



Humidity/Temperature- Measuring Instrument

hygrometric method of measurement



measuring
•
monitoring
•
analysing

AFH-G



- Relative humidity and temperature measurements
- Recommended operating range: 30...100 % rH, -30...+80 °C
- For indoors and air ducts
- Passive and active sensors available
- Robust and insensitive to dirt
- Sensor cleanable
- Hygrometric method of measurement



Analysis

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KOBOLD Messring GmbH
Nordring 22-24
D-65719 Hofheim/Ts.
☎ Head Office:
+49(0)6192 299-0
☎ Sales DE:
+49(0)6192 299-500
☎ +49(0)6192 299-23398
info.de@kobold.com
www.kobold.com



Description

The type AFH-G measuring instrument serves to measure relative humidity indoors and in air ducts. Auxiliary temperature measurement is available as an option.

The moisture sensing element in the sensor comprises several strips of plastic fabric each with 90 fibres of 3 µm diameter. These plastic fibres undergo a special process to acquire hygroscopic properties, this means that they absorb and release moisture. The molecular structure of the fibres changes when they absorb water, giving rise to a measurable change in length. The length of the plastic fibres is thus a measure of the relative humidity.

The swelling effect, acting primarily in the longitudinal direction, is sensed by an electronic pick-off system and transferred to an integrated signal preprocessing system. The output signal of the passive sensors is 100...138.5 Ω, and 4-20 mA for the active sensors.

The special treatment of the measuring element ensures that its hygroscopic properties remain stable, that is sensitivity is maintained until destroyed by external influence. Regeneration found in conventional instruments is not required here, but is also not damaging.

The measuring element is protected by a perforated tube and is open to the housing. Measuring instruments with an integrated temperature sensor provide temperature measurement. The temperatures are also converted to the standardized signals 100-138.5 Ω, and 4-20 mA.

Application Examples

- Monitoring air conditioning systems, drying plant, humidifiers and dehumidifiers
- Building management systems
- Warehousing
- Ripening warehouses for food
- R & D (e.g. environmental engineering)
- In the home
- Greenhouses
- Locations exposed to dust and dirt:
 - Brickworks
 - Grain dryers
 - Ceramic dryers
 - Bakery technology
 - Tobacco drying

Technical Details

Physical Details

Humidity

Measuring range:	0...100% rH
Measuring accuracy:	>40% rH: ±2.5% rH <40% rH: ±3.5% rH
Recommended operating range:	30...100% rH

Temperature

Measuring range:	passive sensors: +5...+80°C active sensors: -30...+60°C
Measuring accuracy:	±0.5°C
Measured medium:	air, pressureless, non-aggressive
Allowed ambient temperature:	at housing: -20...+60°C sensor: -40...+80°C
Average temperature coefficient:	-0.1% r.F./K (20°C and 50% rH)
Allowed air speed:	8 m/s with gauze protection (optional) 15 m/s
Half-life at V = 2 m/s:	1.2 min
Sensor length:	220 mm
Sensor material:	stainless steel
Mounting:	holes in housing base for duct mounting bracket for surface mounting (optional)
Installation position:	sensor vertical pointing down, or horizontal
Connection terminals:	for conductor cross-sections 0.5 mm
Cable connection:	self-sealing grommet M20 x 1.5
Electromagnetic compatibility:	
Noise immunity:	EN 50 082-2
Emitted interference:	EN 50 081-2
Housing:	ABS (Acrylnitril-Butadien-Styrol)
Protection:	IP 64
Weight:	approx. 0.4 kg



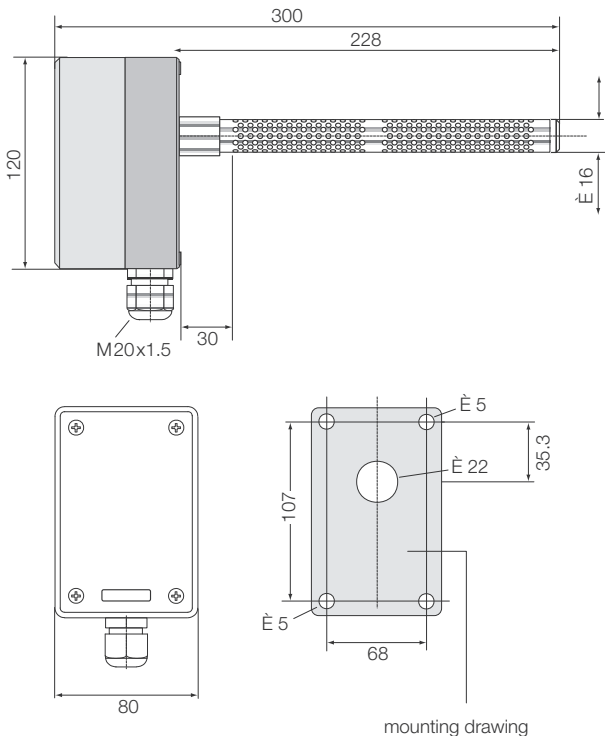
Electrical Data for Passive Sensors

Humidity
 (output 1): 100 ... 138.5 Ω linear, 2-wire
 Allowed loading: 1.0 watt
 Maximum voltage: 42 V
 Insulation resistance: 10 MΩ
 Temperature
 (output 2): Pt 100 according to DIN 43 760
 Allowed loading for air
 1 m/s and T=0.1 K: 2 mA

Electrical Data for Active Sensors

Humidity
 (output 1): 4 ... 20 mA, 2-wire system
 Temperature
 (output 2): 4 ... 20 mA, 2-wire system
 Operating voltage: 15 ... 30 V_{DC}
 Max. load for current output: 500 Ω
 Linearity error of temperature output: <0.5 %

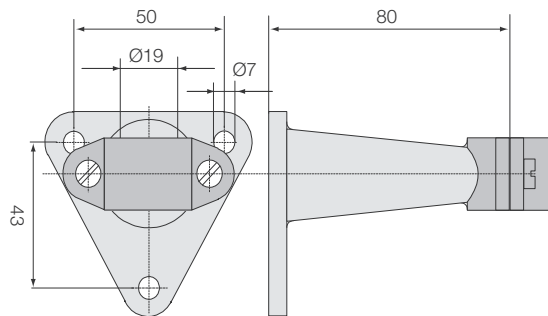
Dimensions



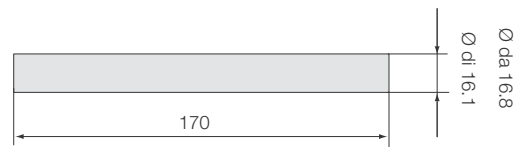
Installation

The installation position should be chosen so as to prevent condensed water from entering the housing. The preferred installation position is "sensor vertically pointing downwards" or "sensor horizontal". A grommet in the probe (0.8 mm diameter) prevents penetration of water in the installation positions described above.

Wall Mounting Set



Order Code Wall Mounting set: AFM



Order Code Gauze Protection: AFG

Order Details (Example: AFH-G 1 F)

Model	Description	Instrument version	Measuring parameter
AFH-G	humidity measuring instrument	1 = passive sensor 2 = active sensor	F = humidity T = humidity + temperature