S-T, Flying Lead Passive Temperature Sensor

Features

- Thermistors and PT sensing elements to fit your system
- Simple installation
- Wide range of temperature probes
- Including 2 m (6.5 ft) conductor. Other lengths on request.

Applications

- Temperature measurement for heating, ventilation and air conditioning applications

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 code

S-Tn10-2P-C

- Sensing tip shape
  default: cylindrical, flattened on one side
  -C = Cylindrical tip
- Cable type:
  default: PVC cable double insulated
  -H = High temperature
  -P = Plenum rated
  -A = PVC cable single insulated
- Cable length in Meter
- Sensing Element (see below)
- Sensor Type: Sensor with flying lead

Standard sensor types

Item Name	Probe	Definition	Cable length
S-Tn3-2	NTC 3kΩ at 25°C (77°F)	$B_{25/50}$ 3935	2m, (6.5ft)
S-Tn5-2	NTC 5kΩ at 25°C (77°F)	$B_{25/50}$ 3470	
S-Tn10-2	NTC 10kΩ at 25°C (77°F)	$B_{25/50}$ 3935	
S-Tn11-2	NTC 10kΩ at 25°C (77°F)	$B_{25/50}$ 3630	
S-Tn12-2	NTC 10kΩ at 25°C (77°F)	$B_{25/50}$ 3380	
S-Tn20-2	NTC 20kΩ at 25°C (77°F)	$B_{25/50}$ 4200	
S-Tn100-2	NTC 100kΩ at 25°C (77°F)	$B_{25/50}$ 4200	
S-Tp1-2	PT100	EN 60751	
S-Tp2-2	PT1000	EN 60751	
S-Tk5-2	NI1000	5000 ppm/K	
S-Tn11-3	NTC 10kΩ at 25°C (77°F)	$B_{25/50}$ 3630	3m, (9.75ft)

VECTOR Temperature Sensor S-T

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: Range: (probe only) Accuracy: -40…0 °C (-40…32 °F): 0…50 °C (32…122 °F): 50…100 °C (122…212 °F): > 100 °C (> 212 °F):	NTC -70…150 °C (-94…302 °F) 0.5 K 0.2 K 0.5 K 1 K
	Platinum-film: Range: (probe only) Accuracy	PT according EN 60751 -70…200 °C (-94…392 °F) EN 60751, class B, ask for other class
	Nickel thin layer: Range: (probe only) Accuracy	1000 Ω at 0 °C, 5000 ppm/K -60…200 °C (-76…392 °F) DIN 43760
Cable	Standard Size Insulation material Operating temperature Ratings	 2 x 0.20 mm² (AWG 24) PVC -40…80 °C (-40…176 °F) UL758, 1581/CSA C22.2 No 210.2
	High temperature Size Insulation material Operating temperature Ratings	-H 2 x 0.35 mm² (AWG 22) FEP -60…200 °C (-76…392 °F) ULR/CSA C22.2 No 210.2
	Plenum rated Size Insulation material Operating temperature Ratings	-P 2 x 0.5 mm² (AWG 20) Plenum PVC -20…75 °C (-4…167 °F) UL C(UL) PLENUM CMP OR E355847 FPLP UL
	Single insulated PVC Size Insulation material Operating temperature Ratings	-A 2 x 0.20 mm² (AWG 24) PVC -40…80 °C (-40…176 °F) UL758,1581 CSA C22.2 No.210.2
Environment	Operation Climatic conditions Temperature depends on cable type	To IEC 721-3-3 class 3K5 See above
	Transport and storage Climatic conditions Temperature Humidity Mechanical conditions	To IEC 721-3-2 and IEC 721-3-1 class 3K3 and class 1K3 -40…80 °C (-40…176 °F) < 95% RH non-condensing class 2M2
Standards	CE conform according to EMC standard 89/336/EEC EMEI standard 73/23/EEC	EN 61000-6-1/ EN 61000-6-3
	Automatic electrical controls for household and similar use Special requirement on temperature dependent controls	EN 60730-1 EN 60730-2-9
	Pollution class	Normal acc. to EN 60730, RoHS compliant
	Degree of protection	IP65 to EN 60529
	Safety class	III (IEC 60536)
Housing	Probe	Stainless steel S304
	Dimensions (Diameter x L)	ø 6 x 50 mm (ø 0.25 x 2 inch), flattened on one side
	Weight (incl. package)	70g (2.5 oz)

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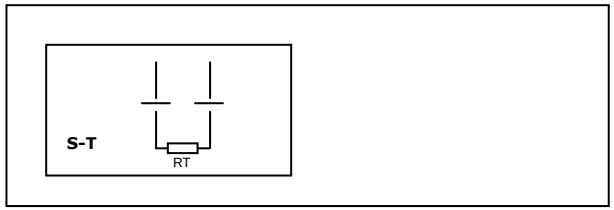
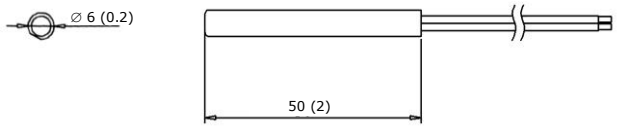
Wiring & installation

Wiring diagram



Dimensions mm(in)



VECTOR Temperature Sensor S-T VECTOR Temperature Sensor S-T

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