

# SPECIFICATION FOR APPROVAL

## 技术规格确认书

客户名称 Customer	
客户料号 Customer PN	
产品类型 Product Model	NTC Thermistor
型号规格 Part Number	CWFM0153FB1-xxxM113X
文控编号 Specification file No.	
版本号 Version	V1

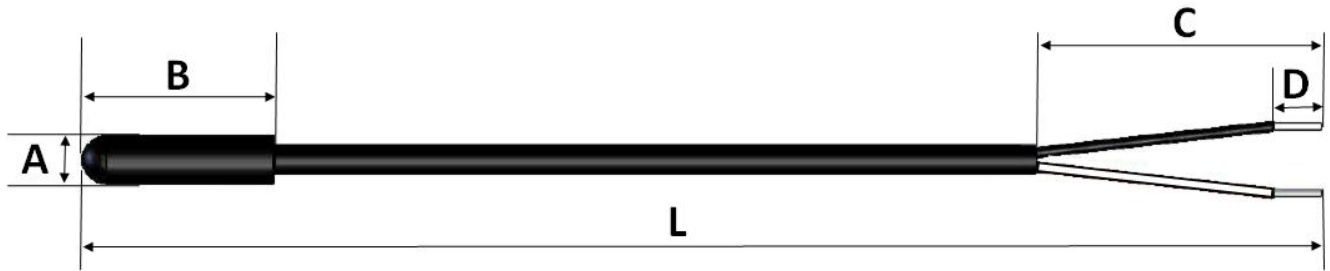
	DES.	CHK.	APP.
Manu.	RH LIANG	HO ZHANG	DZ LIN
User			

This Specification indicates the parameters, electrical properties, test condition, structure and dimension of the NTC Thermistors and Temperature Sensors manufactured by Aolittel . it is sincerely for your confirmation got the spec. and accept as our company' s standard.

Any doubt, please contact us in due course, or if you change the usage of the products, or if the operational environment changed evidently, please inform us.



## 1、 Dimension (Unit: mm)



Dimension				
A	B	C	D	L
5	17	25±5	3±1	as required

## 2、 Material explanation

NO	Material Name	Material and Specifications
2-1.	Element	R25=15KΩ±1% B25/50=3470K±1% DC
2-2.	Coating	NTC encapsulated using PVC over-mold material (Black)
2-3	Cable features	Customization 2464-22#*2C Black hard round sheath wire (OD3.3)
2-4.	Wire ends	Tinned

## 3、 Part Number :

$\text{CWF} \quad \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \quad \underline{\quad}$   
 1      2 3      4      5 6      7      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 (1:25/50; 2:25/85; 3:25/100; 4:25/125; 5:0/25; 6:0/50; 7:0/100; 8:50/85; 9:100/200; 0:Other);
- (7) Length Sign (unit is mm) ;
- (8) Special code ;

## 4、Performance Specs:

NO	Item	Sign	Test Conditions	Min.	Nor.	Max.	Unit
4-1.	Resistance at 25°C	R25	Ta=25±0.05°C P <sub>T</sub> ≤0.1mw	14.85	15.0	15.15	kΩ
4-2.	B Value	B25/50	$B=LN \frac{R_{T1}}{R_{T2}} / \left( \frac{1}{T1} - \frac{1}{T2} \right)$	3435.3	3470	3504.7	k
4-3.	Dissipation factor	σ	In still air	About 2			mW/°C
4-4.	Time response	τ	In flowing water	About 15			sec
4-5.	Withstanding Voltage	/	1500VAC 2Sec	No breakdown			Sec
4-6.	Insulation Resistance		500VDC	≥ 100			MΩ
4-7.	Operating temp. range	/	/	-30	/	+105	°C

## 5、Reliability Test

NO	Item	Technical requirements	Test conditions and method
5-1.	Dry heat storage	△R25: R25≤±3% △B25/85: B25/85≤±2%	80±2°C, Room temperature storage 1000H.
5-2.	Warm storage		55±2°C, 95% RH, Room temperature storage 1000H.
5-3.	Low temperature storage		-30±2°C, Room temperature storage 1000H.
5-4.	Temp. cycle test		-20°C×30min → 25°C×10min → 100°C Water×30min → 25°C×10min, total 10 cycles
5-5.	Lead wire pulling test	No visible damage, and are within specification	Fix the product and apply 9.8Nor 1.0kg force on axial direction of each lead wire, for 10 secs.
5-6.	Lead wire bending test		Fix the product and apply 100g force on axial direction of each lead wire, then bend both lead wires to same direction slowly, before bending them back to original location, for 10 times
5-7.	Welding ability	Tin covered area should be larger than 90%	Soak lead wires with flux, immerse into flux at 230-260, for 3 to 5 secs.

## 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.

## 7、R—T Table

R—T CONVERSION TABLE							
R <sub>25</sub> =15KΩ±1%				B <sub>25/50</sub> =3470K±1%			
T/°C	R <sub>min</sub>	R <sub>cen</sub>	R <sub>max</sub>	T/°C	R <sub>min</sub>	R <sub>cen</sub>	R <sub>max</sub>
-55	765.738	804.9	845.979	-20	106.488	109.725	113.05
-54	712.99	748.914	786.569	-19	101.264	104.29	107.395
-53	665.938	699.009	733.648	-18	96.329	99.157	102.058
-52	623.575	654.108	686.067	-17	91.665	94.309	97.02
-51	585.122	613.377	642.932	-16	87.257	89.729	92.262
-50	549.967	576.164	603.548	-15	83.089	85.401	87.768
-49	517.631	541.956	567.367	-14	79.146	81.309	83.522
-48	487.733	510.346	533.954	-13	75.416	77.439	79.508
-47	459.969	481.01	502.963	-12	71.886	73.778	75.713
-46	434.092	453.684	474.113	-11	68.544	70.314	72.123
-45	409.905	428.157	447.177	-10	65.378	67.035	68.726
-44	387.243	404.254	421.969	-9	62.379	63.929	65.511
-43	365.97	381.829	398.334	-8	59.536	60.987	62.467
-42	345.973	360.76	376.141	-7	56.841	58.199	59.583
-41	327.154	340.943	355.279	-6	54.284	55.555	56.85
-40	309.428	322.29	335.652	-5	51.859	53.048	54.26
-39	292.723	304.719	317.175	-4	49.556	50.67	51.804
-38	276.973	288.163	299.774	-3	47.371	48.413	49.473
-37	262.119	272.557	283.382	-2	45.294	46.27	47.262
-36	248.108	257.845	267.937	-1	43.321	44.235	45.163
-35	234.891	243.974	253.383	0	41.314	42.165	43.029
-34	222.422	230.896	239.668	1	39.663	40.463	41.276
-33	210.659	218.565	226.744	2	37.967	38.716	39.476
-32	199.562	206.938	214.565	3	36.354	37.055	37.765
-31	189.093	195.975	203.088	4	34.818	35.474	36.138
-30	179.217	185.64	192.273	5	33.356	33.969	34.591
-29	169.901	175.894	182.081	6	31.963	32.537	33.118
-28	161.112	166.706	172.477	7	30.637	31.174	31.716
-27	152.821	158.043	163.427	8	29.373	29.874	30.382
-26	144.998	149.873	154.897	9	28.168	28.637	29.111
-25	137.618	142.17	146.857	10	27.019	27.457	27.9
-24	130.653	134.904	139.279	11	25.923	26.332	26.746
-23	124.08	128.05	132.134	12	24.877	25.26	25.646
-22	117.876	121.584	125.397	13	23.879	24.237	24.597
-21	112.019	115.483	119.043	14	22.927	23.26	23.596

<b>R – T CONVERSION TABLE</b>							
<b>R<sub>25</sub>=15KΩ±1%</b>				<b>B<sub>25/50</sub>=3470K±1%</b>			
<b>T/°C</b>	<b>R<sub>min</sub></b>	<b>R<sub>cen</sub></b>	<b>R<sub>max</sub></b>	<b>T/°C</b>	<b>R<sub>min</sub></b>	<b>R<sub>cen</sub></b>	<b>R<sub>max</sub></b>
15	22.017	22.329	22.642	52	5.589	5.7	5.813
16	21.149	21.439	21.731	53	5.404	5.513	5.624
17	20.319	20.59	20.861	54	5.226	5.334	5.443
18	19.526	19.778	20.031	55	5.055	5.161	5.268
19	18.769	19.003	19.239	56	4.89	4.994	5.1
20	18.044	18.263	18.482	57	4.732	4.834	4.938
21	17.352	17.555	17.758	58	4.579	4.68	4.782
22	16.689	16.878	17.067	59	4.432	4.531	4.631
23	16.056	16.231	16.406	60	4.291	4.388	4.486
24	15.449	15.612	15.774	61	4.154	4.249	4.346
25	14.85	15	15.15	62	4.023	4.116	4.212
26	14.303	14.453	14.602	63	3.896	3.988	4.082
27	13.761	13.91	14.06	64	3.774	3.864	3.956
28	13.242	13.391	13.54	65	3.656	3.745	3.835
29	12.745	12.894	13.042	66	3.543	3.63	3.718
30	12.27	12.417	12.565	67	3.433	3.519	3.606
31	11.815	11.961	12.108	68	3.328	3.412	3.497
32	11.379	11.524	11.67	69	3.226	3.308	3.392
33	10.961	11.105	11.25	70	3.128	3.208	3.291
34	10.561	10.704	10.847	71	3.033	3.112	3.193
35	10.178	10.319	10.461	72	2.941	3.019	3.098
36	9.81	9.95	10.091	73	2.853	2.929	3.007
37	9.457	9.596	9.735	74	2.767	2.842	2.919
38	9.119	9.256	9.394	75	2.685	2.759	2.834
39	8.795	8.93	9.066	76	2.605	2.678	2.751
40	8.484	8.618	8.752	77	2.529	2.599	2.672
41	8.186	8.317	8.45	78	2.454	2.524	2.595
42	7.899	8.029	8.16	79	2.383	2.451	2.52
43	7.624	7.752	7.882	80	2.313	2.38	2.448
44	7.36	7.486	7.614	81	2.246	2.312	2.379
45	7.107	7.231	7.357	82	2.181	2.246	2.312
46	6.863	6.986	7.11	83	2.119	2.182	2.247
47	6.629	6.75	6.872	84	2.058	2.12	2.184
48	6.404	6.523	6.643	85	2	2.061	2.123
49	6.188	6.305	6.424	86	1.943	2.003	2.064
50	5.98	6.096	6.212	87	1.888	1.947	2.007

51	5.781	5.894	6.009	88	1.836	1.893	1.952
<b>R-T CONVERSION TABLE</b>							
<b>R<sub>25</sub>=15KΩ±1%</b>				<b>B<sub>25/50</sub>=3470K±1%</b>			
<b>T/°C</b>	<b>R<sub>min</sub></b>	<b>R<sub>cen</sub></b>	<b>R<sub>max</sub></b>	<b>T/°C</b>	<b>R<sub>min</sub></b>	<b>R<sub>cen</sub></b>	<b>R<sub>max</sub></b>
88	1.836	1.893	1.952	111	0.997	1.035	1.073
89	1.784	1.841	1.898	112	0.973	1.01	1.048
90	1.735	1.79	1.847	113	0.95	0.986	1.024
91	1.687	1.741	1.797	114	0.928	0.963	1
92	1.641	1.694	1.748	115	0.906	0.941	0.977
93	1.596	1.648	1.702	116	0.885	0.919	0.955
94	1.552	1.604	1.656	117	0.865	0.899	0.934
95	1.511	1.561	1.612	118	0.845	0.879	0.913
96	1.47	1.519	1.57	119	0.827	0.859	0.893
97	1.431	1.479	1.529	120	0.808	0.84	0.874
98	1.393	1.44	1.489	121	0.791	0.822	0.855
99	1.356	1.402	1.45	122	0.774	0.805	0.837
100	1.32	1.366	1.413	123	0.757	0.788	0.819
101	1.286	1.331	1.377	124	0.741	0.771	0.802
102	1.253	1.297	1.342	125	0.726	0.756	0.786
103	1.22	1.264	1.308				
104	1.189	1.232	1.275				
105	1.159	1.201	1.244				
106	1.13	1.171	1.213				
107	1.101	1.142	1.183				
108	1.074	1.114	1.154				
109	1.048	1.086	1.126				
110	1.022	1.06	1.099				

## 8、 Ordering Information

Part Number	Description	@25°C	MOQ
CWFM0153FB1-202M113X	PVC Overmolded Cap Φ5.3*17mm Length 2 meterS	15K Ω	1000
CWFM0153FB1-322M113X	PVC Overmolded Cap Φ5.3*17mm Length 3.2 meterS	15K Ω	1000
CWFM0153FB1-502M113X	PVC Overmolded Cap Φ5.3*17mm Length 5 meterS	15K Ω	1000

\* For quantities less than Minimum Order Quantity - contact distribution.