

SOD-T Outdoor Temperature Sensor

Features

- Outdoor temperature measurement
- Thermistor, NI and PT sensing elements to fit your system
- Simple and secure installation
- Wide range of temperature probes

Applications

- Outside air temperature measurements for summer winter compensation, energy optimization and economizer.
- Frost protection control of outside air dampers



Temperature Sensor

The sensor measures the temperature by use of a glass packed thermistor with a negative temperature coefficient (NTC), a platinum film (PT) or a nickel thin layer (NI) based probe. Its resistance changes according to the temperature. The change follows a specified curve. A summary of such curves is printed on the back of this document. Contact our sales department for curves or sensing elements not yet listed below.

Compensating conductor resistance

The length and type of conductors used to connect the sensor to the measuring electronic influences the accuracy of the measurement. Especially for elements with low resistance this has to be taken into account. Compensation needs to be performed by the measurement electronics.

Ordering

Item Name	Item Code	Probe	Definition	Time Constant	Comments
SOD-Tn3-1	40-20 0141	NTC 3kΩ at 77 °F	B _{25/50} 3935	ca. 12 min	
SOD-Tn10-1	40-20 0108	NTC 10kΩ at 77 °F	B _{25/50} 3935	ca. 12 min	Vector Standard
SOD-Tn11-1	40-20 0143	NTC 10kΩ at 77 °F	B _{25/50} 3630	ca. 12 min	
SOD-Tn12-1	40-20 0144	NTC 10kΩ at 77 °F	B _{25/50} 3380	ca. 12 min	
SOD-Tn20-1	40-20 0145	NTC 20kΩ at 77 °F	B _{25/50} 4200	ca. 12 min	
SOD-Tn100-1	40-20 0146	NTC 100kΩ at 77 °F	B _{25/50} 4200	ca. 12 min	
SOD-Tp1-1	40-20 0147	PT100	EN60751	ca. 12 min	
SOD-Tp2-1	40-20 0148	PT1000	EN60751	ca. 12 min	
SOD-Tk5-1	40-20 0149	NI1000, 5000 ppm/K	DIN 43760	ca. 12 min	

Accessories

Per default, a cable gland AMC-1 is included for cables Ø 4 – 8 mm (AWG 6 – 1). Order AMC-2 If a conduit connector for ½" conduits is needed.

Item Name	Item Code	Description/Option
AMC-1	40-50 0073	Cable gland PG9 for cables Ø 4 – 8 mm (AWG 6 – 1) (item already included)
AMC-2	40-50 0074	Conduit connector NPT 1/2

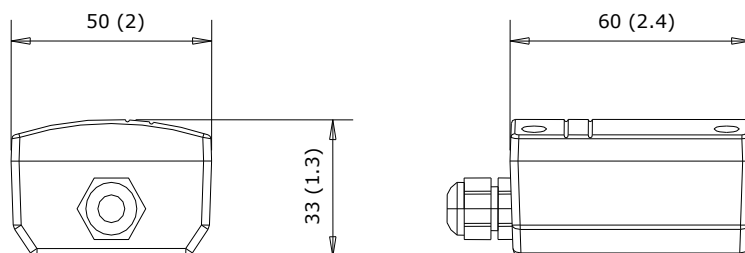
Technical Specification

Warning! This device is intended to be used for comfort applications. Where a device failure endangers human life and/or property, it is the responsibility of the owner, designer and installer to add additional safety devices to prevent or detect a system failure caused by such a device failure. The manufacturer of this device cannot be held liable for any damage caused by such a failure.

Failure to follow specifications and local regulations may endanger life, cause equipment damage and void warranty.

Sensing Probe	Thermistor:	NTC
	Accuracy:	-40...0°C (-40...32°F): 0.5 K 0...50°C (32...122°F): 0.2 K 50...100°C (122...212°F): 0.5 K
	Platinum-Film:	PT according EN 60751
	Accuracy	EN 60751, Class B +/- 0.3 at 0°C (32°F), 0.005 x t[K] for values away from 0°C (32°F).
	Nickel Thin Layer:	1000Ω at 0°C (32°F), 5000 ppm/K
	Accuracy	DIN 43760 +/- 0.4 at 0°C (32°F), <0°C(32°F) 0.028 x t[K], >0°C(32°F) 0.007 x t[K]
Connection	Terminal Connectors	For wire 0.34...2.5 mm ² (AWG 24...12)
Environment	Operation	To IEC 721-3-3
	Climatic Conditions	class 3 K5
	Temperature	-40...100°C (-40...212°F)
	Humidity	<95% R.H. non-condensing
	Transport & Storage	To IEC 721-3-2 and IEC 721-3-1
	Climatic Conditions	class 3 K3 and class 1 K3
Standards	Temperature	-40...100°C (-40...212°F)
	Humidity	<95% R.H. non-condensing
	Mechanical Conditions	class 2M2
	CE conformity	2004/108/EC
	EMC Directive	2006/95/EC
	Low Voltage Directive	
	Product standards	
	Automatic electrical controls for household and similar use	EN 60 730 -1
	Special requirement on temperature dependent controls	EN 60 730 - 2 - 9
	Degree of Protection	IP65 to EN 60 529
Housing	Safety Class	III (IEC 60536)
	Material	Fire proof PC + ABS plastic
	Dimensions Cover: (H x W x D)	33 x 60 x 50 mm (1.3 x 2.4 x 2 in)
	Weight (including package)	80 g (2.8 oz)

Dimension



Installation

See installation sheet no. 70-000533 (www.vectorcontrols.com).

Resistance table for thermistors (NTC)

°C	°F	Tn3 [kΩ]	Tn5 [kΩ]	Tn10 [kΩ]	Tn11 [kΩ]	Tn12 [kΩ]	Tn20 [kΩ]	Tn100 [kΩ]
B_{25/50}		3935	3470	3935	3630	3380	4200	4200
B_{25/85}		3974	3535	3974	3687	3435	4260	4260
B_{25/100}		3988	3526	3988	3715	3455	4285	4285
Signal type →		NTC 3k	NTC 5k	NTC 10k-2	NTC-10k-3		NTC 20k	NTC 100k
-50	-58	201,1	161,9	670,2	441,3	329,2	1711	8558
-40	-40	100,9	89,49	336,4	239,7	188,4	814,0	4095
-30	-22	53,09	54,07	177,0	135,3	111,3	415,6	2077
-20	-4	29,12	33,21	97,08	78,91	67,74	220,6	1105
-10	14	16,60	21,07	55,33	47,54	42,45	122,4	612,4
0	32	9,795	13,73	32,65	29,49	27,28	70,20	351,0
10	50	5,969	9,041	19,90	18,79	17,96	41,56	207,8
20	68	3,747	6,064	12,49	12,26	12,09	25,34	126,7
25	77	3,000	5,000	10,00	10,00	10,00	20,00	100,00
30	86	2,417	4,139	8,057	8,194	8,313	15,88	79,43
40	104	1,598	2,875	5,327	5,592	5,828	10,21	51,06
50	122	1,081	2,032	3,603	3,893	4,161	6,718	33,60
60	140	0,746	1,463	2,488	2,760	3,021	4,518	22,59
70	158	0,525	1,069	1,751	1,990	2,229	3,100	15,50
80	176	0,376	0,792	1,255	1,458	1,669	2,168	10,84
90	194	0,275	0,601	0,915	1,084	1,266	1,542	7,707
100	212	0,203	0,464	0,678	0,817	0,973	1,114	5,571
110	230	0,536	0,354	0,512	0,624	0,752	0,818	4,092
120	248	0,123	0,272	0,410	0,481	0,605	0,609	3,046
130	266	0,097	0,212	0,322	0,380	0,487	0,460	2,298
140	284	0,077	0,169	0,257	0,300	0,395	0,351	1,755
150	302	0,063	0,137	0,210	0,240	0,325	0,271	1,356

Resistance table for platinum film and NI1000 elements

°C	°F	Tp1 [Ω]	Tp2 [Ω]	Tk5 [Ω]	Tk6 [Ω]
		PT100 DIN 60751	PT1000 DIN 60751	NI1000, K=5000	NI1000 K=6180
-50	-58	80,28	803,0	790,88	742,55
-40	-40	84,27	843,0	830,84	791,31
-30	-22	88,22	882,0	871,69	841,46
-20	-4	92,16	922,0	913,48	892,96
-10	14	96,09	961,0	956,24	945,82
0	32	100,00	1000,0	1000	1000
10	50	103,90	1039,0	1044,79	1055,52
20	68	107,79	1078,0	1090,65	1111,36
30	86	111,67	1117,0	1137,62	1170,56
40	104	115,54	1155,0	1185,71	1230,11
50	122	119,40	1194,0	1234,98	1291,05
60	140	123,24	1232,0	1285,45	1353,40
70	158	127,07	1270,5	1337,15	1417,21
80	176	130,89	1309,0	1390,12	1482,50
90	194	134,70	1347,0	1444,39	1549,34
100	212	138,50	1385,0	1500,00	1617,79
110	230	142,29	1423,0	1556,98	1687,89
120	248	146,06	1460,5	1615,37	1759,72
130	266	149,80	1498,0	1675,19	1833,35
140	284	153,60	1536,0	1736,48	1908,87
150	302	157,30	1573,0	1799,27	1986,35
160	320	161,05	1610,5	1863,60	2065,89
170	338	164,75	1647,5	1929,50	2147,58
180	356	168,45	1684,5	1997,00	2231,53
190	374	172,15	1721,5	2066,15	2317,83
200	392	175,85	1758,5	2136,96	2406,60