

## SD-T, Duct temperature sensor

### Features

- Thermistors and PT sensing elements to fit your system
- Simple and secure installation
- Wide range of temperature probes

### Applications

- On return air ducts to measure room temperatures
- On supply air ducts to measure heating/cooling supply air
- 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.

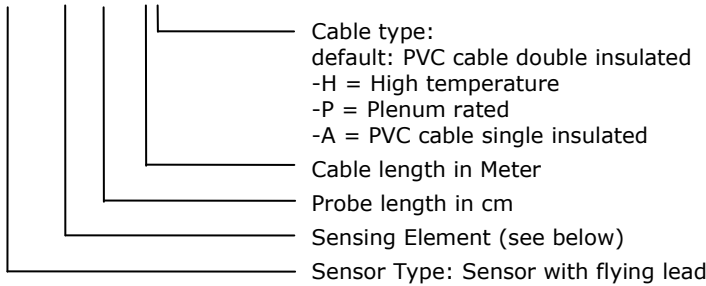


### Compensating conductor resistance

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

SD-Tn10-12-2A



### Ordering

Item name	Article #	Probe type	Definition	Length	Comments
SD-Tn3-12-2	40-20 0014	NTC 3kΩ at 25°C (77°F)	B <sub>25/50</sub> 3935	120mm (4.7")	2m (6.5ft) PVC cable
SD-Tn10-12-2	40-20 0002	NTC 10kΩ at 25°C (77°F)	B <sub>25/50</sub> 3935	120mm (4.7")	Vector standard
SD-Tn11-12-2	40-20 0015	NTC 10kΩ at 25°C (77°F)	B <sub>25/50</sub> 3630	120mm (4.7")	2m (6.5ft) PVC cable
SD-Tn12-12-2	40-20 0089	NTC 10kΩ at 25°C (77°F)	B <sub>25/50</sub> 3380	120mm (4.7")	2m (6.5ft) PVC cable
SD-Tn20-12-2	40-20 0016	NTC 20kΩ at 25°C (77°F)	B <sub>25/50</sub> 4200	120mm (4.7")	2m (6.5ft) PVC cable
SD-Tn100-12-2	40-20 0017	NTC 100kΩ at 25°C (77°F)	B <sub>25/50</sub> 4200	120mm (4.7")	2m (6.5ft) PVC cable
SD-Tp1-12-2	40-20 0023	PT100	EN60751	120mm (4.7")	2m (6.5ft) PVC cable
SD-Tp2-12-2	40-20 0024	PT1000	EN60751	120mm (4.7")	2m (6.5ft) PVC cable
SD-Tk5-12-2	40-20 0025	NI1000	5000 ppm/K	120mm (4.7")	2m (6.5ft) PVC cable
SD-Tn10-12-2H	40-20 0150	NTC 10kΩ at 25°C (77°F)	B <sub>25/50</sub> 3935	120mm (4.7")	2m (6.5ft) FEP cable
SD-Tn10-12-2P	40-20 0152	NTC 10kΩ at 25°C (77°F)	B <sub>25/50</sub> 3935	120mm (4.7")	2m (6.5ft) Plenum rated cable

SD-Tn3-20-2	40-20 0018	NTC 3kΩ at 25°C (77°F)	B <sub>25/50</sub> 3935	200mm (7.9")	2m (6.5ft) PVC cable
SD-Tn10-20-2	40-20 0003	NTC 10kΩ at 25°C (77°F)	B <sub>25/50</sub> 3935	200mm (7.9")	Vector standard
SD-Tn11-20-2	40-20 0020	NTC 10kΩ at 25°C (77°F)	B <sub>25/50</sub> 3630	200mm (7.9")	2m (6.5ft) PVC cable
SD-Tn12-20-2	40-20 0103	NTC 10kΩ at 25°C (77°F)	B <sub>25/50</sub> 3380	200mm (7.9")	2m (6.5ft) PVC cable
SD-Tn20-20-2	40-20 0021	NTC 20kΩ at 25°C (77°F)	B <sub>25/50</sub> 4200	200mm (7.9")	2m (6.5ft) PVC cable
SD-Tn100-20-2	40-20 0022	NTC 100kΩ at 25°C (77°F)	B <sub>25/50</sub> 4200	200mm (7.9")	2m (6.5ft) PVC cable
SD-Tp1-20-2	40-20 0026	PT100	EN60751	200mm (7.9")	2m (6.5ft) PVC cable
SD-Tp2-20-2	40-20 0027	PT1000	EN60751	200mm (7.9")	2m (6.5ft) PVC cable
SD-Tk5-20-2	40-20 0028	NI1000	5000 ppm/K	200mm (7.9")	2m (6.5ft) PVC cable
SD-Tn10-20-2H	40-20 0151	NTC 10kΩ at 25°C (77°F)	B <sub>25/50</sub> 3935	200mm (7.9")	2m (6.5ft) FEP cable
SD-Tn10-20-2P	40-20 0153	NTC 10kΩ at 25°C (77°F)	B <sub>25/50</sub> 3935	200mm (7.9")	2m (6.5ft) Plenum rated cable

Other sensor types or specifications on request

### Accessories


Combine with AMI immersion stainless steel pocket for use as immersion sensor.

Item name	Article #	Immersion length (L)
AMI-S05-1	40-51 0012	5 cm (2")
AMI-S07-1	40-51 0013	7.5 cm (3")
AMI-S10-1	40-51 0014	10 cm (4")
AMI-S15-1	40-51 0015	15 cm (5.9")
AMI-S20-1	40-51 0016	20 cm (7.9")
AMI-S30-1	40-51 0017	30 cm (11.8")
AMI-S40-1	40-51 0018	40 cm (15.7")

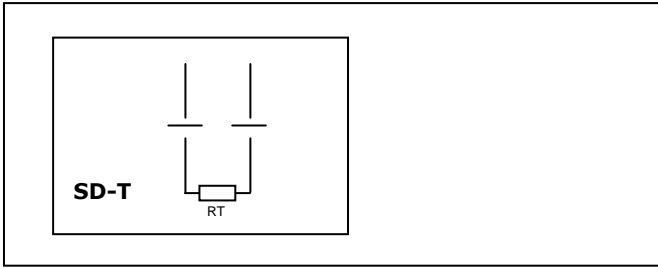
**Technical specification**

**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.

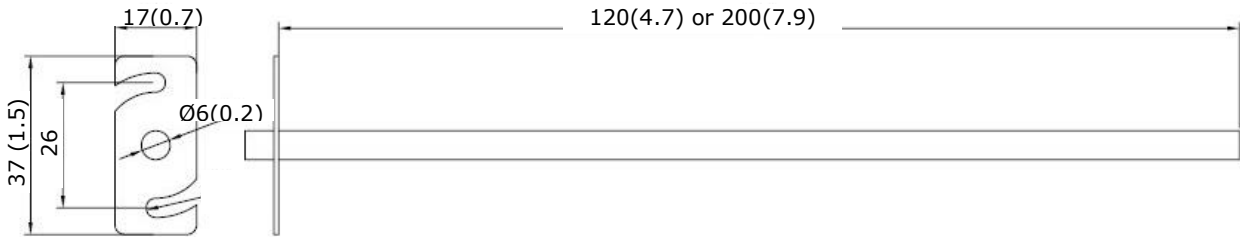
Failure to follow specifications and local regulations may endanger life, cause equipment damage and void warranty.

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°F)
	Accuracy	EN 60751, Class B
	Nickel thin layer:	1000 Ω 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 61000-6-1 / EN61 000-6-3
	Product standards	
	Automatic electrical controls for household and similar use	EN 60730-1
	Safety class	III (IEC 60536)
Housing	Probe	Stainless Steel
	Dimensions (Diameter x L)	∅ 6 x 120 mm (∅ 0.2 x 4.7 in)
		∅ 6 x 200 mm (∅ 0.2 x 7.9 in)
	Weight (including package)	Depends on cable type and length. For PVC cable 2m length: 45 g (1.6 oz)

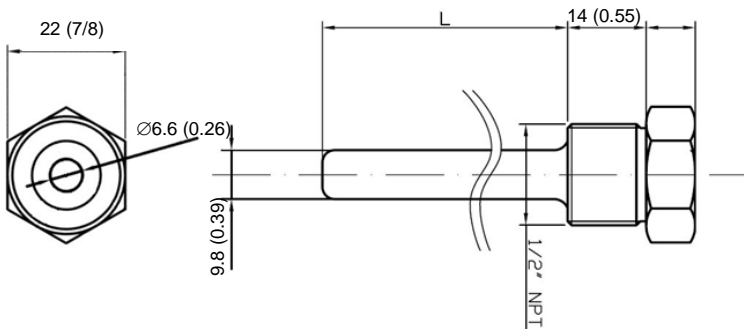
**Wiring diagram**



**Dimension SD-T**



**Dimensions AMI**



**Installation of duct probes**

Duct probes should be installed directly on the duct, in an area where the air stream is well mixed:

- Locate a supply air sensor two or three meters downstream from the nearest fan and coil.
- Mount the return air sensor close to the air inlet but downstream from a return fan if one is present.
- To install the sensor, drill a 8 mm hole in the duct and insert the assembled base plate with probe into the air stream. Secure the base plate to the duct with two sheet-metal screws.

**Installation of immersion sensors**

- Weld a nut to the water pipe according to local regulations.
- Fix an AMI immersion pocket to the nut
- Insert the probe into the immersion pocket
- For AMI-Sx-1 only: Secure the probe with the horizontal fixing screw of the AMI immersion pocket.

**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