

Resistance Characteristic

| Temp. | PT100 | PT1000 | NI1000 | NI1000 TK5000 | NTC 1kOhm | NTC 1,8kOhm | NTC 3kOhm | NTC 5kOhm | NTC 10kOhm |
|-------|--------|---------|---------|------------------|--------------|----------------|--------------|--------------|---------------|
| °C | Ohm | Ohm | Ohm | Ohm | Ohm | Ohm | Ohm | Ohm | Ohm |
| -50 | 80,31 | 803,10 | 743,00 | 790,88 | 32886,00 | | 200338,00 | | |
| -40 | 84,27 | 842,70 | 791,00 | 830,83 | 18641,00 | 35658 | 100701,00 | 166555 | 333282 |
| -30 | 88,22 | 882,20 | 842,00 | 871,69 | 10961,00 | 21131 | 53005,00 | 87897 | 175846 |
| -20 | 92,16 | 921,60 | 893,00 | 913,48 | 6662,00 | 12838 | 29092,00 | 48322 | 96659 |
| -10 | 96,06 | 960,90 | 946,00 | 956,24 | 4175,00 | 7992 | 16589,00 | 27584 | 55171 |
| 0 | 100,00 | 1000,00 | 1000,00 | 1000,00 | 2961,00 | 5095 | 9795,20 | 16300 | 32600 |
| 10 | 103,90 | 1039,00 | 1056,00 | 1044,79 | 1781,00 | 3221 | 5971,12 | 9942 | 19885 |
| 20 | 107,79 | 1077,90 | 1112,00 | 1090,65 | 1205,00 | 2212 | 3748,10 | 6244 | 12489 |
| 25 | 109,74 | 1097,40 | 1141,00 | 1113,99 | 1000,00 | 1820 | 3000,00 | 5000 | 10000 |
| 30 | 111,67 | 1116,70 | 1171,00 | 1137,61 | 834,20 | 1504 | 2416,80 | 4029 | 8058 |
| 40 | 115,54 | 1155,40 | 1230,00 | 1185,71 | 589,20 | 1042 | 1597,50 | 2664 | 5329 |
| 50 | 119,40 | 1194,00 | 1291,00 | 1234,97 | 424,00 | 735 | 1080,30 | 1803 | 3606 |
| 60 | 123,24 | 1232,40 | 1353,00 | 1285,44 | 310,40 | 528 | 746,12 | 1246 | 2492 |
| 70 | 127,07 | 1270,00 | 1417,00 | 1337,14 | 231,00 | 384 | 525,49 | 878 | 1756 |
| 80 | 130,89 | 1308,90 | 1483,00 | 1390,12 | 174,50 | 284 | 376,85 | 630 | 1260 |
| 90 | 134,70 | 1347,00 | 1549,00 | 1444,39 | 133,60 | 213 | 274,83 | 459 | 920 |
| 100 | 138,50 | 1385,00 | 1618,00 | 1500,00 | 103,70 | 162 | 203,59 | 340 | 682 |
| 110 | 142,29 | 1422,00 | 1688,00 | 1556,98 | 81,40 | 125 | 153,03 | 256 | 513 |
| 120 | 146,06 | 1460,60 | 1760,00 | 1615,36 | 64,70 | 97 | 116,58 | 195 | 391 |
| 130 | 149,82 | 1498,20 | 1833,00 | 1675,18 | 51,90 | | 89,95 | 150 | |
| 140 | 153,58 | 1535,80 | 1909,00 | 1736,47 | 42,10 | | 70,22 | 117 | |
| 150 | 157,31 | 1573,10 | 1987,00 | 1799,26 | 34,40 | | 55,44 | 93 | |

Resistance Characteristic

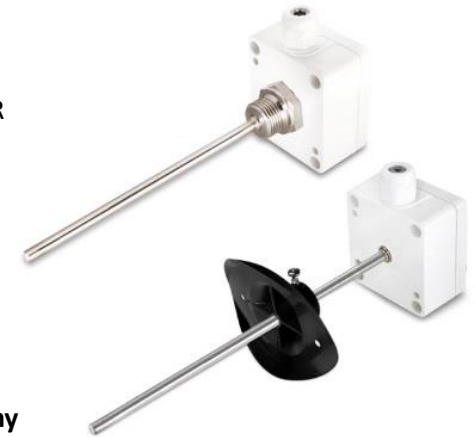
| Temp. | NTC 20kOhm | KTY 81-210 | KTY 11-6 | KTY 81-110 | KTY 81-121 | NTC 10kPRECON | LM235Z |
|-------|---------------|---------------|-------------|---------------|---------------|------------------|---------|
| °C | Ohm | Ohm | Ohm | Ohm | Ohm | Ohm | mVolt |
| -50 | | 1068,65 | 1035,91 | 515,00 | 510,00 | 454910 | 2232,00 |
| -40 | 804170 | 1158,95 | 1139,27 | 567,00 | 562,00 | 245089 | 2332,00 |
| -30 | 412798 | 1269,25 | 1250,39 | 624,00 | 617,00 | 137307 | 2432,00 |
| -20 | 220734 | 1385,15 | 1396,25 | 684,00 | 677,00 | 79729 | 2532,00 |
| -10 | 122439 | 1508,65 | 1495,86 | 747,00 | 740,00 | 47843 | 2632,00 |
| 0 | 70440 | 1639,60 | 1630,21 | 815,00 | 807,00 | 29588 | 2732,00 |
| 10 | 41544 | 1778,10 | 1772,32 | 886,00 | 877,00 | 18813 | 2832,00 |
| 20 | 25341 | 1924,15 | 1922,17 | 961,00 | 951,00 | 12272 | 2932,00 |
| 25 | 20000 | 2000,00 | 2000,00 | 1000,00 | 990,00 | 10000 | 2982,00 |
| 30 | 15888 | 2077,80 | 2079,77 | 1040,00 | 1029,00 | 8195 | 3032,00 |
| 40 | 10214 | 2238,90 | 2245,17 | 1122,00 | 1111,00 | 5593 | 3132,00 |
| 50 | 6718 | 2407,60 | 2418,21 | 1209,00 | 1196,00 | 3894 | 3232,00 |
| 60 | 4517 | 2583,80 | 2599,06 | 1299,00 | 1286,00 | 2763 | 3332,00 |
| 70 | 3110 | 2767,50 | 2787,65 | 1392,00 | 1378,00 | 1994 | 3432,00 |
| 80 | 2167 | 2958,80 | 2983,99 | 1490,00 | 1475,00 | 1462 | 3532,00 |
| 90 | 1541 | 3152,50 | 3188,08 | 1591,00 | 1575,00 | 1088 | 3632,00 |
| 100 | 1114 | 3363,90 | 3399,91 | 1696,00 | 1679,00 | 821 | 3732,00 |
| 110 | 818 | 3577,75 | 3619,50 | 1805,00 | 1786,00 | 628 | 3832,00 |
| 120 | 608 | 3799,10 | 3846,83 | 1915,00 | 1896,00 | 486 | 3932,00 |
| 130 | 457 | 4028,05 | 4081,91 | 2023,00 | 2003,00 | 380 | 4032,00 |
| 140 | 347 | 4188,10 | 4324,74 | 2124,00 | 2103,00 | 301 | 4132,00 |
| 150 | 266 | 4397,70 | 4575,31 | 2211,00 | 2189,00 | 240 | 4232,00 |

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D-TT-A / I-TT-L

DUCT/IMMERSION TEMPERATURE SENSOR



Made in Germany

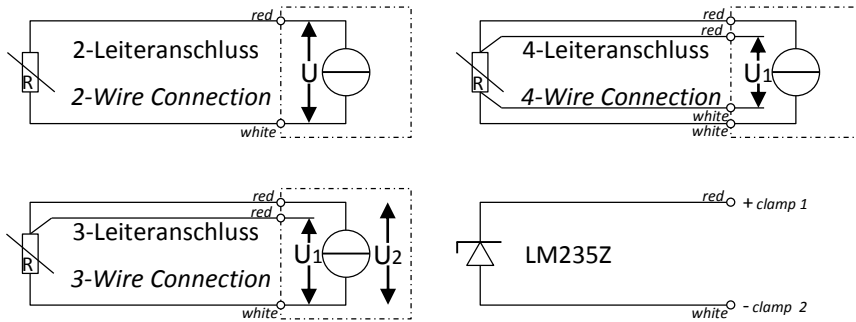
Application

Our Duct/Immersion temperature sensors are equipped with dew point resistance by default. In combination with an immersion sleeve, the D-TT-A / I-TT-L can also be used for measuring the temperature of liquid/nonaggressive media. Gaseous media may be measured with help of our mounting flange MF. The D-TT-A / I-TT-L s fields of application are heating, ventilation and refrigeration engineering as well as air-conditioning. With the help of the respective sensors (see below), the device can be connected to all conventional control and display systems.

Technical Data:

| | |
|--------------------------------|--|
| measurement range: | -50°C...+180°C – depends on sensor |
| Tmax. case: | +100°C |
| sensor: | nach Kundenwunsch (siehe Tabelle) |
| protection pipe: | ø 6 mm aus VA |
| wire-connection: | 2-Leiter-Anschluss (Standard) |
| connection clamp: | Schraubklemme max. 1,5 mm ² |
| Gehäuse: | PA6 15% GK, Farbe RAL 9010 |
| Abmessung Gehäuse (L x B x H): | 65 x 60 x 38 mm |
| Schutzart: | P65 |
| Montagezubehör (optional): | Tauchhülse, Montageflansch, Klemmverschraubung |

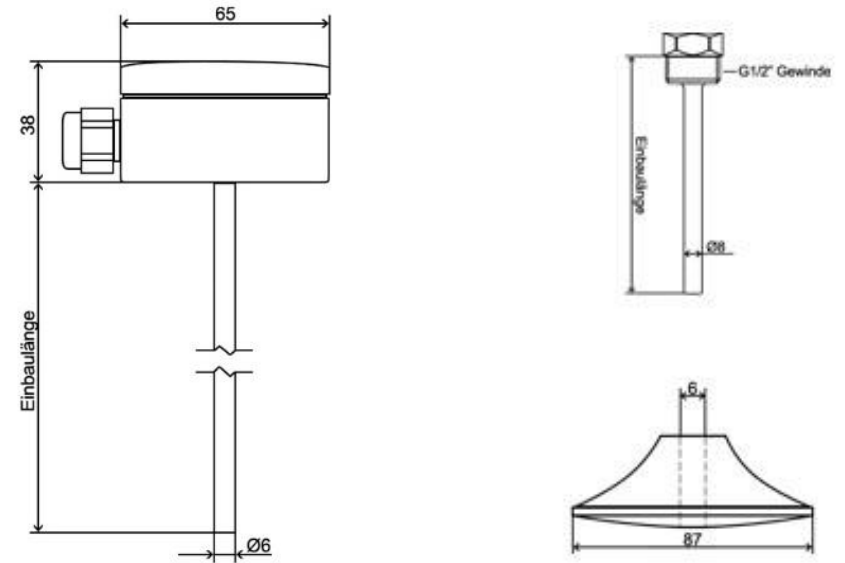
Electrical Connection



The temperature sensors are designed for safety extra low voltage operation (SELV) . The technical data specified in this Data Sheet have to be considered. For Pt 100 sensor model in two- wire version, the line resistance of the connecting cable (cable) must be considered. This can be corrected in the display or DDC/SPS. The measuring current should not be greater than 1 mA. An excessively high measurement current will arise self - heating of the sensor and thus can distort the measurement result.

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General Information

- Installation of the equipment must be performed by qualified personnel.
- The units may be connected with the power off .
- The safety of the VDE, the states , the TÜV and the local energy supply company must be observed.
- The EMC guidelines must be observed . It can be used shielded connecting lines, laying parallel with current-carrying
- Lines should be avoided.
- The operating near devices that do not comply with EMC directives may adversely affect the operation of
- The buyer is responsible for ensuring compliance with the applicable building and safety guidelines
- This product should not be used for safety-related tasks , such as for the protection of persons and emergency stop switch on equipment .
- Improper use of any defects and damages are excluded from the warranty and liability .
- Consequential damages caused by a fault in this device are excluded from warranty or liability .
- It Only the technical data and connecting conditions of installation and operating instructions supplied with the instrument . Changes are always possible in terms of technical progress and the improvement of the products.
- Changes of the device by the user, all warranty claims .