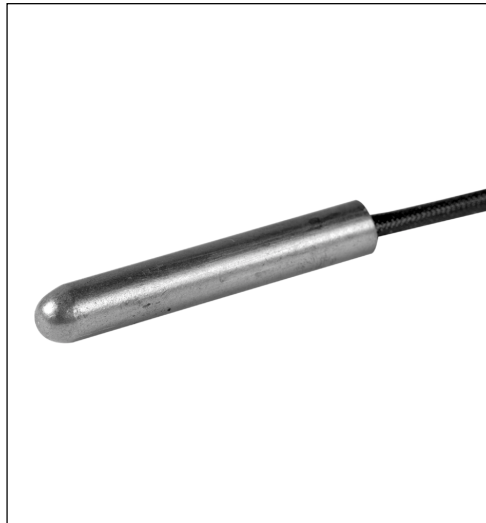




Temperature sensor NTC 100 K for solar heating controller SH-E01

General



Solar heating controller type SH-E01 uses the differential temperature between two temperature sensors to control the transfer of heat energy from a Solar collector to a hot water storage tank.

These temperature sensors are thermally sensitive semiconductor resistors which show a decrease in resistance as temperature increases. In this application the sensors are used in accordance with their zero-power characteristics.

Sensor units consist of an NTC (negative temperature coefficient) 100 K resistance element which is then encapsulated in a sealed Copper tube.

The sensor is adjusted to meet the tolerance requirements of BS EN 60751.

Ordering

Type	Temperature range	Cable length	Ordering no.
NTC 100K temperature sensor	-40 to 200°C	3 m	088H2050

Spare parts and accessories

Type	Description	Ordering no.
Sensor pocket, brass	Length 112 mm	993N3568
Sensor pocket, brass	Length 182 mm	993N3569
Heat conduction compound	5 g	041E0110
Heat conduction compound	0.9 kg	041E0111

Technical data

Sensor enclosure:

Rating:	IP 68 (totally sealed)
Body:	C105 Copper tube
Diameter:	8 mm
Length:	50 mm

Cable:

0.5 m of B-type PTFE wire 16/0.2 to BS 3G 210 with maximum temperature ratings of -75 to 260°C.

This is enclosed in Vidaflex S100, Class H (180°C) sleeving rated for short term temperatures up to 250°C at the sensor end.

Joined to 2.5 m of PVC cable rated for 105°C with 3.75 kV insulation.

Resistance value, NTC 100K

Resistance –Temperature data for a Siemens Masushita NTC thermister type: B57550-G104-F2

R/T curve	8404
R at 25°C	100000 ohms
B (0/100)	4036 IKI 1%(+/-)
Rx at 25°C	100000 ohms 1%(+/-)

Tolerance of the NTC thermister:

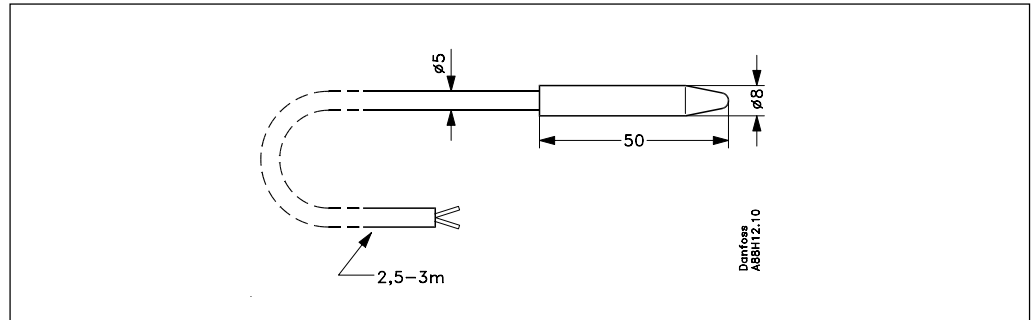
+/- 1°C	greater than -40°C and less than or equal to 90°C
+/- 2.5°C	greater than 90°C and less than or equal to 150°C
+/- 3.5°C	greater than 150°C and less than or equal to 200°C

Temperature [°C]	Nominal Resistance [Ω]	Temperature [°C]	Nominal Resistance [Ω]	Temperature [°C]	Nominal Resistance [Ω]
-40	3446000	41	50480	92	8145
-35	2485000	42	48465	93	7894
-30	1812000	43	46542	94	7652
-25	1336000	44	44705	95	7419
-20	994100	45	42950	96	7184
-15	747000	46	41272	97	6977
-10	566400	47	39669	98	6767
-7	481641	48	38136	99	6564
-5	433100	49	36671	100	6369
-3	390035	50	35270	101	6180
0	334000	51	33929	102	5998
1	317226	52	32647	103	5822
2	301310	53	31419	104	5651
3	286232	54	30245	105	5487
4	271969	55	29120	106	5328
5	258500	56	28041	107	5175
6	245797	57	27008	108	5026
7	233816	58	26018	109	4883
8	222506	59	25069	110	4744
9	211817	60	24160	111	4610
10	201700	61	23287	112	4480
11	192107	62	22450	113	4354
12	183013	63	21648	114	4233
13	174396	64	20878	115	4115
14	166232	65	20140	116	4001
15	156100	66	19431	117	3891
16	151176	67	18750	118	3784
17	144238	68	18098	119	3681
18	137662	69	17471	120	3581
19	131432	70	16870	125	3126
20	125500	71	16292	130	2737
21	119864	72	15737	135	2404
22	114515	73	15204	140	2117
23	109428	74	14692	145	1869
24	104593	75	14200	150	1655
25	100000	76	13725	155	1469
26	95634	77	13269	160	1307
27	91485	78	12830	165	1166
28	87541	79	12407	170	1043
29	83789	80	12000	175	934.5
30	80220	81	11607	180	839.3
31	76820	82	11230	185	755.4
32	73582	83	10866	190	681.3
33	70498	84	10516	195	615.8
34	67560	85	10180	200	557.6
35	64760	86	9855		
36	62090	87	9543		
37	59544	88	9243		
38	57116	89	8953		
39	54800	90	8674		
40	52590	91	8405		

The sensor cable can be extended by double-insulated cable, min. $2 \times 0,75 \text{ mm}^2$.
The typical resistance change for extended cable is:

- $2.4 \Omega/100 \text{ m}$ cable for core cross-sectional area of 0.75 mm^2
- $1.2 \Omega/100 \text{ m}$ cable for core cross-sectional area of 1.2 mm^2
- $0.7 \Omega/100 \text{ m}$ cable for core cross-sectional area of 2.50 mm^2

The sensor is EMC tested without any remarks with cable length up to 50 m.

Dimension

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