OPERATION MANUAL

Outdoor sensor humidity/temperature of the GLT series

Description

Type temperature probe for wall mounting, probe installed

typ humidity- temperature probe for wall mounting, probe installed

Characteristic features

- Standard signal 0...10 V or 4...20 mA
- Linearised and temperature compensated humidity measurement
- High long term stability, innovative technique
- Probe with stainless steel housing 1.4571
- High quality housing enclosure IP 65
- Probe head with PE Sinter filter
- Optionally with display

Areas of application

- Building instrumentation
- Industrial measurement and controlling systems
- Meteorology
- Drying systems

Application range

In the area of building instrumentation, there is a requirement for reasonably priced measuring probes which are suitable for continuous operation and protected against over voltage and transients. Further aspects are DC/ AC supply, high long term stability as well as a good measuring accuracy in the application. The B+B probes of GLT-series are developed for these requirements and are specially suitable for application in this area due to the modern sensor technology and innovative construction.

A multifunctional digital sensor is used which electively measures temperature or temperature and humidity. The measurement of relative humidity is done with a precise and long term stable capacitive polymer sensor element with industrial rating. The processing of measured value is linearised and temperature compensated. The voltage supply for the 0 ... 10 V model can be done alternatively with AC or DC supply. The 4... 20 mA model is meant for only DC supply.The sensor which is made up of high quality stainless steel has a fine pored PE protection filter and is made pressure tight against ambient pressure at the sensor head with a Teflon tube. Because of this, the probe can also be operated at pressure difference and higher flow rates, for example in ventilation ducts.

Because of the large connecting area inside the housing and the documented connecting clamps a fast connection is guaranteed.

Attention: Do not use the humidity-/ temperature probes in an environment of aggressive or corrosive gases or steams.

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Technical data

Humidity measurement	
Measuring range	0...100 % RH, without condensation
Accuracy	±2% RH (from 0...90% RH)
Response time t_{90}	Approx. 25 sec. (with protection filter)
Output scaling	0...100% RH
Temperature measurement	
Measuring range	-40...+125 °C
Accuracy	±0,3 °K (from 0...+90°C)
Output scaling	Selectable, DIP switch
General	
CE-Conformance	2014/30/EU
EMV Noise emission	EN 61000-6-3:2011
EMV Noise immunity	EN 61000-6-1:2007
Probe dimensions	65x59x37mm, see drawing
Probe housing	Stainless steel 1.457 Polyamide
Protection filter	PE-Sinter filter 25 µm
Electronics housing	Plastic
Connection	Screw terminals 0.75 mm²
Cable gland	M16 x 1,5
Clamping range	4 ... 8,5 mm
Operating voltage	Type –10V: 15 ... 24 V AC/DC Type –20MA: 16 ... 24 V DC
Shunt	at 24V supply voltage: max. 400 Ohm at 16V supply voltage: max. 40 Ohm
Over voltage protection	TVS diode

Supply

For 4 ... 20 mA model, only DC supply is possible. The 0... 10 V model can be alternatively fed with either DC or AC voltage and also with unfiltered rectified voltage.
In case of AC supply, the neutral point of the transformer must be connected to signal ground and the connection of further probes must be absolutely done with phase balance. In case of supply with rectified unfiltered voltage, the minus must be connected to reference ground and plus to be connected to +DC/AC 24 V. Wrong connection leads to malfunctioning or can cause damage to the electronics!

Connection

Preferably shielded connection cable should be used for the connection. First of all, it is to be noted that in EMI disturbed environment, the shielding should be grounded. Check before connection, whether the supply voltage is as per operating voltage specification mentioned in the data sheet.

Calibration

The measuring sensors are calibrated with reproducibility of PTB National standard. Calibration certificate as per ISO 9000 standard is also available with some extra charges.
For re-confirming measuring accuracy by the end user, reference cells are available for specific humidity values. For conformance to specifications, we recommend check-up at regular intervals.

Measurement of signal voltage

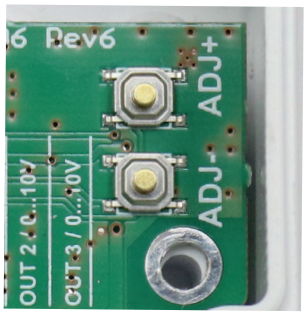
In order to avoid measuring error in the 0...10 V model, due to line resistance and current flow through the grounding wire, a separate grounding wire is to be employed for the signal voltage. The voltage measurement should be with a four wire system.

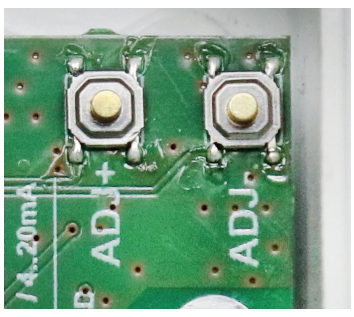
Protection filter

The humidity probe is supplied with a 25 µm PE sinter filter as a standard package. Other filters, including hydrophobic special filters are available as special accessories.
Precipitations on the filter or sensor element can deteriorate the response behaviour. Contaminated filters should be replaced.

Adjustment

The sensors are long term stable and are maintenance free in a clean environment. Hence, a re-calibration is not required as per practice.
For the three outputs, always buttons are provided on the motherboard which can be use for re-adjusted, if required. For this purpose, ADJ+ for the temperature output or ADJ- for the humidity output is pressed for four seconds. After that the LED on the board flashes and the chosen output can be readjusted with ADJ+ and ADJ-. For the humidity channel, use of our humidity reference cells is recommended as a calibration standard. The adjustment of temperature channel is done with a reference thermometer. The calibration work presupposes relevant knowledge and is only recommended if required experience and equipment are available!





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Temperature adjustment

1. Press and hold the ADJ+ button for 4 seconds
2. The LED will start blinking. This means adjustment mode is active
3. Press ADJ+ to increase the temperature value
4. Press ADJ- to decrease the temperature value
5. Wait a few seconds after adjustment to save the setting

Humidity adjustment

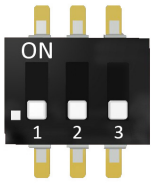
1. Press and hold the ADJ- button for 4 seconds
2. The LED will start blinking. This means adjustment mode is active
3. Press ADJ+ to increase the humidity value
4. Press ADJ- to decrease the humidity value
5. Wait a few seconds after adjustment to save the setting

Reset to default

1. Press and hold ADJ+ and ADJ- together for 4-5 seconds
2. The LED will blink
3. Both temperature and humidity settings will return to factory default values

Output scaling

The output scaling of the temperature can be set using the DIP switch on the circuit board. Depending on the position of the 3 switches, the output will be set to different temperature ranges. The sensor is factory-set to -20 ... +80 °C.



S1	S2	S3	scaling
Off	Off	Off	-20 ... +80 °C (state of delivery)
Off	Off	On	-30 ... +70 °C
Off	On	Off	-40 ... +60 °C
Off	On	On	-40 ... +125 °C
On	Off	Off	0 ... +50 °C
On	Off	On	0 ... +75 °C
On	On	Off	0 ... +100 °C
On	On	On	0 ... +125 °C

Mounting of measuring probes

Mounting should be done with the probe tube in downside direction to avoid mearuring error caused by self heating of the electronic circuit. Moderate flow in region of the probe is an advantage concerning response time and accuracy.
The probe is pressure tight up to 100 mbar. The probes are not suitable for compressed air with higher pressure.
For outdoor applications, a special weather protection housing with mast/wall holder as well as a hydrophobic PE sinter filter is recommended. Alternatively, a mounting flange is available with clamping ring/clamping screws.

Product variant

Model for wall mounting, for example, as external probe, the measuring probe is horizontally flanged (at the front side) to the evaluation electronics. Probe tube length is around 70 mm.

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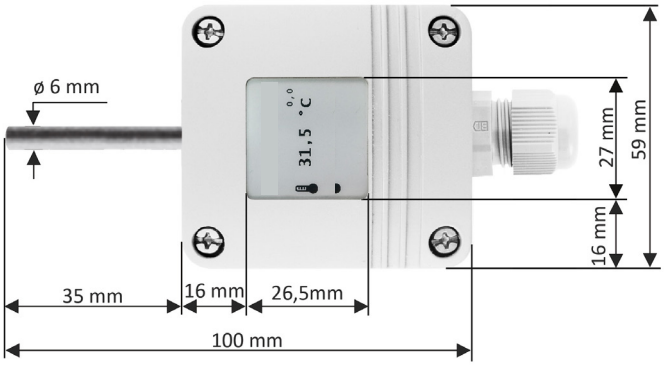
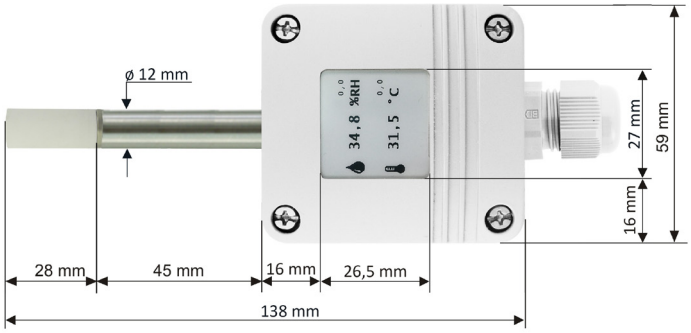
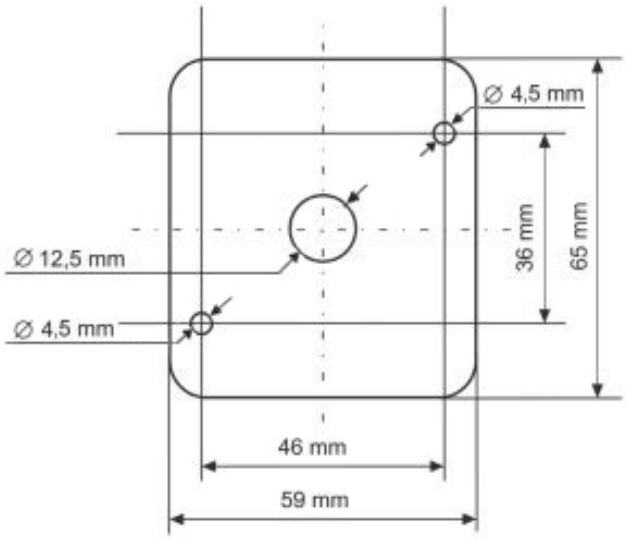
Dimensioned drawing temperature probe



Dimensioned drawing humidity- temperature probe



Drilling template for measuring amplifier



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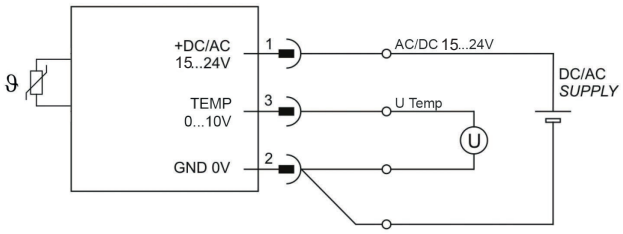
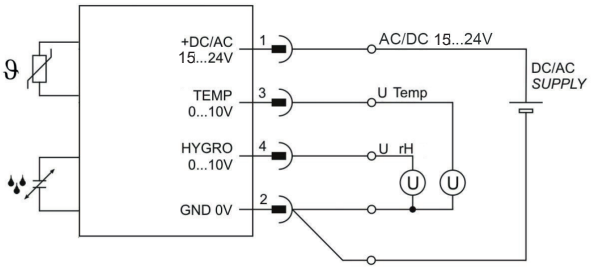
Plug configuration

Temperature measurement 0 ... 10 V



Terminal	Function	Description
1	+DC/AC 15 ... 24 V	Operating voltage
2	GND 0 V	Reference potential
3	TEMP 0 ... 10 V	Temperature-Signal 0 ... 10 V

Humidity measurement 0 ... 10 V and Temperature measurement 0 ... 10 V



Terminal	Function	Description
1	+DC/AC 15 ... 24 V	Operating voltage
2	GND 0 V	Reference potential
3	TEMP 0 ... 10 V	Temperature-Signal 0 ... 10 V
4	HYGRO 0 ... 10 V	Humidity-Signal 0 ... 10 V

The measurement of the output signal should be done with separate signal ground, in order to avoid measuring error due to voltage drop at the supply ground.

Temperature and humidity is always with reference to GND, operating voltage +DC/AC 15 ... 24 V is common for both transmitters.
The measurement of the output signal should be done with separate signal ground, in order to avoid measuring error due to voltage drop at the supply ground.

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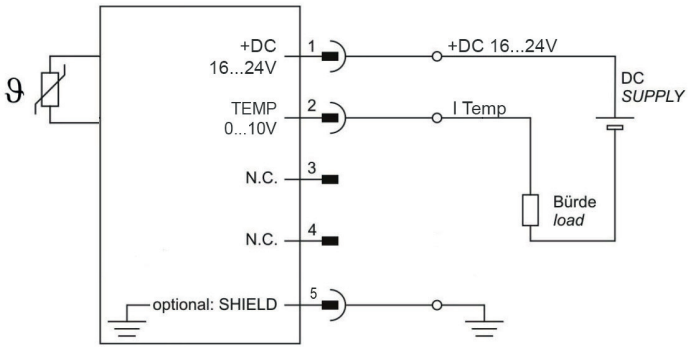
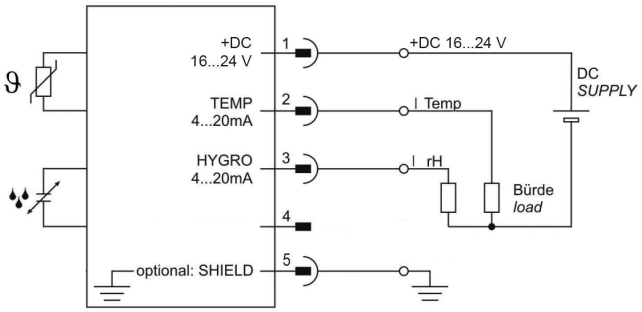
Temperature measurement 4 ... 20 mA



Terminal	Function	Description
1	+DC 16 ... 24 V	Operating voltage
2	TEMP 4 ... 20 mA	Temperature-Signal 4 ... 20 mA
3	---	Unoccupied
4	---	Unoccupied
5	SHIELD	Shielding

The shielding (SHIELD) is to be optionally covered. Connection through shielded lines is recommended.

Humidity measurement 4 ... 20 mA and Temperature measurement 4 ... 20 mA



Terminal	Function	Description
1	+DC 16 ... 24 V	Operating voltage
2	TEMP 4 ... 20 mA	Temperature-Signal 4 ... 20 mA
3	HYGRO 4 ... 20 mA	Humidity-Signal 4 ... 20 mA
4	---	Unoccupied
5	SHIELD	Shielding

The shielding (SHIELD) is to be optionally covered. Connection through shielded lines is recommended.
Operating voltage +DC 16 ... 24 V is common for both the instrument transformers.

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Product key

Product key for humidity- temperature probe

example: 0551 3 2 0 1

0551 □ □ □ □

Sensor	
1	Temperature digital (STS)
3	Humidity- Temperature digital (SHT)

Output signal calibration	
1	0...10 V Standard
2	4...20 mA Standard
3	0...10 V Measuring range Customized
4	4...20 mA Measuring range Customized

Display	
0	Without display
1	With display

Design	
0	B+B Plastic housing room sensor
1	B+B Plastic housing outdoor sensor
2	B+B Plastic housing duct sensor
3	B+B Plastic housing pendulum sensor
4	B+B Plastic housing compact sensor

Guarantee

On our high quality measuring probes, you get a guarantee of 24 months. Mechanically damaged sensors or tampering into electronics makes the sensors devoid of guarantee claims. Calibration services are not covered in the guarantee.

Attention

Please avoid extreme mechanical and inappropriate exposure.

The device/product is not suitable for potential explosive areas and medical-technical applications.

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