

TVD Immersion Temperature Sensors

Application

The TVD immersion temperature sensors are used to measure the temperature in the pipelines of heating, ventilation and air-conditioning systems.

The immersion temperature sensors are used in conjunction with all loop controllers and control 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 modifiche - Innehåll som skall ändras - Změny vyhrazeny - Zmiany zastrzeżone - Возможны изменения - A változtatások jogát fenntartjuk - 保留未经通知而改动的权力

Important Information Regarding Product Safety

Safety Instructions

This data sheet contains information on installing and commissioning the product "TVD". 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.

Legend



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.



CAUTION

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

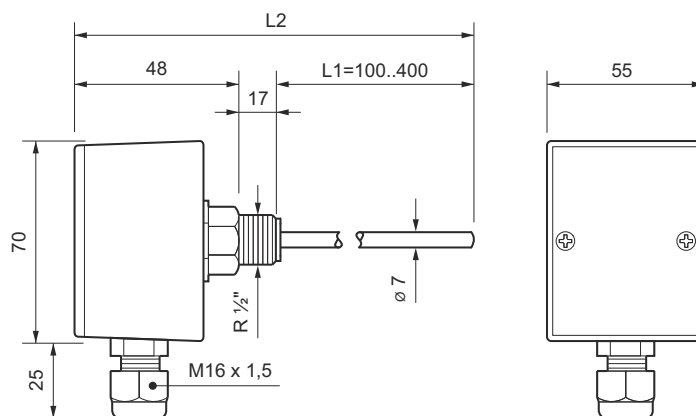
For disposal, the product is considered waste from electrical and electronic equipment (electronic waste) and must not be disposed of as household waste. Special treatment for specific components may be legally binding or ecologically sensible. The local and currently applicable legislation must be observed.

Product Description**TVD****Item**

TVD1	Immersion temperature sensor, 100 mm brass thermowell
TVD15	Immersion temperature sensor, 150 mm brass thermowell
TVD2	Immersion temperature sensor, 200 mm brass thermowell
TVD3	Immersion temperature sensor, 300 mm brass thermowell
TVD4	Immersion temperature sensor, 400 mm brass thermowell
TVD...S6	Immersion temperature sensor, 100 mm..400 mm brass thermowell, specially designed for water chillers with the risk of condensation

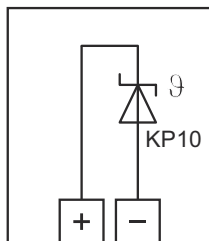
Technical Data

Function	Temperature voltage transmitter
Measured quantity	Supply temperature
Measuring element	KP10, 2.731 V at 0 °C, TC = 10 mV/K TDN...S6: Measuring element is encapsulated in the thermowell
Ambient temperature	-50 °C..+150 °C
Measuring tolerance	Typically $\pm 0.2K$
Measuring range	TVD 0 °C..+130 °C TVD...S6 -20 °C..+130 °C
Ambient humidity	TVD 0% to 95% relative humidity, not permanently condensing TVD...S6 Specially designed for water chillers with the risk of condensation
Thermowell	Brass, PN10, $\varnothing 7$ mm, R1/2" threaded connection ■ TVD1/TVD1-S6, length: 100 mm ■ TVD15/TVD15-S6, length: 150 mm ■ TVD2/TVD2-S6, length: 200 mm ■ TVD3/TVD3-S6, length 300 mm ■ TVD4/TVD4-S6, length: 400 mm
Connection housing	Light gray plastic housing, M16 x 1.5 cable entry
Degree of protection	IP65

Dimensions

- 1 L1 = thermowell length
- 2 L2 = available space for installation in thermowells

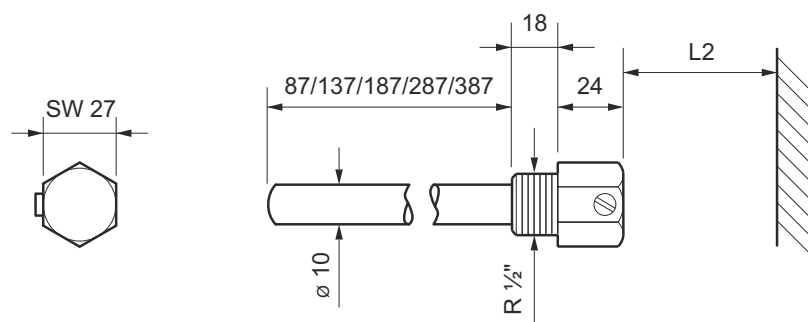
Connection



Accessories (not included)

Thermowell	Brass, PN10 (max. test pressure: 16 bar), Ø 10 mm, R $\frac{1}{2}$ " threaded connection
Z5/TD1	For TVD1, TVD1-S6
Z5/TD15	For TVD15, TVD15-S6
Z5/TD2	For TVD2, TVD2-S6
Z5/TD3	For TVD3, TVD3-S6
Z5/TD4	For TVD4, TVD4-S6
Thermowell	Stainless steel 1.4571, PN16 (max. test pressure: 25 bar), Ø 10 mm, R $\frac{1}{2}$ " threaded connection
Z6/TD1	For TVD1, TVD1-S6
Z6/TD15	For TVD15, TVD15-S6
Z6/TD2	For TVD2, TVD2-S6
Z6/TD3	For TVD3, TVD3-S6
Z6/TD4	For TVD4, TVD4-S6

Dimensions



1 L2 = available space for installation in thermowells

Mounting



CAUTION

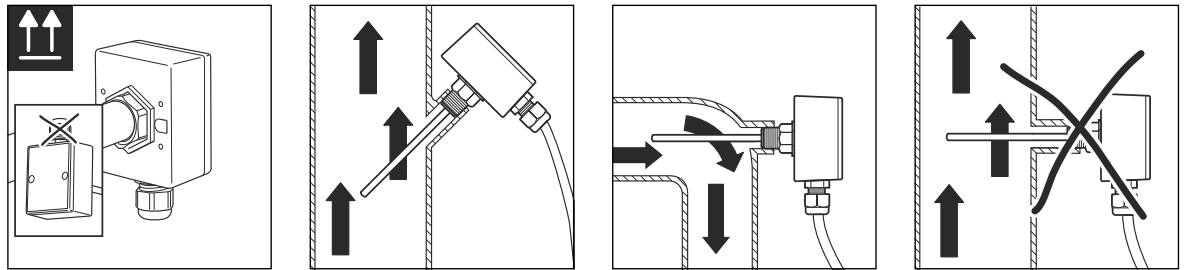
Installation and removal may only be performed by qualified technicians.

Installing the immersion temperature sensor

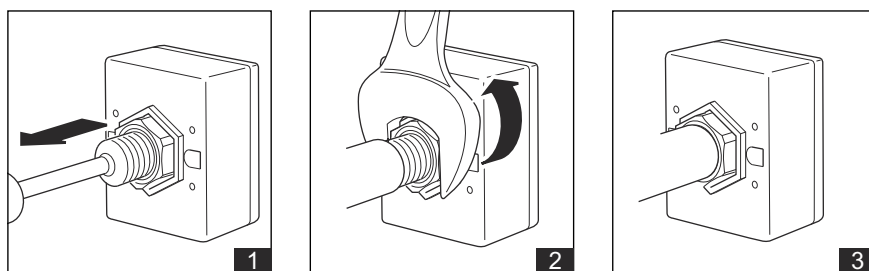
Only mount in the specified installation position.

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

- To record measurement more quickly, the thermowell must face against the direction of flow.
- In order to ensure accurate measurements, choose an installation location where no temperature stratifications occur. If possible, install the sensor downstream of pumps or mixture of two water flows. Ensure that there is a distance of approx. 10 x the pipe diameter between the valve and sensor.
- The medium must flow freely around the thermowell with the measuring element. The measuring length is 15 mm measured from the bottom of the thermowell.
- Be sure to leave enough space to connect the device.



- ▶ Use a wrench (27 mm) to secure the thermowell shaft (R $\frac{1}{2}$ "). Do not screw it into the connection housing.
- ▶ In order to prevent moisture (condensate/pipe leakage) from entering the connection housing, the cable gland should point downwards. If that is not possible, make a downward-facing loop in the connection cable.



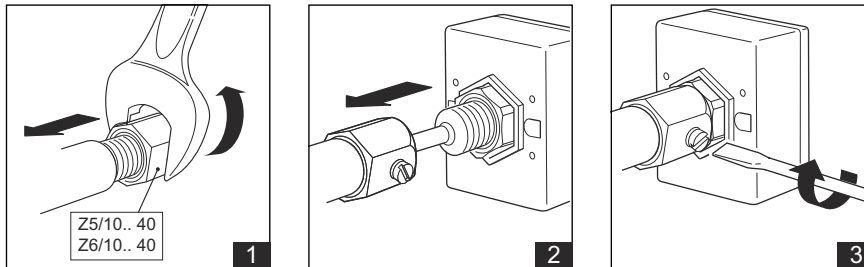
- ▶ When using a thermowell, observe the instructions in the Installation Using the Z5/TD1..4 or Z6/TD1..4 Thermowell section, page 6.

Installation Using the Z5/TD1..4 or Z6/TD1..4 Thermowell

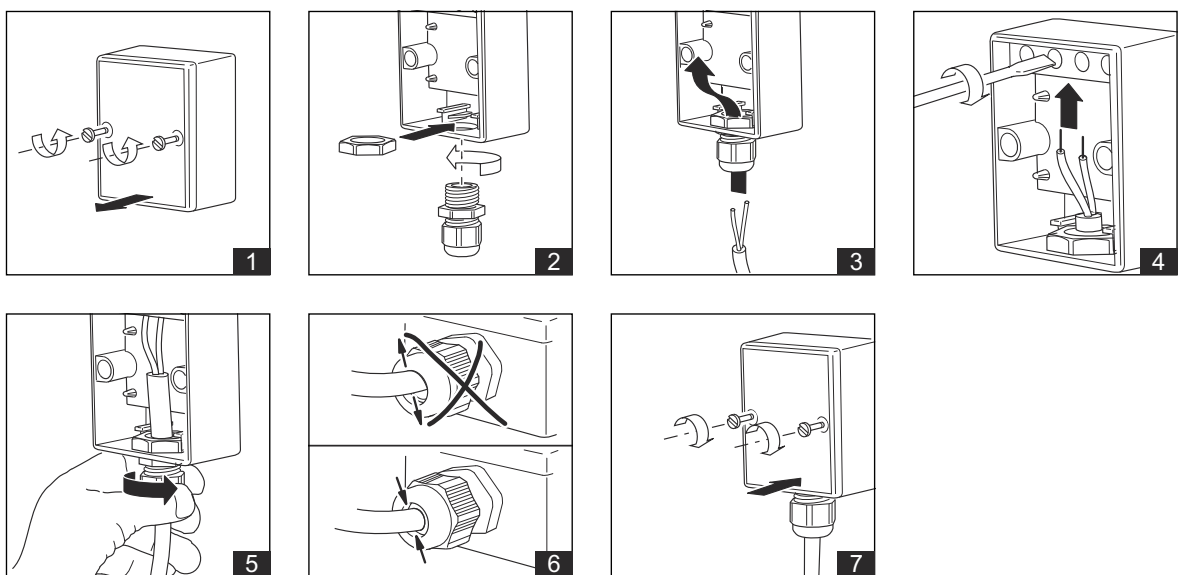
For improved thermal transfer between the thermowell and the sensor thermowell, fill the thermowell with a thermally conductive fluid. In this case, the thermowell must point downwards.

The thermowell shaft of the sensor must not be sealed.

- Insert the sensor into the thermowell and secure the retaining screw.



Installation



Product Description

TVD

Temperature and Voltage Table for KP10

T (°C)	V (V)	T (°C)	V (V)	T (°C)	V (V)	T (°C)	V (V)	T (°C)	V (V)
-50	2.23	-10	2.63	30	3.03	70	3.43	110	3.83
-49	2.24	-9	2.64	31	3.04	71	3.44	111	3.84
-48	2.25	-8	2.65	32	3.05	72	3.45	112	3.85
-47	2.26	-7	2.66	33	3.06	73	3.46	113	3.86
-46	2.27	-6	2.67	34	3.07	74	3.47	114	3.87
-45	2.28	-5	2.68	35	3.08	75	3.48	115	3.88
-44	2.29	-4	2.69	36	3.09	76	3.49	116	3.89
-43	2.30	-3	2.70	37	3.10	77	3.50	117	3.90
-42	2.31	-2	2.71	38	3.11	78	3.51	118	3.91
-41	2.32	-1	2.72	39	3.12	79	3.52	119	3.92
-40	2.33	0	2.73	40	3.13	80	3.53	120	3.93
-39	2.34	1	2.74	41	3.14	81	3.54	121	3.94
-38	2.35	2	2.75	42	3.15	82	3.55	122	3.95
-37	2.36	3	2.76	43	3.16	83	3.56	123	3.96
-36	2.37	4	2.77	44	3.17	84	3.57	124	3.97
-35	2.38	5	2.78	45	3.18	85	3.58	125	3.98
-34	2.39	6	2.79	46	3.19	86	3.59	126	3.99
-33	2.40	7	2.80	47	3.20	87	3.60	127	4.00
-32	2.41	8	2.81	48	3.21	88	3.61	128	4.01
-31	2.42	9	2.82	49	3.22	89	3.62	129	4.02
-30	2.43	10	2.83	50	3.23	90	3.63	130	4.03
-29	2.44	11	2.84	51	3.24	91	3.64	131	4.04
-28	2.45	12	2.85	52	3.25	92	3.65	132	4.05
-27	2.46	13	2.86	53	3.26	93	3.66	133	4.06
-26	2.47	14	2.87	54	3.27	94	3.67	134	4.07
-25	2.48	15	2.88	55	3.28	95	3.68	135	4.08
-24	2.49	16	2.89	56	3.29	96	3.69	136	4.09
-23	2.50	17	2.90	57	3.30	97	3.70	137	4.10
-22	2.51	18	2.91	58	3.31	98	3.71	138	4.11
-21	2.52	19	2.92	59	3.32	99	3.72	139	4.12
-20	2.53	20	2.93	60	3.33	100	3.73	140	4.13
-19	2.54	21	2.94	61	3.34	101	3.74	141	4.14
-18	2.55	22	2.95	62	3.35	102	3.75	142	4.15
-17	2.56	23	2.96	63	3.36	103	3.76	143	4.16
-16	2.57	24	2.97	64	3.37	104	3.77	144	4.17
-15	2.58	25	2.98	65	3.38	105	3.78	145	4.18
-14	2.59	26	2.99	66	3.39	106	3.79	146	4.19
-13	2.60	27	3.00	67	3.40	107	3.80	147	4.20
-12	2.61	28	3.01	68	3.41	108	3.81	148	4.21
-11	2.62	29	3.02	69	3.42	109	3.82	149	4.22
-10	2.63	30	3.03	70	3.43	110	3.83	150	4.23

TVD	Product Description
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