

## SC-T, Flying Lead Contact Temperature Sensor

### Features

- Strap-On mounting for pipes or arched surfaces
- Thermistors and PT sensing elements to fit your system
- Simple installation
- Wide range of temperature probes
- Including 2m (6.5ft) wire

### Applications

- Measure temperature for heating, ventilation and air conditioning applications
- For heating or cooling mode detection in 2-pipe systems
- As frost protection sensor
- As input for standard controls equipment



### Temperature sensor

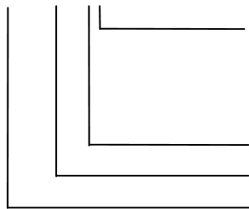
The sensor measures the temperature by use of a glass packed thermistor with a negative temperature coefficient (NTC), a platinum film (PT) or a nickel thin layer (NI) based probe. Its resistance changes according to the temperature. The change follows a specified curve. A summary of such curves is printed 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

SC-Tn10-2A



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


### Ordering standard temperature sensors

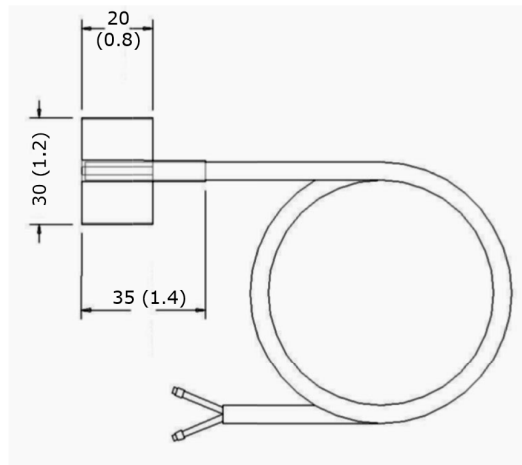
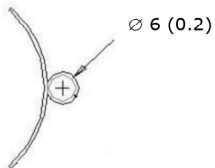
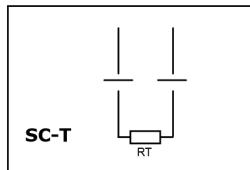
Item name	Article #	Probe Type	Definition	Cable length
SC-Tn3-2	40-20 0094	NTC 3kΩ at 25°C	B <sub>25/50</sub> 3935	2m, (6.5ft)
<b>SC-Tn10-2</b>	<b>40-20 0095</b>	<b>NTC 10kΩ at 25°C</b>	<b>B<sub>25/50</sub> 3935</b>	
SC-Tn11-2	40-20 0096	NTC 10kΩ at 25°C	B <sub>25/50</sub> 3630	
SC-Tn12-2	40-20 0097	NTC 10kΩ at 25°C	B <sub>25/50</sub> 3380	
SC-Tn20-2	40-20 0098	NTC 20kΩ at 25°C	B <sub>25/50</sub> 4200	
SC-Tn100-2	40-20 0099	NTC 100kΩ at 25°C	B <sub>25/50</sub> 4200	
SC-Tp1-2	40-20 0100	PT100	EN60751	
SC-Tp2-2	40-20 0101	PT1000	EN60751	
SC-Tk5-2	40-20 0102	NI1000	5000 ppm/K	
AMS-2	40-50 0079	Tightening strap for ½-3in pipes		
AMS-3	40-50 0080	Tightening strap for 3-6in pipes		
Other sensor elements, cable types, cable lengths on request				

**Technical Specification**

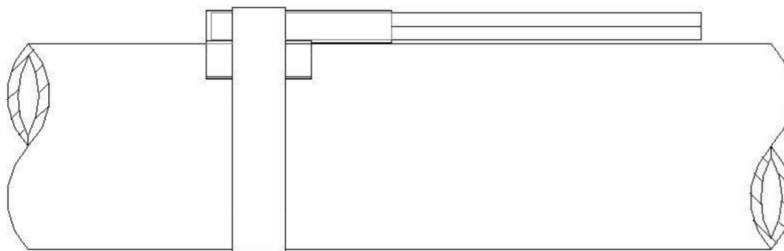
**Warning!** This device is intended to be used for comfort applications. Where a device failure endangers human life and/or property, it is the responsibility of the owner, designer and installer to add additional safety devices to prevent or detect a system failure caused by such a device failure. 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
	Range: (Probe only)	-70...150°C (-94...302°F)
	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
	> 100°C (> 212°F):	1 K
	Platinum-Film:	PT according EN 60751
	Range: (Probe only)	-70...200°C (-94...392)
	Accuracy	EN 60751, Class B
	Nickel Thin Layer:	1000Ω at 0°C, 5000 ppm/K
	Range: (Probe only)	-60...200°C (-76...392°F)
	Accuracy	DIN 43760
Cable	Standard	
	Size	2 x 0.20 mm <sup>2</sup> (AWG 24)
	Insulation material	PVC
	Operating Temperature	-40...80°C (-40...176°F)
	Ratings	UL758, 1581/CSA C22.2 No 210.2
	High temperature	-H
	Size	2 x 0.35 mm <sup>2</sup> (AWG 22)
	Insulation material	FEP
	Operating temperature	-60...200°C (-76...392°F)
	Ratings	ULR/CSA C22.2 No 210.2
	Plenum rated	-P
	Size	2 x 0.5 mm <sup>2</sup> (AWG 20)
Insulation material	Plenum PVC	
Operating temperature	-20...75°C (-4...167°F)	
Ratings	UL C(UL) PLENUM CMP OR E355847 FPLP UL	
Environment	Operation	To IEC 721-3-3
	Climatic conditions	class 3K5
	Temperature depends on cable type	See above
	Humidity	< 95% RH non-condensing
	Transport & Storage	To IEC 721-3-2 and IEC 721-3-1
	Climatic conditions	class 3K3 and class 1K3
Temperature	-40...80°C (-40...176°F)	
Humidity	< 95% RH non-condensing	
Mechanical conditions	class 2M2	
Standards	 conform according to EMC Standard 89/336/EEC	EN 61 000-6-1/ EN 61 000-6-3
	Product standards	
	Automatic electrical controls for household and similar use	EN 60 730 -1
	Safety Class	III (IEC 60536)
Housing	Probe	Brass
	Dimensions (Diameter x L)	Probe: ø 6 x 35 mm (ø 0.25" x 1.4") Contact Plate: 20x30mm (0.8" x 1.2")
	Weight (including package)	80g (2.8oz)

**Wiring and Dimension [mm](in)****Installation**

- Mount the sensor on a supply or return pipe depending on application.
- Make sure the maximum allowed temperature limit is not exceeded.
- For better temperature transfer between sensor and medium use heat conducting paste or heat conducting pads.
- If possible place the sensor on the upper side of the pipe to prevent permeation by condensate.
- Bend the wings of the contact sensor to fit to the radius of the pipe.
- Place the heat conducting pad or liquid between pipe and sensor and use the tightening strap to fix the sensor to the pipe. Use moderate torque, do not crush the sensor.



**Resistance Table for Thermistors (NTC)**

°C	°F	Tn3 [kΩ]	Tn5 [kΩ]	Tn10 [kΩ]	Tn11 [kΩ]	Tn12 [kΩ]	Tn20 [kΩ]	Tn100 [kΩ]
<b>B<sub>25/50</sub></b>		3935	3470	3935	3630	3380	4200	4200
<b>B<sub>25/85</sub></b>		3974	3535	3974	3687	3435	4260	4260
<b>B<sub>25/100</sub></b>		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