



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 Temperature Sensor
型号规格 Part Number	CWFM0103FB2-xxxM19X
文控编号 Specification file No.	
版本号 Version	V1

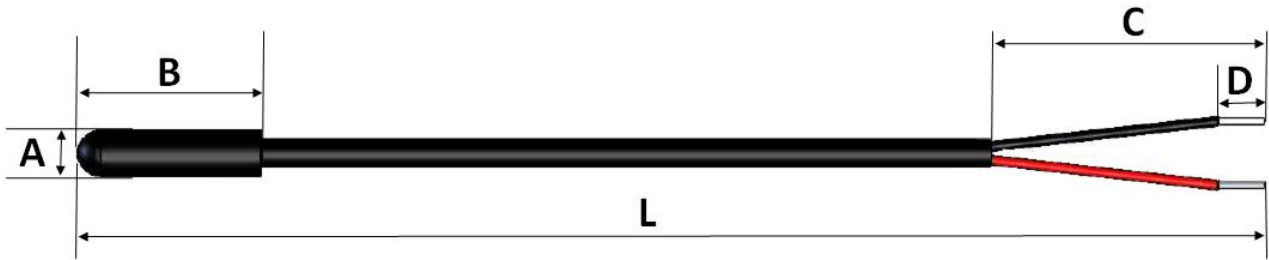
	DES.	CHK.	APP.
Manu.	RH LIANG	HO ZHANG	DZ LIN
User			



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1、 Dimension (Unit: mm)



Dimension				
A	B	C	D	L
5	20	35±5	5±1	as required

2、 Material explanation

NO	Material Name	Material and Specifications
2-1.	Element	R25=10KΩ±1% B25/85=3435K±1% DD
2-2.	Coating	(TPE) Thermoplastic Elastomer (Black)
2-3	Cable features	AWG24 TPE Jacket (Black)
2-4.	Wire ends	Tinned
2-5	Note	Protection Level: IP68

3、 Part Number :

NSA -

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 ;



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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 _T ≤0.1mw	9.9	10.0	10.1	kΩ
4-2.	B Value	B25/85	$B=LN \frac{R_{T1}}{R_{T2}} / \left(\frac{1}{T1} - \frac{1}{T2} \right)$	3400.7	3435	3469.4	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	/	1800VAC 2Sec	No breakdown			Sec
4-6.	Insulation Resistance		500VDC	≥100			MΩ
4-7.	Operating temp. range	/	/	-50	/	+120	°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%	100±2°C , Room temperature storage 1000H.
5-2.	Warm storage		55±2°C , 95% RH, Room temperature storage 1000H.
5-3.	Low temperature storage		-20±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



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T(°C)	Rmin (KΩ)	Rcen (KΩ)	Rmax (KΩ)	T(°C)	Rmin (KΩ)	Rcen (KΩ)	Rmax (KΩ)
-40	198.0266	206.2371	214.6365	-7	37.142	38.0268	38.9184
-39	187.1047	194.7496	202.5662	-6	35.4979	36.3268	37.1617
-38	176.8599	183.9804	191.2569	-5	33.9363	34.7128	35.4946
-37	167.2457	173.8799	180.6559	-4	32.4524	33.1798	33.9119
-36	158.219	164.402	170.7139	-3	31.042	31.7234	32.409
-35	149.7402	155.5044	161.3857	-2	29.701	30.3393	30.9813
-34	141.7727	147.1481	152.6299	-1	28.4258	29.0236	29.6247
-33	134.2823	139.2965	144.4073	0	27.2125	27.7725	28.3354
-32	127.2374	131.9159	136.6822	1	26.0495	26.5737	27.1004
-31	120.6085	124.975	129.4212	2	24.9434	25.4341	25.927
-30	114.3686	118.445	122.5937	3	23.8911	24.3504	24.8116
-29	108.4943	112.3008	116.173	4	22.8898	23.3196	23.7511
-28	102.9598	106.5152	110.1302	5	21.9367	22.3389	22.7426
-27	97.7435	101.0651	104.4408	6	21.0292	21.4055	21.7831
-26	92.825	95.9289	99.0819	7	20.1647	20.5168	20.8699
-25	88.1857	91.0868	94.0324	8	19.3411	19.6704	20.0006
-24	83.8079	86.52	89.2724	9	18.5561	18.8641	19.1728
-23	79.6751	82.211	84.7834	10	17.8077	18.0957	18.3843
-22	75.7723	78.144	80.5487	11	17.0942	17.3634	17.6331
-21	72.0853	74.3037	76.552	12	16.4135	16.665	16.917
-20	68.6008	70.6762	72.7787	13	15.7641	15.9991	16.2345
-19	65.3215	67.2641	69.2311	14	15.1441	15.3636	15.5834
-18	62.2188	64.0373	65.8779	15	14.5523	14.7572	14.9623
-17	59.2819	60.9845	62.707	16	13.9872	14.1784	14.3698
-16	56.5012	58.0954	59.7076	17	13.4473	13.6256	13.8041
-15	53.8674	55.3603	56.8694	18	12.9313	13.0976	13.264
-14	51.3719	52.7701	54.1829	19	12.4384	12.5933	12.7483
-13	49.0066	50.3162	51.6389	20	11.967	12.1113	12.2556
-12	46.7641	47.9908	49.2293	21	11.5162	11.6505	11.7848
-11	44.6372	45.7864	46.9462	22	11.0851	11.21	11.3349
-10	42.6193	43.6959	44.782	23	10.6725	10.7886	10.9047
-9	40.6973	41.7057	42.7226	24	10.2777	10.3855	10.4933
-8	38.8734	39.818	40.7702	25	9.9	10	10.1



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T(°C)	Rmin (KΩ)	Rcen (KΩ)	Rmax (KΩ)	T(°C)	Rmin (KΩ)	Rcen (KΩ)	Rmax (KΩ)
26	9.5309	9.6308	9.7307	60	2.9558	3.022	3.0886
27	9.1751	9.2748	9.3745	61	2.8645	2.9295	2.995
28	8.8348	8.9342	9.0336	62	2.7764	2.8403	2.9047
29	8.5092	8.6082	8.7072	63	2.6913	2.7541	2.8174
30	8.1979	8.2963	8.3948	64	2.6094	2.6711	2.7333
31	7.8997	7.9975	8.0954	65	2.5301	2.5908	2.6519
32	7.6142	7.7113	7.8085	66	2.4539	2.5135	2.5736
33	7.3408	7.4372	7.5336	67	2.3801	2.4387	2.4977
34	7.0789	7.1744	7.27	68	2.3091	2.3666	2.4246
35	6.8282	6.9228	7.0175	69	2.2403	2.2968	2.3538
36	6.5876	6.6813	6.7751	70	2.1739	2.2294	2.2854
37	6.3571	6.4498	6.5426	71	2.1099	2.1644	2.2194
38	6.1361	6.2278	6.3196	72	2.0481	2.1016	2.1557
39	5.9241	6.0147	6.1055	73	1.9882	2.0408	2.0939
40	5.7206	5.8102	5.8999	74	1.9305	1.9821	2.0343
41	5.5254	5.6139	5.7025	75	1.8746	1.9253	1.9765
42	5.3381	5.4254	5.5129	76	1.8206	1.8704	1.9207
43	5.1582	5.2444	5.3308	77	1.7684	1.8173	1.8667
44	4.9855	5.0705	5.1558	78	1.718	1.766	1.8145
45	4.8195	4.9034	4.9875	79	1.6692	1.7163	1.764
46	4.6602	4.7429	4.8258	80	1.622	1.6683	1.7151
47	4.507	4.5885	4.6703	81	1.5763	1.6218	1.6678
48	4.3598	4.4401	4.5207	82	1.5322	1.5768	1.622
49	4.2183	4.2974	4.3768	83	1.4895	1.5333	1.5777
50	4.0822	4.1601	4.2383	84	1.4481	1.4911	1.5347
51	3.9496	4.0263	4.1034	85	1.4081	1.4503	1.4931
52	3.8219	3.8974	3.9733	86	1.3684	1.4099	1.4519
53	3.699	3.7733	3.848	87	1.3301	1.3708	1.412
54	3.5806	3.6537	3.7272	88	1.293	1.3329	1.3734
55	3.4664	3.5384	3.6107	89	1.2571	1.2963	1.336
56	3.3566	3.4274	3.4986	90	1.2223	1.2607	1.2997
57	3.2508	3.3204	3.3904	91	1.1886	1.2263	1.2646
58	3.1488	3.2173	3.2862	92	1.1559	1.1929	1.2305
59	3.0505	3.1178	3.1855	93	1.1243	1.1606	1.1975



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T(°C)	Rmin (KΩ)	Rcen (KΩ)	Rmax (KΩ)	T(°C)	Rmin (KΩ)	Rcen (KΩ)	Rmax (KΩ)
94	1.0934	1.1291	1.1653	128	0.4491	0.4679	0.4871
95	1.0638	1.0988	1.1343	129	0.4382	0.4566	0.4755
96	1.035	1.0693	1.1042	130	0.4276	0.4457	0.4642
97	1.007	1.0407	1.0749	131	0.4173	0.4351	0.4533
98	0.98	1.0131	1.0467	132	0.4073	0.4248	0.4427
99	0.9537	0.9861	1.0191	133	0.3978	0.4149	0.4325
100	0.9283	0.9601	0.9925	134	0.3884	0.4052	0.4225
101	0.9036	0.9348	0.9666	135	0.3793	0.3958	0.4127
102	0.8795	0.9102	0.9414	136	0.3703	0.3865	0.4031
103	0.8563	0.8864	0.917	137	0.3616	0.3775	0.3938
104	0.8338	0.8633	0.8933	138	0.3531	0.3688	0.3849
105	0.8118	0.8408	0.8703	139	0.3449	0.3603	0.3761
106	0.7907	0.8191	0.848	140	0.337	0.3521	0.3676
107	0.771	0.7989	0.8273	141	0.3292	0.344	0.3592
108	0.752	0.7794	0.8073	142	0.3215	0.3361	0.3511
109	0.7335	0.7604	0.7879	143	0.3142	0.3285	0.3432
110	0.7155	0.742	0.769	144	0.3069	0.321	0.3354
111	0.6981	0.7241	0.7506	145	0.3	0.3138	0.328
112	0.6812	0.7067	0.7327	146	0.2931	0.3067	0.3206
113	0.6647	0.6898	0.7154	147	0.2865	0.2998	0.3135
114	0.6486	0.6733	0.6984	148	0.28	0.2931	0.3066
115	0.6314	0.6556	0.6803	149	0.2736	0.2865	0.2997
116	0.6147	0.6384	0.6626	150	0.2676	0.2802	0.2932
117	0.5985	0.6217	0.6454	151	0.2616	0.274	0.2868
118	0.5825	0.6053	0.6286	152	0.2558	0.268	0.2806
119	0.5671	0.5895	0.6123	153	0.2503	0.2623	0.2746
120	0.5523	0.5742	0.5966	154	0.2448	0.2566	0.2687
121	0.5378	0.5593	0.5813	155	0.2395	0.2511	0.263
122	0.5236	0.5447	0.5662	156	0.2343	0.2457	0.2574
123	0.51	0.5307	0.5518	157	0.2293	0.2405	0.252
124	0.4966	0.5169	0.5376	158	0.2243	0.2353	0.2466
125	0.4837	0.5036	0.5239	159	0.2195	0.2303	0.2415
126	0.4718	0.4913	0.5112	160	0.2148	0.2254	0.2364
127	0.4604	0.4795	0.4991	161	0.2102	0.2207	0.2315



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T(°C)	Rmin (KΩ)	Rcen (KΩ)	Rmax (KΩ)	T(°C)	Rmin (KΩ)	Rcen (KΩ)	Rmax (KΩ)
162	0.2057	0.216	0.2266	195	0.1058	0.1118	0.1181
163	0.2014	0.2115	0.2219	196	0.1038	0.1097	0.1159
164	0.1972	0.2071	0.2174	197	0.1019	0.1077	0.1138
165	0.1929	0.2027	0.2128	198	0.0999	0.1057	0.1117
166	0.1889	0.1985	0.2084	199	0.0981	0.1038	0.1097
167	0.1848	0.1943	0.2041	200	0.0963	0.1019	0.1077
168	0.181	0.1903	0.1999				
169	0.1774	0.1865	0.1959				
170	0.1736	0.1826	0.1919				
171	0.1701	0.1789	0.188				
172	0.1666	0.1753	0.1843				
173	0.163	0.1716	0.1804				
174	0.1598	0.1682	0.1769				
175	0.1565	0.1648	0.1734				
176	0.1534	0.1615	0.1699				
177	0.1502	0.1582	0.1665				
178	0.1471	0.155	0.1631				
179	0.1442	0.152	0.16				
180	0.1413	0.1489	0.1568				
181	0.1386	0.1461	0.1539				
182	0.1359	0.1433	0.1509				
183	0.1331	0.1404	0.1479				
184	0.1305	0.1377	0.1451				
185	0.1281	0.1351	0.1424				
186	0.1256	0.1325	0.1397				
187	0.1233	0.1301	0.1372				
188	0.1209	0.1276	0.1346				
189	0.1185	0.1251	0.132				
190	0.1164	0.1229	0.1297				
191	0.1141	0.1205	0.1271				
192	0.112	0.1183	0.1249				
193	0.1099	0.1161	0.1226				
194	0.1078	0.1139	0.1203				



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8、 Ordering Information

Part Number	Description	@25°C	MOQ
CWFM0103FB2-102M19X	TPE Probe $\Phi 5*20$ mm Length 1 meter	10K Ω	1000
CWFM0103FB2-202M19X	TPE Probe $\Phi 5*20$ mm Length 2 meterS	10K Ω	1000
CWFM0103FB2-302M19X	TPE Probe $\Phi 5*20$ mm Length 3 meterS	10K Ω	1000
CWFM0103FB2-502M19X	TPE Probe $\Phi 5*20$ mm Length 5 meterS	10K Ω	1000

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