



# Thermistor Sensor 10k NTC IP68 Rated

**CONTACT US:**

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✉ [enquiries@united-automation.com](mailto:enquiries@united-automation.com)🌐 [www.united-automation.com](http://www.united-automation.com)**KEY FEATURES:**

- ✓ **IP68 Waterproof Protection:** Fully encapsulated design ensures maximum durability and complete resistance to moisture ingress.
- ✓ **Wide Temperature Range:** Operates effectively from -50°C to +110°C, with an IP65 version available for temperatures up to 150°C.
- ✓ **Double-Insulated Construction:** Primary insulation is made of PP, with secondary insulation of TPE, providing excellent protection and reliability.
- ✓ **High Dielectric Strength:** 4kVAC ensures safety and performance in high-voltage environments.
- ✓ **Customisable Cable Length:** Available in lengths from 200mm to 10 meters, with other lengths available upon request.

The **Thermistor Sensor 10k NTC IP68 Rated** is a high-quality thermistor sensor designed for applications where reliable temperature monitoring is crucial. Featuring a 10k NTC (Negative Temperature Coefficient) thermistor, this sensor offers precise temperature measurement across a wide range, from -50°C to +110°C. Engineered with double insulation and fully encapsulated for maximum durability, the sensor is IP68 rated, ensuring complete waterproof protection and exceptional resistance to moisture ingress.

The Thermistor Sensor 10k NTC IP68 Rated is the ideal solution for applications requiring robust, reliable temperature measurement in harsh environments. Whether for refrigeration, air-conditioning, solar heating, or underfloor heating, this sensor provides the accuracy and durability needed to maintain optimal system performance.

**TECHNICAL SPECIFICATIONS**

<b>Temperature Range</b>	-50 to 110°C (125°C intermittent) (IP65 version up to 150°C available)
<b>Di-electric Strength</b>	4kVAC
<b>Primary Insulation</b>	Polypropylene (PP)
<b>Secondary Insulation</b>	Thermoplastic Elastomer (TPE)
<b>Cable Length</b>	200mm to 10 meters (custom lengths available)

**APPLICATIONS:**

Ideal for use in demanding environments, the Thermistor Sensor 10k NTC IP68 Rated is perfect for:

- **Refrigeration Systems:** Reliable temperature monitoring in commercial and industrial refrigeration units.
- **Air-Conditioning:** Accurate temperature control for HVAC systems.
- **Solar Heating Systems:** Ensuring optimal performance in solar energy applications.
- **Underfloor Heating:** Precise temperature management for underfloor heating installations.

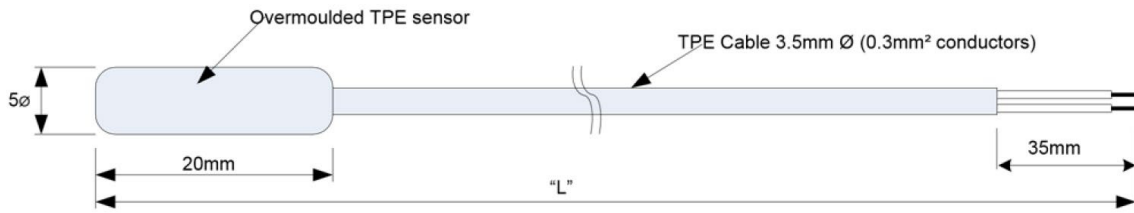


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ENGLAND



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## DIAGRAM



## THERMISTOR OPTIONS

The IP68 probes can utilise the following thermistor series:

NTC Range	R25 Values	R25 Tolerances	NTC Temp. Range
AP Series	2kΩ – 200kΩ	0.5%-1%	-60/+150°C
SP Series	1kΩ – 100kΩ	0.2%-0.5%	-60/+150°C
AT Series	1kΩ – 100kΩ	1%	-50/+110°C
NT Series	5kΩ – 1MΩ	1%-3%	-60/+300°C
ET Series	2kΩ – 232kΩ	1%-3%	-60/+100°C

## MOUNTING & OTHER OPTIONS

A range of stainless-steel housings can be added to increase sensor robustness or provide various mounting options. Different colour versions are available

## RECOMMENDATION

## DOCUMENTS

Other documents, which may be appropriate for your applications, are available on request.

Code	Identity	Description
P01.1	COS	UAL Conditions of Sale

**NOTE:** It is recommended that installation and maintenance of this equipment should be carried out by suitably qualified personnel, with reference to the current edition of the I.E.T. Wiring Regulations BS7671. The regulations contain important requirements regarding the safety of electrical equipment.

## PRODUCT CODE AND RELATED PRODUCT CODE

Product Code	Product Description
A84034	Thermistor Sensor 10k NTC IP68 Rated



# 103APA-2-1P

## TEMPERATURE VS RESISTANCE CHARACTERISTICS [ITS-90]

Resistance 10.0k ohms at 25 Degree C  
 Resistance Tolerance  $\pm 1.0\%$   
 B Value 3 976K at 25/85 Degree C  
 B Value Tolerance  $\pm 0.5\%$

Temp. (deg C)	Rmax. (k ohms)	Rst. (k ohms)	Rmin. (k ohms)	Tolerance (deg C)
-60	1244	1202	1162	-0.45 + 0.46
-59	1153	1115	1078	-0.45 + 0.45
-58	1070	1035	1000	-0.45 + 0.45
-57	993.1	961.0	929.9	-0.45 + 0.45
-56	922.6	893.1	864.5	-0.45 + 0.45
-55	857.7	830.6	804.2	-0.45 + 0.45
-54	797.9	772.9	748.7	-0.45 + 0.45
-53	742.7	719.7	697.4	-0.45 + 0.45
-52	691.8	670.7	650.1	-0.44 + 0.45
-51	644.8	625.3	606.3	-0.44 + 0.45
-50	601.4	583.4	565.9	-0.44 + 0.45
-49	561.2	544.6	528.5	-0.44 + 0.44
-48	524.1	508.8	493.8	-0.44 + 0.44
-47	489.7	475.5	461.7	-0.44 + 0.44
-46	457.8	444.7	432.0	-0.44 + 0.44
-45	428.3	416.2	404.3	-0.44 + 0.44
-44	400.9	389.7	378.7	-0.44 + 0.44
-43	375.5	365.1	354.9	-0.43 + 0.44
-42	351.9	342.2	332.8	-0.43 + 0.44
-41	329.9	321.0	312.2	-0.43 + 0.44
-40	309.5	301.2	293.1	-0.43 + 0.43
-39	290.2	282.5	275.0	-0.42 + 0.42
-38	272.2	265.1	258.1	-0.42 + 0.42
-37	255.4	248.8	242.4	-0.42 + 0.42
-36	239.9	233.7	227.7	-0.42 + 0.42
-35	225.4	219.7	214.1	-0.42 + 0.42
-34	211.8	206.6	201.4	-0.41 + 0.42
-33	199.2	194.3	189.5	-0.41 + 0.42
-32	187.5	182.9	178.4	-0.41 + 0.41
-31	176.5	172.2	168.1	-0.41 + 0.41
-30	166.3	162.3	158.4	-0.41 + 0.40
-29	156.5	152.8	149.2	-0.40 + 0.40
-28	147.4	144.0	140.6	-0.40 + 0.40
-27	138.9	135.7	132.5	-0.39 + 0.40
-26	130.9	128.0	125.0	-0.39 + 0.40
-25	123.5	120.7	118.0	-0.39 + 0.39
-24	116.5	113.9	111.4	-0.39 + 0.39
-23	110.0	107.6	105.2	-0.39 + 0.39
-22	103.9	101.6	99.47	-0.38 + 0.39
-21	98.14	96.07	94.04	-0.38 + 0.39
-20	92.78	90.85	88.95	-0.38 + 0.38
-19	87.68	85.88	84.10	-0.37 + 0.38
-18	82.90	81.21	79.56	-0.37 + 0.37
-17	78.41	76.84	75.29	-0.37 + 0.37
-16	74.19	72.73	71.29	-0.37 + 0.37
-15	70.24	68.87	67.52	-0.37 + 0.37
-14	66.52	65.24	63.98	-0.36 + 0.37
-13	63.03	61.83	60.65	-0.36 + 0.36
-12	59.74	58.62	57.52	-0.36 + 0.36
-11	56.65	55.61	54.57	-0.36 + 0.36
-10	53.74	52.76	51.80	-0.35 + 0.35



## 103APA-2-1P

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 B Value 3 976K at 25/85 Degree C  
 B Value Tolerance  $\pm 0.5\%$

Temp. (deg C)	Rmax. (k ohms)	Rst. (k ohms)	Rmin. (k ohms)	Tolerance (deg C)
-10	53.74	52.76	51.80	-0.35 + 0.35
-9	50.96	50.05	49.14	-0.35 + 0.35
-8	48.34	47.49	46.64	-0.34 + 0.35
-7	45.88	45.08	44.29	-0.34 + 0.34
-6	43.55	42.81	42.07	-0.34 + 0.34
-5	41.37	40.67	39.97	-0.34 + 0.34
-4	39.30	38.65	38.00	-0.33 + 0.34
-3	37.36	36.74	36.13	-0.33 + 0.33
-2	35.52	34.94	34.37	-0.33 + 0.33
-1	33.79	33.25	32.71	-0.33 + 0.33
0	32.15	31.64	31.14	-0.32 + 0.32
1	30.58	30.11	29.64	-0.32 + 0.32
2	29.11	28.66	28.22	-0.31 + 0.32
3	27.71	27.29	26.88	-0.31 + 0.31
4	26.39	26.00	25.61	-0.31 + 0.31
5	25.14	24.77	24.41	-0.31 + 0.31
6	23.96	23.61	23.27	-0.30 + 0.31
7	22.84	22.52	22.20	-0.30 + 0.30
8	21.78	21.48	21.18	-0.30 + 0.30
9	20.78	20.50	20.21	-0.29 + 0.30
10	19.83	19.56	19.30	-0.29 + 0.29
11	18.92	18.67	18.42	-0.29 + 0.29
12	18.06	17.82	17.59	-0.28 + 0.28
13	17.24	17.02	16.80	-0.28 + 0.28
14	16.46	16.25	16.05	-0.28 + 0.28
15	15.73	15.53	15.34	-0.27 + 0.28
16	15.03	14.85	14.66	-0.27 + 0.27
17	14.37	14.19	14.02	-0.27 + 0.27
18	13.74	13.57	13.41	-0.26 + 0.27
19	13.14	12.99	12.84	-0.26 + 0.26
20	12.57	12.43	12.29	-0.26 + 0.26
21	12.03	11.89	11.76	-0.25 + 0.25
22	11.51	11.38	11.26	-0.25 + 0.25
23	11.02	10.90	10.78	-0.24 + 0.25
24	10.55	10.44	10.33	-0.24 + 0.24
25	10.10	10.00	9.900	-0.24 + 0.24
26	9.679	9.581	9.483	-0.24 + 0.25
27	9.278	9.182	9.086	-0.25 + 0.25
28	8.896	8.802	8.708	-0.26 + 0.26
29	8.533	8.440	8.348	-0.26 + 0.27
30	8.186	8.096	8.006	-0.27 + 0.27
31	7.852	7.764	7.676	-0.27 + 0.28
32	7.535	7.448	7.363	-0.28 + 0.28
33	7.232	7.147	7.064	-0.29 + 0.29
34	6.943	6.860	6.779	-0.29 + 0.30
35	6.667	6.587	6.507	-0.30 + 0.30
36	6.404	6.326	6.247	-0.31 + 0.31
37	6.153	6.076	6.000	-0.32 + 0.32
38	5.913	5.838	5.764	-0.32 + 0.33
39	5.684	5.611	5.539	-0.33 + 0.33
40	5.466	5.394	5.323	-0.34 + 0.34



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Temp. (deg C)	Rmax. (k ohms)	Rst. (k ohms)	Rmin. (k ohms)	Tolerance (deg C)
40	5.466	5.394	5.323	-0.34 + 0.34
41	5.255	5.185	5.116	-0.34 + 0.34
42	5.053	4.985	4.918	-0.35 + 0.35
43	4.860	4.794	4.728	-0.35 + 0.36
44	4.676	4.611	4.547	-0.36 + 0.37
45	4.500	4.437	4.374	-0.37 + 0.37
46	4.332	4.270	4.209	-0.38 + 0.38
47	4.170	4.110	4.051	-0.38 + 0.39
48	4.016	3.958	3.899	-0.39 + 0.39
49	3.869	3.811	3.755	-0.40 + 0.40
50	3.727	3.671	3.616	-0.41 + 0.40
51	3.590	3.536	3.482	-0.41 + 0.41
52	3.459	3.406	3.354	-0.42 + 0.42
53	3.334	3.282	3.231	-0.42 + 0.43
54	3.214	3.163	3.113	-0.43 + 0.43
55	3.098	3.049	3.000	-0.44 + 0.44
56	2.988	2.940	2.892	-0.45 + 0.45
57	2.882	2.835	2.789	-0.45 + 0.46
58	2.781	2.735	2.689	-0.46 + 0.47
59	2.683	2.639	2.594	-0.47 + 0.47
60	2.590	2.546	2.503	-0.48 + 0.47
61	2.497	2.455	2.413	-0.47 + 0.47
62	2.409	2.367	2.326	-0.48 + 0.48
63	2.323	2.283	2.243	-0.49 + 0.49
64	2.242	2.202	2.163	-0.49 + 0.50
65	2.164	2.125	2.087	-0.50 + 0.51
66	2.088	2.051	2.014	-0.51 + 0.51
67	2.016	1.980	1.944	-0.52 + 0.52
68	1.947	1.911	1.876	-0.52 + 0.53
69	1.881	1.846	1.812	-0.53 + 0.54
70	1.817	1.783	1.749	-0.54 + 0.53
71	1.754	1.721	1.689	-0.54 + 0.54
72	1.694	1.662	1.630	-0.55 + 0.55
73	1.637	1.605	1.574	-0.55 + 0.56
74	1.581	1.550	1.520	-0.56 + 0.57
75	1.528	1.498	1.468	-0.57 + 0.58
76	1.477	1.448	1.419	-0.58 + 0.58
77	1.428	1.399	1.371	-0.59 + 0.59
78	1.380	1.353	1.325	-0.60 + 0.60
79	1.335	1.308	1.281	-0.60 + 0.61
80	1.291	1.265	1.239	-0.61 + 0.61
81	1.249	1.223	1.198	-0.61 + 0.62
82	1.208	1.183	1.158	-0.62 + 0.63
83	1.169	1.144	1.120	-0.63 + 0.64
84	1.131	1.107	1.083	-0.64 + 0.64
85	1.094	1.071	1.048	-0.65 + 0.65
86	1.059	1.036	1.014	-0.65 + 0.66
87	1.025	1.003	0.9813	-0.66 + 0.67
88	0.9918	0.9706	0.9497	-0.67 + 0.67
89	0.9603	0.9396	0.9192	-0.68 + 0.68
90	0.9300	0.9098	0.8899	-0.69 + 0.69



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Temp. (deg C)	Rmax. (k ohms)	Rst. (k ohms)	Rmin. (k ohms)	Tolerance (deg C)
90	0.9300	0.9098	0.8899	-0.69 + 0.69
91	0.9006	0.8808	0.8614	-0.69 + 0.69
92	0.8722	0.8530	0.8340	-0.70 + 0.70
93	0.8449	0.8261	0.8077	-0.71 + 0.71
94	0.8186	0.8002	0.7822	-0.72 + 0.72
95	0.7932	0.7753	0.7578	-0.72 + 0.73
96	0.7687	0.7513	0.7342	-0.73 + 0.74
97	0.7452	0.7281	0.7114	-0.74 + 0.75
98	0.7224	0.7058	0.6895	-0.75 + 0.76
99	0.7005	0.6843	0.6684	-0.76 + 0.77
100	0.6794	0.6635	0.6480	-0.77 + 0.77
101	0.6588	0.6433	0.6281	-0.77 + 0.78
102	0.6389	0.6238	0.6090	-0.78 + 0.78
103	0.6197	0.6049	0.5905	-0.79 + 0.79
104	0.6012	0.5868	0.5727	-0.80 + 0.80
105	0.5833	0.5693	0.5555	-0.81 + 0.81
106	0.5660	0.5523	0.5389	-0.82 + 0.82
107	0.5494	0.5360	0.5229	-0.82 + 0.83
108	0.5333	0.5202	0.5074	-0.83 + 0.84
109	0.5178	0.5050	0.4925	-0.84 + 0.85
110	0.5028	0.4903	0.4781	-0.85 + 0.85
111	0.4882	0.4760	0.4641	-0.85 + 0.86
112	0.4741	0.4622	0.4505	-0.86 + 0.87
113	0.4604	0.4488	0.4374	-0.87 + 0.88
114	0.4472	0.4359	0.4248	-0.88 + 0.89
115	0.4345	0.4234	0.4125	-0.89 + 0.90
116	0.4222	0.4113	0.4007	-0.90 + 0.91
117	0.4103	0.3997	0.3893	-0.91 + 0.92
118	0.3988	0.3884	0.3783	-0.92 + 0.93
119	0.3876	0.3775	0.3676	-0.93 + 0.94
120	0.3769	0.3670	0.3573	-0.94 + 0.94
121	0.3664	0.3567	0.3472	-0.94 + 0.95
122	0.3562	0.3468	0.3375	-0.95 + 0.96
123	0.3464	0.3371	0.3281	-0.96 + 0.97
124	0.3369	0.3278	0.3190	-0.97 + 0.98
125	0.3277	0.3188	0.3102	-0.98 + 0.99
126	0.3188	0.3101	0.3017	-0.99 + 1.00
127	0.3101	0.3017	0.2934	-1.00 + 1.01
128	0.3018	0.2935	0.2855	-1.01 + 1.02
129	0.2937	0.2856	0.2777	-1.02 + 1.03
130	0.2859	0.2780	0.2703	-1.03 + 1.03
131	0.2782	0.2705	0.2630	-1.03 + 1.04
132	0.2708	0.2633	0.2559	-1.04 + 1.05
133	0.2637	0.2563	0.2491	-1.05 + 1.06
134	0.2567	0.2495	0.2424	-1.06 + 1.07
135	0.2500	0.2429	0.2360	-1.07 + 1.08
136	0.2435	0.2365	0.2298	-1.08 + 1.09
137	0.2372	0.2304	0.2238	-1.09 + 1.10
138	0.2310	0.2244	0.2179	-1.10 + 1.11
139	0.2251	0.2186	0.2123	-1.12 + 1.13
140	0.2193	0.2130	0.2068	-1.13 + 1.13



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<u>Temp. (deg C)</u>	<u>Rmax. (k ohms)</u>	<u>Rst. (k ohms)</u>	<u>Rmin. (k ohms)</u>	<u>Tolerance (deg C)</u>
140	0.2193	0.2130	0.2068	-1.13 + 1.13
141	0.2137	0.2075	0.2014	-1.13 + 1.14
142	0.2083	0.2022	0.1962	-1.14 + 1.15
143	0.2030	0.1970	0.1912	-1.15 + 1.16
144	0.1979	0.1920	0.1863	-1.16 + 1.17
145	0.1929	0.1872	0.1816	-1.17 + 1.18
146	0.1881	0.1825	0.1770	-1.18 + 1.19
147	0.1834	0.1779	0.1725	-1.19 + 1.20
148	0.1788	0.1735	0.1682	-1.20 + 1.21
149	0.1744	0.1692	0.1640	-1.21 + 1.22
150	0.1701	0.1650	0.1600	-1.22 + 1.23