TetraTec® Instruments



TEMPERATURE AND HUMIDITY SENSOR

HUMTMP

Humidity and temperature in one probe

TETRATEC INSTRUMENTS GMBH · STEINENBRONN · GERMANY

01 — THE SENSOR

Two quantities, screwed in pressure-tight.

The HUMTMP measures temperature and relative humidity simultaneously: temperature with a passive Pt100 element, humidity with a capacitive measuring element. The G1/2 thread with O-ring and integrated glass feedthroughs connects it pressure-tight to closed compressed-air piping systems up to 16 bar gauge pressure.

10–90 %
RELATIVE HUMIDITY
temperature −10 to +60 °C

16 bar
MAX. GAUGE PRESSURE
vacuum operation too, burst pressure > 50 bar

IP 68
DEGREE OF PROTECTION
stainless steel 1.4571 housing

THE ESSENTIALS

One sensor, one connector

Humidity and temperature come from one sensor and over one circular connector: one mounting point and one cable instead of two.

Screwed in pressure-tight

The thread with O-ring and the integrated glass feedthroughs make the sensor pressure-tight – under vacuum as in a compressed-air line.

Capacitive humidity element

Resistant to thermal shock, chemically resistant and long-term stable.

Pt100 with four-wire connection

The passive platinum element is operated over four wires; the resistance of the lead does not enter the measurement.

PTFE membrane filter

A PTFE membrane filter protects the measuring element. It is available as a spare part.

Recalibration in-house

We recalibrate the sensor in our facility, on request also the humidity at four points.

WHAT IT IS NOT BUILT FOR

The HUMTMP is intended for air and compressed air and works from −10 to +60 °C, at gauge pressure up to 16 bar and under vacuum. It is stored at non-condensing humidity. The measuring element must not be wetted by liquid water (condensate, splash water); moisture damages it. If your measuring point goes beyond these limits or carries another gas, we clarify with you before the design what is possible.

Operating principle

The humidity element is a capacitor whose dielectric absorbs and releases water vapour from the surrounding gas; its capacitance therefore follows the relative humidity. The electronics in the sensor convert it into an output signal of 0 to 1 V and are supplied with 24 VDC (8 to 28 VDC). Between 10 and 90 % RH we test the sensor to a tolerance of ±2 % RH.

Temperature is measured by a passive Pt100 platinum resistor with a four-wire connection: two wires carry the measuring current of 1 mA, two further wires pick up the voltage at the element. Humidity and temperature share one 8-pin circular connector to IEC 60130-9.

THE VERSION

PART NO.	SENSOR PROTECTION	RESPONSE TIME T_{99}	SPARE FILTER
HUMTMP-MF-G12	PTFE membrane filter	approx. 25 s	HUMTMP-ERS-PTFEPOR

With G1/2 male thread, flat sealing with O-ring. Pin assignment and complete data are given in the datasheet.

TYPICAL APPLICATIONS

- Humidity and temperature in compressed-air networks
- Reference calculation at the unit under test with CoM4 systems
- Humidity and temperature at laminar flow elements
- Humidity for the density calculation in flow measurement
- Measuring points under vacuum and positive pressure
- Gas state in test benches and test set-ups

> *Humidity and temperature from one probe: this saves an additional sensor and space at the measuring point.*

02 — SELECTION

HUMTMP – short response time, well protected.

VERSIONS

- **HUMTMP-MF-G12** – with PTFE membrane filter
- Process connection G1/2 male, flat sealing with O-ring

ACCESSORIES

- Spare filter HUMTMP-ERS-PTFEPOR
- Connection cable, standard length 2.5 m
- Humidity calibration at four points (option)

KEY SPECIFICATIONS

Relative humidity	**10 to 90 % RH**
Temperature	**−10 to +60 °C**
Test tolerance humidity	**±2 % RH (10–90 %)**
Temperature element	**Pt100, 1/3 class B**
Response time T_{99}	**approx. 25 s**
Operating pressure	**gauge pressure up to 16 bar or vacuum**
Humidity output	**0 to 1 V**
Power supply	**24 VDC (8 to 28 VDC)**
Process connection	**G1/2 male, O-ring**
Electrical connection	**8-pin, IEC 60130-9**
Housing	**stainless steel 1.4571, approx. 120 g**

Complete data in the technical datasheet.

FROM ENQUIRY TO RECURRING CALIBRATION

1. **Record the measuring point**
   Medium, pressure, temperature and mounting situation – the design follows from these.
2. **Supply the sensor**
   HUMTMP with connection cable, on request with humidity calibration.
3. **Recalibrate regularly**
   Recalibration in our facility at the agreed interval.

We design your measuring point with you.

REQUEST A DESIGN

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