2.074	2.113	89	0.675	0.696	0.717
52	1.971	2.010	2.048	90	0.658	0.678	0.698
53	1.910	1.948	1.986	91	0.641	0.660	0.681
54	1.851	1.888	1.925	92	0.624	0.644	0.664
55	1.794	1.830	1.867	93	0.608	0.627	0.647
56	1.739	1.775	1.811	94	0.593	0.611	0.631
57	1.686	1.721	1.757	95	0.578	0.596	0.615
58	1.635	1.669	1.705	96	0.563	0.581	0.600
59	1.585	1.619	1.654	97	0.549	0.567	0.585
60	1.537	1.571	1.605	98	0.535	0.553	0.570
61	1.491	1.525	1.558	99	0.522	0.539	0.557
62	1.447	1.480	1.513	100	0.509	0.526	0.543
63	1.404	1.436	1.469	101	0.496	0.513	0.530
64	1.363	1.394	1.426	102	0.484	0.500	0.517
65	1.323	1.354	1.385	103	0.472	0.488	0.505
66	1.284	1.315	1.346	104	0.461	0.476	0.493
67	1.247	1.277	1.307	105	0.449	0.465	0.481
68	1.211	1.240	1.270	106	0.439	0.454	0.469
69	1.176	1.205	1.234	107	0.428	0.443	0.458
70	1.142	1.171	1.200	108	0.418	0.432	0.448
71	1.110	1.138	1.166	109	0.408	0.422	0.437



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72	1.078	1.106	1.134	110	0.398	0.412	0.427
73	1.048	1.075	1.103				