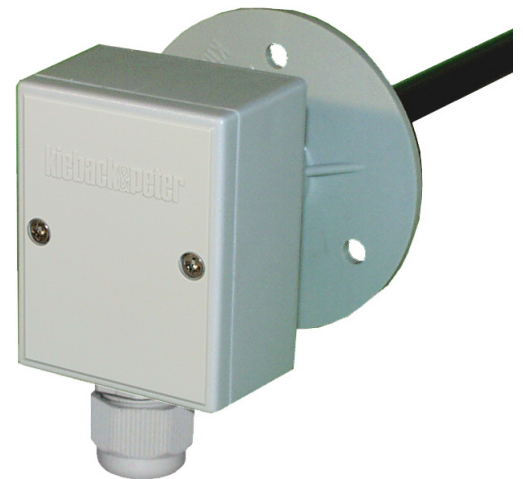


## TLH2, TLH3, TLH4 Duct humidity/temperature sensors

### Application

With its two separate measuring systems, the combined TLHx allow for continuous detection of the relative humidity and temperature control in ventilation and air conditioning systems.

The sensors are used in conjunction with all loop controllers and control systems that have an analog 0 to 10 V input and sensor connection for the KP10 active measuring element.



Content	Page
Important Information Regarding Product Safety .....	2
Item .....	3
Technical Data .....	3
Accessories (not included in delivery) .....	3
Dimensions .....	4
Connection .....	4
Mounting .....	4
Installation .....	5
Temperature/voltage table .....	6

Änderungen vorbehalten - Contents subject to change - Sous réserve de modifications - Reservado el derecho a modificación - Wijzigingen voorbehouden - Con riserva di modifichie - 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 "TLH2, TLH3, TLH4". 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.



#### 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****TLH2, TLH3, TLH4****Item**

TLH2	Duct humidity/temperature sensor Support tube is 200 mm long (installation length 180 mm)
TLH3	Duct humidity/temperature sensor Support tube is 300 mm long (installation length 280 mm)
TLH4	Duct humidity/temperature sensor Support tube is 400 mm long (installation length 380 mm)

**Technical Data**

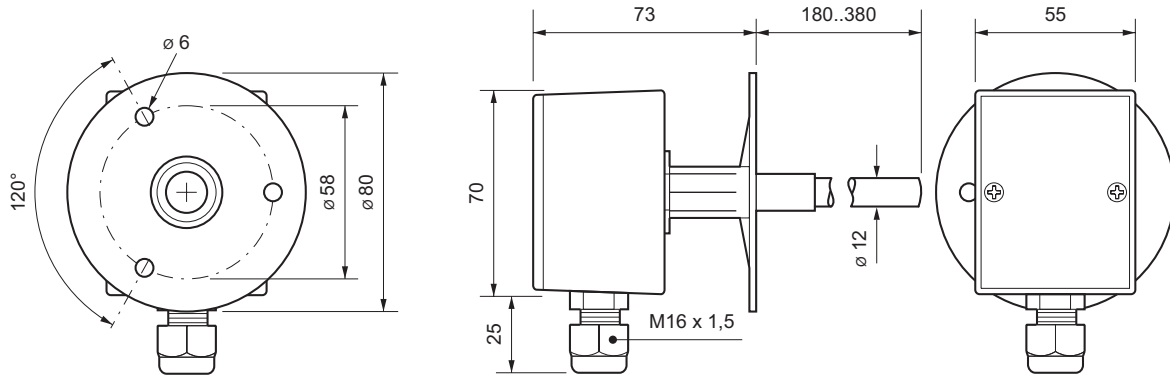
Nominal voltage	AC 24 V $\pm$ 10 %, 0.5 VA	
Measured value	rel. humidity	Humidity sensor with converter Output: 0 to 10 V DC; max. 5 mA for 0 to 100 % r. h.
	Temperature	KP10 active measuring element Output: 2.731 V at 0 °C, TC = 10 mV/K
Measuring tolerance	rel. humidity	$\pm$ 3 % r. h.
	Temperature	Typically $\pm$ 0.2 K
Time constant	rel. humidity	Change in humidity at the same temperature: T = 15 s If the temperature changes: T = 190 s (Values both at an air velocity of 2 m/s)
	Temperature	T = 35 s
Measuring range	rel. humidity	0 % to 100 % r.h.
	Temperature	-40 °C to +80 °C
Connection	Screw terminals, max. 1.5 mm <sup>2</sup>	
Housing	Light gray plastic housing, cable entry M16 x 1.5	
Degree of protection	IP65	
Ambient temperature	-40 °C to +80 °C	
Ambient humidity	0 to 90% r.h.; non-condensing	

**Accessories (not included in delivery)**

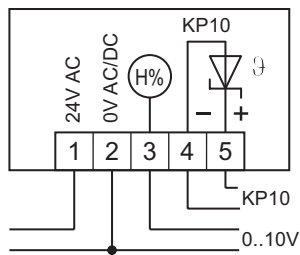
B3	Socket flange for variable installation depth
----	---



Dimensions



Connection



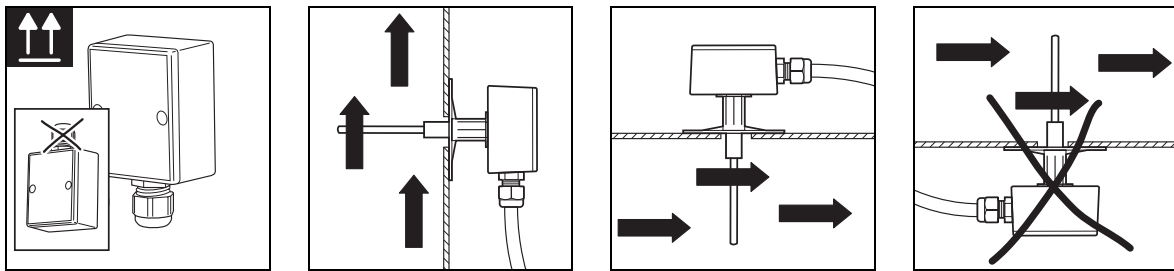
Mounting



**CAUTION**

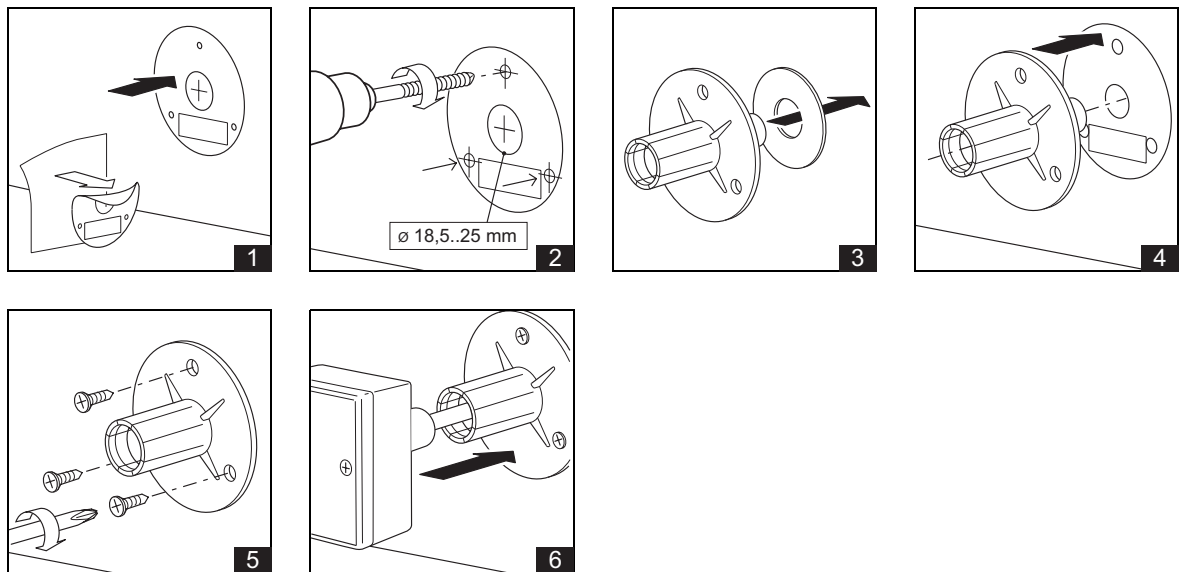
Mounting/demounting may only be carried out by qualified technicians when the power is switched off.

Only mount in the specified mounting position.



## Product Description

TLH2, TLH3, TLH4



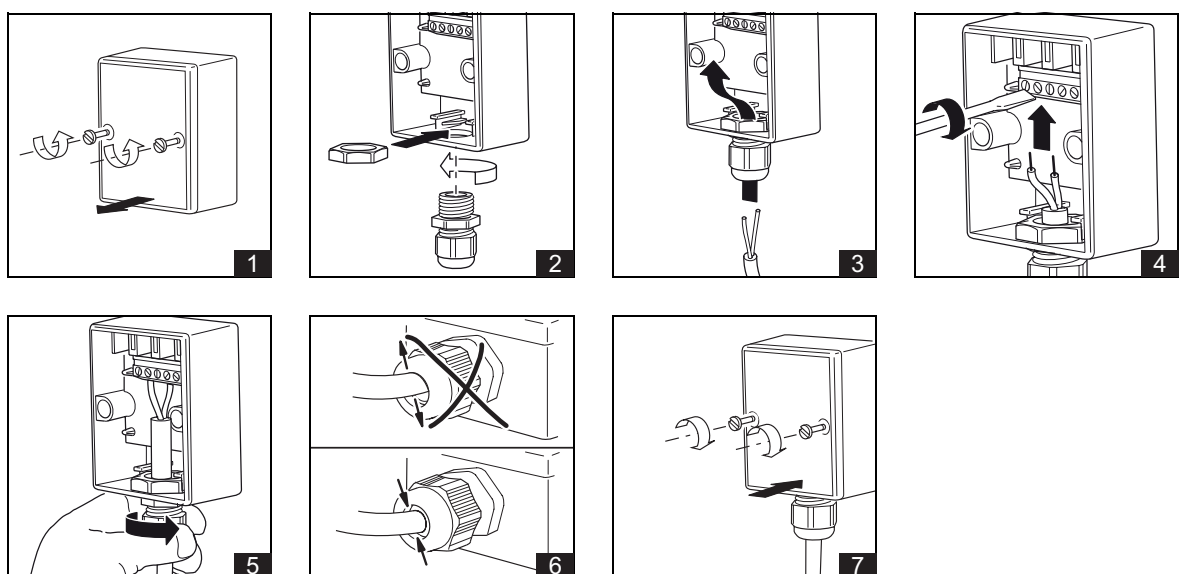
- ▶ Affix the drill stencil to the ventilation duct and drill the mounting holes.
- ▶ Screw the socket flange (with gasket) tightly onto the ventilation duct.
- ▶ The duct temperature sensor is supplied with a self-adhesive drill stencil for the socket flange for easy mounting. The stencil has an information block for position detection.
- ▶ Insert the duct temperature sensor into the socket flange until it locks into place.
- ▶ Be sure to leave enough space to connect the device.

The sensor is uninstalled in reverse order.

## Installation

**CAUTION**

Electrical installation for connecting the device may only be carried out by qualified technicians. Ensure that this process complies with guidelines from the VDE (Association for Electrical, Electronic & Information Technologies) and local wiring regulations.



Temperature/voltage table

Temperature/Resistance Table for KP10 Measuring Element

T (C)	U (V)	T (C)	U (V)	T (C)	U (V)	T (C)	U (V)
<b>-40</b>	<b>2.33</b>	<b>-10</b>	<b>2.63</b>	<b>20</b>	<b>2.93</b>	<b>50</b>	<b>3.23</b>
-39	2.34	-9	2.64	21	2.94	51	3.24
-38	2.35	-8	2.65	22	2.95	52	3.25
-37	2.36	-7	2.66	23	2.96	53	3.26
-36	2.37	-6	2.67	24	2.97	54	3.27
-35	2.38	-5	2.68	25	2.98	55	3.28
-34	2.39	-4	2.69	26	2.99	56	3.29
-33	2.40	-3	2.70	27	3.00	57	3.30
-32	2.41	-2	2.71	28	3.01	58	3.31
-31	2.42	-1	2.72	29	3.02	59	3.32
<b>-30</b>	<b>2.43</b>	<b>0</b>	<b>2.73</b>	<b>30</b>	<b>3.03</b>	<b>60</b>	<b>3.33</b>
-29	2.44	1	2.74	31	3.04	61	3.34
-28	2.45	2	2.75	32	3.05	62	3.35
-27	2.46	3	2.76	33	3.06	63	3.36
-26	2.47	4	2.77	34	3.07	64	3.37
-25	2.48	5	2.78	35	3.08	65	3.38
-24	2.49	6	2.79	36	3.09	66	3.39
-23	2.50	7	2.80	37	3.10	67	3.40
-22	2.51	8	2.81	38	3.11	68	3.41
-21	2.52	9	2.82	39	3.12	69	3.42
<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>
-19	2.54	11	2.84	41	3.14	71	3.44
-18	2.55	12	2.85	42	3.15	72	3.45
-17	2.56	13	2.86	43	3.16	73	3.46
-16	2.57	14	2.87	44	3.17	74	3.47
-15	2.58	15	2.88	45	3.18	75	3.48
-14	2.59	16	2.89	46	3.19	76	3.49
-13	2.60	17	2.90	47	3.20	77	3.50
-12	2.61	18	2.91	48	3.21	78	3.51
-11	2.62	19	2.92	49	3.22	79	3.52
<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>