Zertifiziertes QM-System
DIN EN ISO 9001
Zertifikat-Nr. 01017

Humidity/Temperature-Measuring Instrument

capacitive method of measurement

measuring • monitoring • analysing

AFK-G

- Measurement of relative humidity and temperature
- Also available in high pressure version (to 25 bar) and high-temperature version (to 200 °C)
- Operating range: 0...100 % rH, -25...+125 °C
- Short response times
- Analogue outputs (4-20 mA) for relative humidity and temperature
- For indoors and air ducts
- Capacitive method of measurement

Analysis

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Description

The range AFK-G humidity/temperature sensors are sensors for measuring relative humidity and temperature (optional) in air and other non-aggressive gases for an operating temperature to 200 °C. The high pressure variant can be used up to a pressure of 25 bar. The sensors are thus ideally suited for measuring humidity in industrial processes.

The sensors are based on capacitive metrology which is reasonably-priced, maintenance-free and highly accurate. Capacitive humidity sensor elements form the basis of these sensors. An electrode system, a moisture-sensitive polymer layer and a gold layer that is permeable to vapour are situated on a small thin glass or ceramic substrate.

Since the hygroscopic polymer layer can absorb water molecules that alter its dielectric constant, this layered system acts as a moisture-dependant capacitor, whose capacitance is a measure of the surrounding relative humidity.

The change in capacitance is converted to an electrical output signal by electronics normally mounted on the humidity sensor element. Both parts form a capacitive humidity sensor that can be adjusted using humidity references. Accuracy is approximately ±2 % rH.

The transmitters offer a 4-20 mA analogue output for relative humidity and a second 4-20 mA output for temperature when specified.

Application Examples

- Monitoring air conditioning systems, drying plant, humidifiers and dehumidifiers
- Bakery technology
- Warehousing
- Ripening warehouses for food
- R & D (e.g. environmental engineering)
- Household
- Greenhouses

Technical Details

Humidity

Measuring range:	0...100 % r.F.
Measuring accuracy:	±2 % rF (for range 5...95 % rH and 10...40 °C)
Additional measurement error:	0.1 %/K (at <10 °C, >40 °C)
Response time (T 90 at 1 m/s):	1 min
Analogue output:	4...20 mA
Max load:	1000 Ω

Temperature

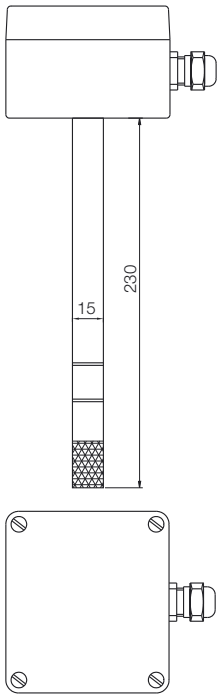
Measuring element:	Pt 100, category B (according to DIN IEC 751)
Measuring range:	-25...+125 °C for AFK-G1 (standard version, duct mounting) -25...+125 °C for AFK-G3 (high pressure version) 0...200 °C for AFK-G2 (high-temperature version) -20...+80 °C (standard variant)
Measuring accuracy:	±0,3 K
Additional error:	(<10 °C, >40 °C) ±0.07 %/10 K
Analogue output:	4...20 mA
Max load:	1000 Ω
Response time (T 90 bei 1 m/s):	1 min

General

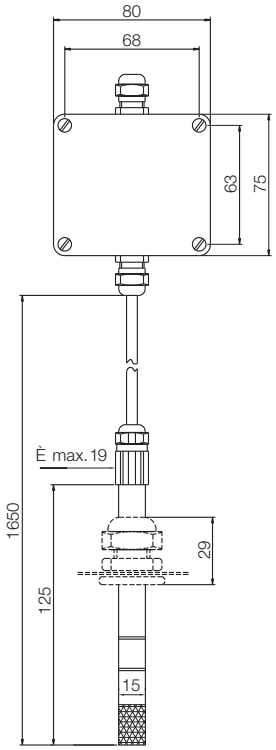
Ambient temperature:	
Transmitter:	-40...+80 °C
Sensor (standard, (duct mounting):	-40...+125 °C
Sensor (high pressure):	-40...+125 °C
Sensor (high temp.):	-60...+200 °C
Sensor (standard, wall mounting):	-40...+80 °C
Ambient pressure:	atmospheric to 25 bar (high pressure version)
Operating voltage:	12...30 V_{DC}
Power input:	24 mA each meas. channel
Degree of protection:	
Messumformer:	IP 54
Sensor:	IP 40
Material:	
Transmitter:	diecast aluminium
Sensor:	stainless steel
Electromagnetic compatibility:	
Noise immunity:	EN 50082-2
Emitted interference:	EN 55011 Kl. B
Weight:	approx. 0.4 - 0.6 kg (depending on version)

Dimensions

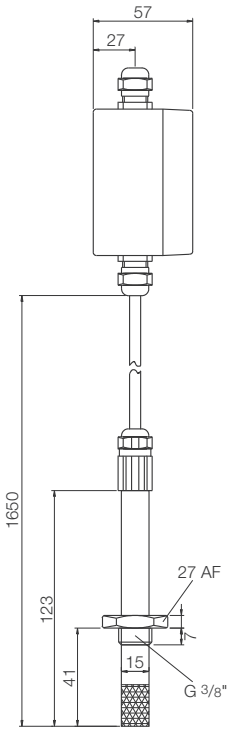
Standard version (duct mounting)



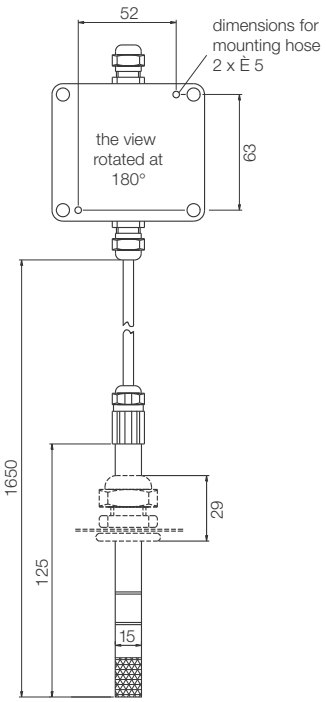
High temperature version



High pressure version



Mounting dimensions



Order Details (Example: **AFK-G 1 F**)

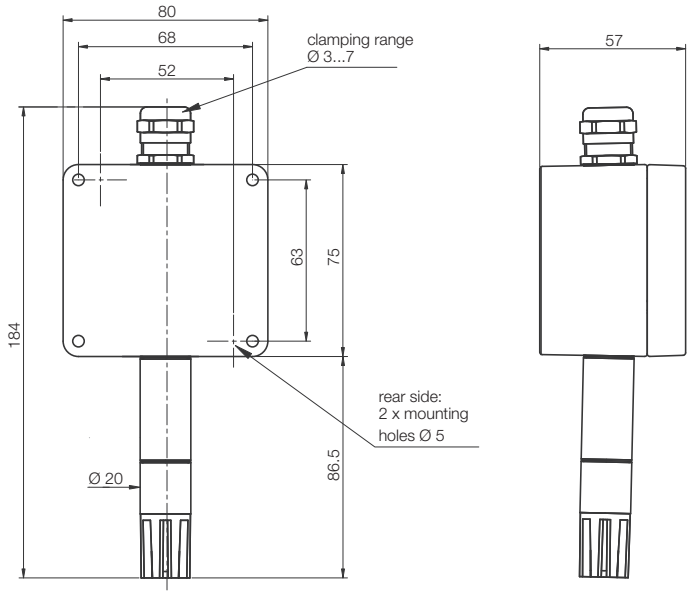
Model	Description	Instrument version	Measuring parameter
AFK-G	humidity measuring instrument	**1** = standard version duct mounting, t_{max}: 125 °C **2** = high temperature version t_{max}: 200 °C **3** = high pressure version p_{max}: 25 bar, t_{max}: 125 °C **4** = standard version wall mounting, t_{max}: 80 °C	**F** = humidity **T** = humidity and temperature

Accessories

Mounting plate for duct mounting
Model AFK-GB
(details see following page)

Dimensions

Standard version
(wall mounting)



Accessories
Mounting plate for duct mounting
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