

**Product Description****TDE, TDE-10M, TDE-15M, TDE-S3, TDE-S4****TDE, TDE-10M, TDE-15M, TDE-S3, TDE-S4  
Temperature Sensor**

Temperature sensors TDE, TDE-10M, TDE-15M, TDE-S3 and TDE-S4 can be used in existing thermowells with an internal diameter from 6.5 mm.

The temperature sensors are used to measure the temperature for all controllers und controller systems that have a sensor connection for the KP10 measuring element.



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Änderungen vorbehalten - Contents subject to change - Sous réserve de modifications - Reservado el derecho a modificación - Wijzigingen voorbehouden - Con riserva di modifichè - Innehåll som skall ändras - Změny vyhrazeny - Zmiany zastrzeżone - Возможны изменения -

## Important Information Regarding Product Safety

### Safety Instructions

This data sheet contains information on installing and commissioning the product "TDE, TDE-10M, TDE-15M, TDE-S3, TDE-S4". Each person who carries out work on this product must have read and understood this data sheet. If you have any questions that are not resolved by this data sheet, you can obtain further information from the supplier or manufacturer.

If the product is not used in accordance with this data sheet, the protection provided will be impaired.

Applicable regulations must be observed when installing and using the device. Within the EU, these include regulations regarding occupational safety and accident prevention as well as those from the VDE (Association for Electrical, Electronic & Information Technologies). If the device is used in other countries, it is the responsibility of the system installer or operator to comply with local regulations.

Mounting, installation and commissioning work on the devices may only be carried out by qualified technicians. Qualified technicians are persons who are familiar with the described product and who can assess given tasks and recognize possible dangers due to technical training, knowledge and experience as well as knowledge of the appropriate regulations.

### Meaning of the Symbols



#### WARNING

Indicates a hazard of medium risk which can result in death or severe bodily injury if it is not avoided.



#### CAUTION

Indicates a hazard of low risk which can result in minor or medium bodily injury if it is not avoided.



#### NOTICE

Indicates a hazard of medium risk which can result in material damage or malfunctions if it is not avoided.



#### Note

Indicates additional information that can simplify the work with the product for you.

### Notes on Disposal

For disposal, the product is considered waste from electrical and electronic equipment (electronic waste) and must not be disposed of as household waste. Special treatment for specific components may be legally binding or ecologically sensible. The local and currently applicable legislation must be observed.

**Product Description**

**TDE, TDE-10M, TDE-15M, TDE-S3, TDE-S4**

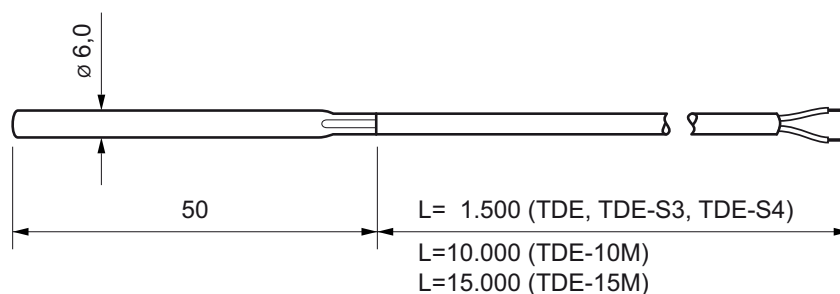
**Item**

TDE	Measuring element KP10 in protective sleeve for 10 to 130 °C, IP65 around the protective sleeve, silicon connection cable
TDE-10M	Measuring element KP10 in protective sleeve for 10 to 130 °C, IP65 around the protective sleeve, silicon connection cable
TDE-15M	Measuring element KP10 in protective sleeve for 10 to 130 °C, IP65 around the protective sleeve, silicon connection cable
TDE-S3	Measuring element KP10 in protective sleeve for -20 to 130 °C, IP67 around the protective sleeve, silicon connection cable
TDE-S4	Measuring element KP10 in protective sleeve for 0 to 50 °C, IP65 around the protective sleeve, silicon connection cable

**Technical Data**

Function	Temperature voltage transmitter
Measured variable	Temperature
Measuring element	KP10, 2.731 V at 0°C, TC = 10 mV/K
Measuring tolerance	<0.2 K
Measuring range	TDE, TDE-10M, TDE-15M: 10 to 130 °C TDE-S3: -20 to 130 °C TDE-S4: 0 to 50 °C
Time constant	63 s
Protective sleeve	Cu, not pressure-tight
Connection	2-wire connection, silicon connection cable TDE, TDE-S3, TDE-S4: approx. 1.5 m long TDE-10M: approx. 10 m long TDE-15M: approx. 15 m long
Degree of protection	TDE, TDE-10M, TDE-15M: IP65 around the protective sleeve TDE-S3: IP67 around the protective sleeve TDE-S4: IP65 around the protective sleeve
Ambient humidity	0 to 95% r.h. non-condensing

**Dimensions**

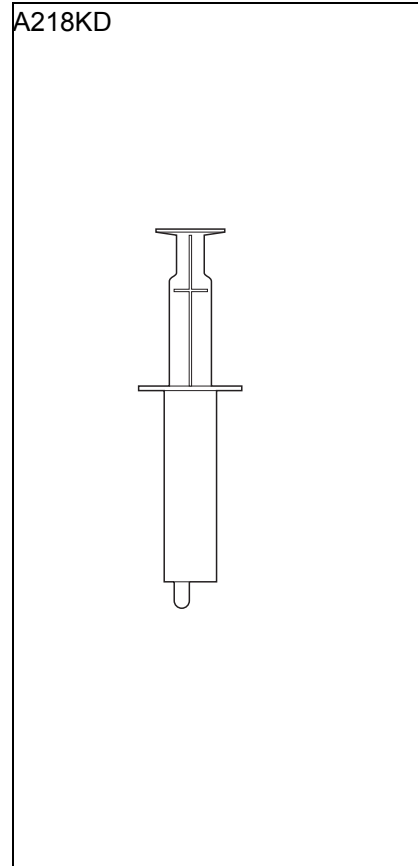
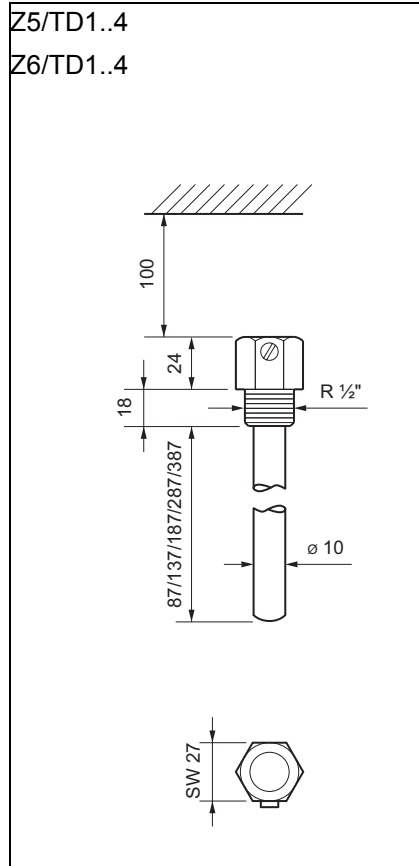


**Accessories (included in delivery)**

Pressure spring for thermowells with interior diameter > 7.5 mm.

**Accessories (not included in delivery)**

- A218KD: Heat-conductive paste
- Z5/TD1..4: Thermowells
- Z6/TD1..4: Thermowells



Installation



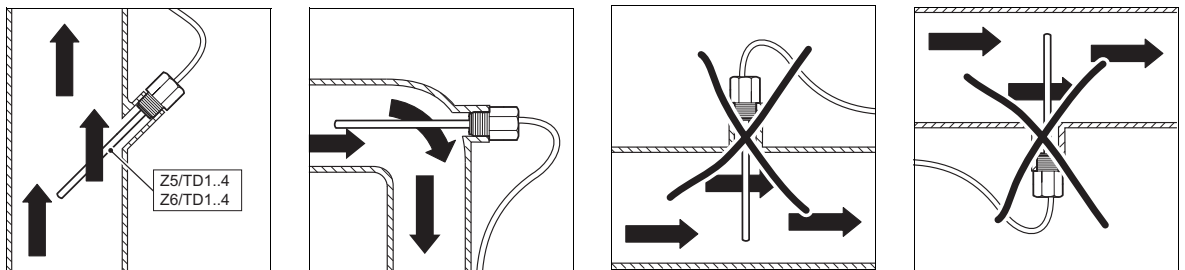
**WARNING!**

Only qualified technicians may install or remove the device.

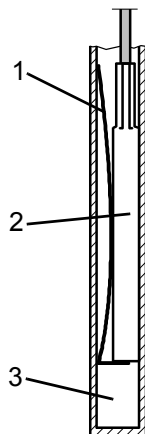
In addition to the generally applicable installation guidelines for working on pipelines, the following must be observed:

- The temperature sensor must be pushed into the thermowell and sensor case deep enough to allow for fault-free and accurate measuring of the temperature of the medium. The measuring length is 14 mm measured from the bottom of the protective sleeve.
- For improved thermal transfer between the thermowell and the measuring element, the measuring element should be fed into the thermowell with the heat-conductive paste.
- The supplied pressure spring is to be used with thermowell with an interior diameter of over 7.5 mm, so that the measuring element touches the inner wall of the thermowell, see figure "For use in thermowells with interior diameter > 7.5 mm."

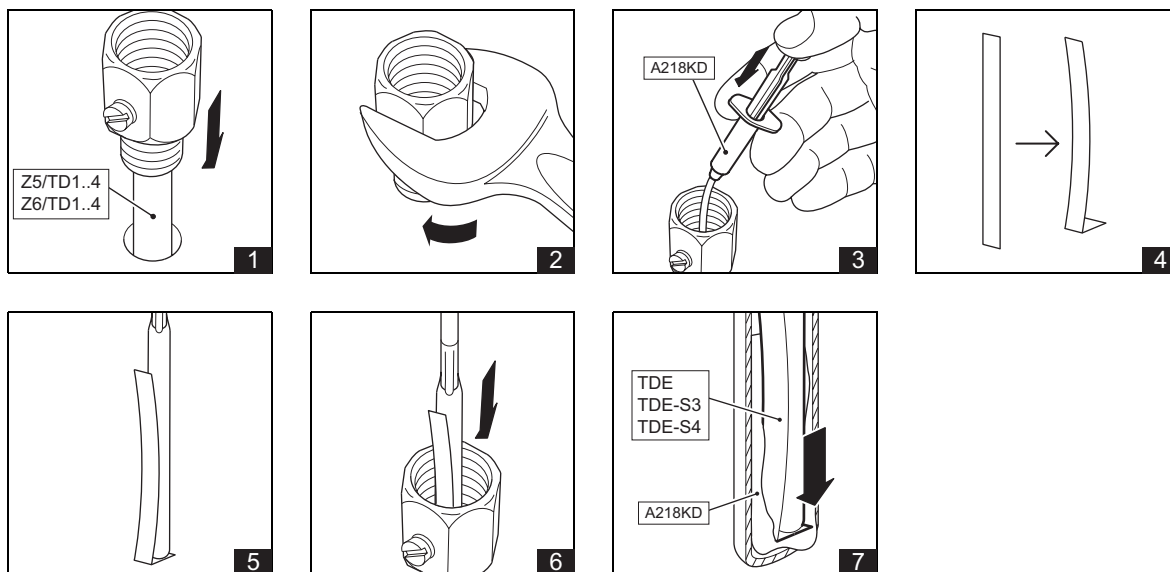
**Installation position**



**For use in thermowells with interior diameter > 7.5 mm.**



- 1 Pressure spring
- 2 Temperature sensor
- 3 Thermowell



**Installation**



**CAUTION**

Electrical installation and device connection may only be carried out by qualified technicians, e.g. an electrician.

Ensure that this process complies with guidelines from the VDE (Association for Electrical, Electronic & Information Technologies) and local wiring regulations.

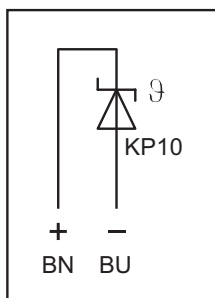
The device must be connected in accordance with the applicable system wiring diagram.



**Note**

When connecting temperature sensors of type TDE, TDE-10M, TDE-15M, TDE-S3, TDE-S4 to the control system, be sure to observe the correct polarity.

**Connection**



Temperature/voltage table for KP10, temperature range -20 °C to 130 °C

T (C)	U (V)	T (C)	U (V)	T (C)	U (V)	T (C)	U (V)	T (C)	U (V)
<b>-20</b>	<b>2.53</b>	<b>10</b>	<b>2.83</b>	<b>40</b>	<b>3.13</b>	<b>70</b>	<b>3.43</b>	<b>100</b>	<b>3.73</b>
-19	2.54	11	2.84	41	3.14	71	3.44	101	3.74
-18	2.55	12	2.85	42	3.15	72	3.45	102	3.75
-17	2.56	13	2.86	43	3.16	73	3.46	103	3.76
-16	2.57	14	2.87	44	3.17	74	3.47	104	3.77
-15	2.58	15	2.88	45	3.18	75	3.48	105	3.78
-14	2.59	16	2.89	46	3.19	76	3.49	106	3.79
-13	2.60	17	2.90	47	3.20	77	3.50	107	3.80
-12	2.61	18	2.91	48	3.21	78	3.51	108	3.81
-11	2.62	19	2.92	49	3.22	79	3.52	109	3.82
<b>-10</b>	<b>2.63</b>	<b>20</b>	<b>2.93</b>	<b>50</b>	<b>3.23</b>	<b>80</b>	<b>3.53</b>	<b>110</b>	<b>3.83</b>
-9	2.64	21	2.94	51	3.24	81	3.54	111	3.84
-8	2.65	22	2.95	52	3.25	82	3.55	112	3.85
-7	2.66	23	2.96	53	3.26	83	3.56	113	3.86
-6	2.67	24	2.97	54	3.27	84	3.57	114	3.87
-5	2.68	25	2.98	55	3.28	85	3.58	115	3.88
-4	2.69	26	2.99	56	3.29	86	3.59	116	3.89
-3	2.70	27	3.00	57	3.30	87	3.60	117	3.90
-2	2.71	28	3.01	58	3.31	88	3.61	118	3.91
-1	2.72	29	3.02	59	3.32	89	3.62	119	3.92
<b>0</b>	<b>2.73</b>	<b>30</b>	<b>3.03</b>	<b>60</b>	<b>3.33</b>	<b>90</b>	<b>3.63</b>	<b>120</b>	<b>3.93</b>
1	2.74	31	3.04	61	3.34	91	3.64	121	3.94
2	2.75	32	3.05	62	3.35	92	3.65	122	3.95
3	2.76	33	3.06	63	3.36	93	3.66	123	3.96
4	2.77	34	3.07	64	3.37	94	3.67	124	3.97
5	2.78	35	3.08	65	3.38	95	3.68	125	3.98
6	2.79	36	3.09	66	3.39	96	3.69	126	3.99
7	2.80	37	3.10	67	3.40	97	3.70	127	4.00
8	2.81	38	3.11	68	3.41	98	3.71	128	4.01
9	2.82	39	3.12	69	3.42	99	3.72	129	4.02
<b>10</b>	<b>2.83</b>	<b>40</b>	<b>3.13</b>	<b>70</b>	<b>3.43</b>	<b>100</b>	<b>3.73</b>	<b>130</b>	<b>4.03</b>

