

- Measuring range: 0-100% RH
  - Maximum accuracy to 180°C
  - Analogue outputs humidity and temperature scalable and configurable
  - High degree of resistance of sensor to chemicals
  - Sensor replacement without recalibration
- Optional:
- Plus package (Calculation of absolute humidity, dew point etc.)
  - Pressure-tight version to 15 bar
  - Display



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**Model:**  
AFK-E

**Description**

The measuring instruments AFK-E have been designed for the accurate measurement of humidity and temperature in industrial applications. They allow measurements in the range 0-100% RH and between -40°C and +180°C.

A capacitive humidity sensor element with excellent long-term stability, minimum hysteresis and high chemical resistance forms the basis for this highly accurate transmitter series.

The values for humidity and temperature are displayed on two analogue outputs. A scalable and selectable current signal in the range 4 to 20 mA or any voltage signal between 0 and 10 V are available for selection.

This flexibility is achieved with cutting-edge microprocessor technology, whereby the scaling and selection of the output signal is carried out with a user-friendly graphic interface running under MS Windows. The factory setting can thus be changed easily on site by the user.

In addition to measured values for humidity and temperature, transmitters with the plus-package supply the following values:

- Dew-point temperature
- Freezing point temperature
- Wet-bulb temperature
- Water-vapour partial pressure
- Mixing ratio
- Absolute humidity
- Specific enthalpy

The measured values are also output to an RS232 serial port for further processing by software.

**Application examples:****Control**

- Humidity of clean rooms
- Air-conditioning cabinets
- Cheese ageing rooms

**Drying**

- Ceramics
- Bricks
- Wood
- Pharmaceutical products
- Pasta & noodles

**Warehousing**

- Medicines
- Fruit and vegetables

**Technical details:****Characteristic data of humidity sensor**

|  |  |
|--|--|
| Measuring range:                                   | 0-100% RH                                  |
| Accuracy (including hysteresis and non-linearity): | ± 2% RH (0-90% RH)<br>± 3% RH (90-100% RH) |
| Temperature dependence of electronics:             | 0.06% RH/°C                                |
| Temperature dependence of sensor:                  | < 0.03% RH/°C                              |
| Response time $t_{90}$ at 20°C                     |  |
| without filter:                                    | < 6 s                                      |
| with st. steel sintered filter:                    | < 30 s                                     |
| with PTFE filter:                                  | 13.5 s                                     |
| with metal screen:                                 | 7 s  |

**Characteristic data of temperature sensor**

|  |                                    |
|--|------------------------------------|
| Measuring range:                       | -40 to +180°C                      |
| Sensor:                                | Pt 1000 (DIN EN 60751, category A) |
| Accuracy at 20°C:                      | ± 0.2°C                            |
| Temperature dependence of electronics: | 0.005°C/°C                         |

**Electrical characteristic data**

|   |               |                    |
|---|---------------|--------------------|
| Analogue outputs (selectable and scalable):         | 0 - 5 V       | < 1.0 mA           |
|   | 0 - 10 V      | < 1.0 mA           |
|   | 4 - 20 mA     | $R_L < 400 \Omega$ |
| Supply voltage:                                     | 24 V AC ± 15% |                    |
|   | 16-30 V DC    |                    |
| with optional plug-in power supply unit:            | 230 V AC      |                    |
| Current consumption                                 |               |                    |
| 2 x voltage output:                                 | 60 mA         |                    |
| 2 x current output:                                 | 100 mA        |                    |
| Current consumption with plug-in power supply unit: |               |                    |
| 2 x voltage output:                                 | 25 mA         |                    |
| 2 x current output:                                 | 25 mA         |                    |

**Communication**

|  |   |
|--|---|
| Serial port for PC communication:              | RS 232C   |
| System requirement for communication software: | IBM-compatible AT, 386/33 MHz or higher (with coprocessor), 5 Mbytes free memory, 4 Mbytes RAM, 3.5" disk drive, serial port, mouse (recommended), MS Windows 3.1 or higher |

## Humidity/Temperature Measuring Instrument

for Industrial Applications, Capacitive Method of Measurement · Model AFK-E



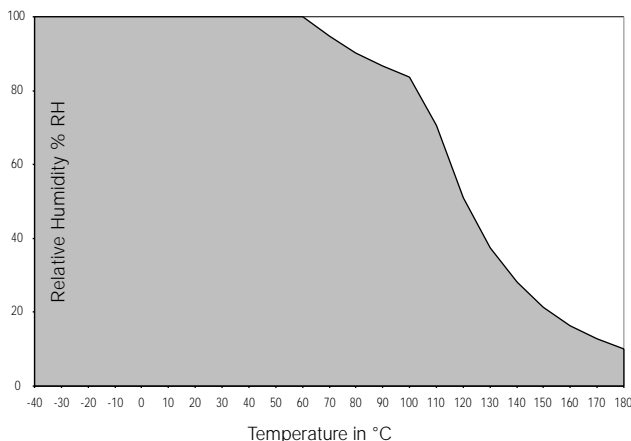
### General characteristic data

|   |  |
|---|--|
| Resistance to pressure                                      |  |
| Standard version:   | Atmospheric  |
| Pressure-tight version:                                     | to 15 bar  |
| Housing:  | aluminium  |
| Connection:   | Quickon cable gland  |
| Sensor protection:  | stainless steel sintered filter<br>(PTFE filter and metal screen optional) |
| Cable length:   | 2 m  |
| Operating temp. electronics:                                | -40 to +60°C   |
| Storage temperature:  | -30 to +60°C   |
| Operation and storage temperature for housing with display: | 0-40°C   |
| Electromagnetic compatibility                               |  |
| Noise immunity:   | EN 50082-1, EN 50082-2   |
| Emitted interference:                                       | EN 50081-1, EN 50081-2   |

### Availability of the following calculation functions with plus package (max. adjustable measuring ranges)

|                               |    |                           |
|-------------------------------|----|---------------------------|
| Dew-point temperature         | Td | -80 to 100°C              |
| Freezing point temperature    | Tf | -80 to 0°C                |
| Wet-bulb temperature          | Tw | 0 to 100°C                |
| Water-vapour partial pressure | e  | 0 to 1100 mbar            |
| Mixing ratio                  | r  | 0 to 999 g/kg             |
| Absolute humidity             | dv | 0 to 700 g/m <sup>3</sup> |
| Specific enthalpy             | H  | -50 to 2800 kJ/kg         |

### Operating range of humidity sensor \*



\*The grey area indicates the allowed measuring area for the humidity sensor.

Operating points outside this area do not cause damage to the element, however the specified measuring accuracy cannot be guaranteed.

### Accessories

- **Dustproof filter covers:**  
St. steel sintered filters: for tough industrial applications where the detecting sensors are exposed to strong mechanical and thermal stresses; serviceable to 180°C.



PTFE filter: for chemically aggressive environments and high temperatures, serviceable to 180°C (not with pressure-tight version)



Metal screen: with high humidity, danger of moisture condensation or with rapidly alternating humidity cycles, serviceable to 120°C (not with pressure-tight version)



- **External plug-in power supply unit with 1.5 m cable:**  
For direct connection to a supply voltage of 230 V AC.



- **RS 232 interface cable:**  
for configuration and scaling of transmitter
- **Stainless steel mounting flange:**  
For installation of humidity sensor in the duct



- **Humidity sensor with characteristic data:**  
For replacing the sensor element without recalibration

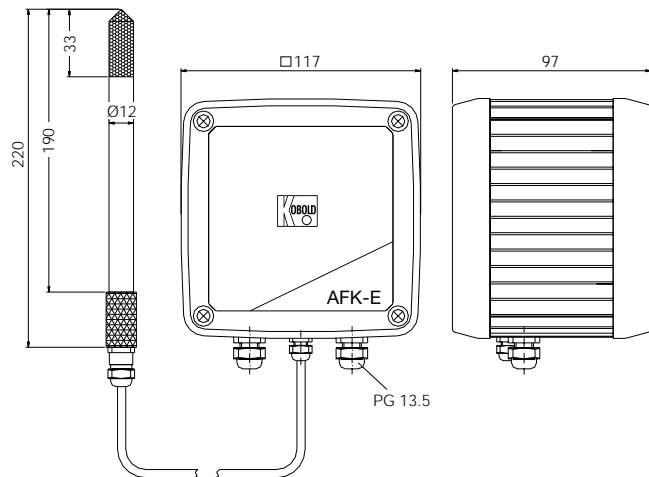
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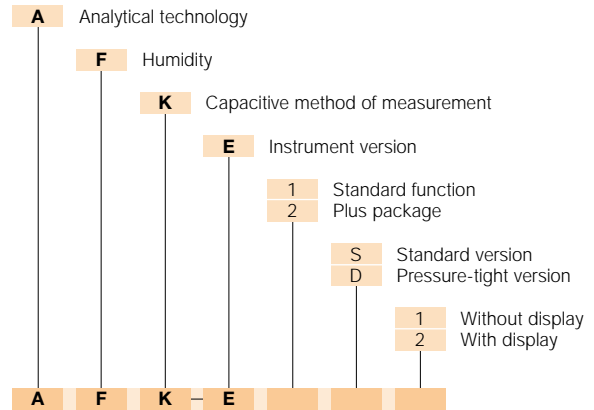


### Dimensions

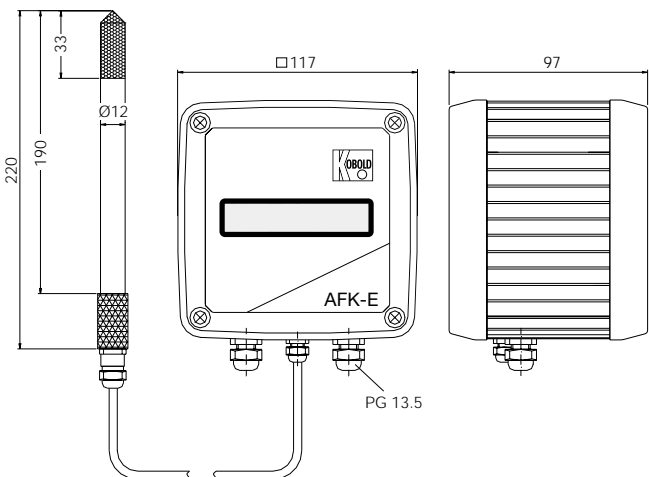
#### AFK-E



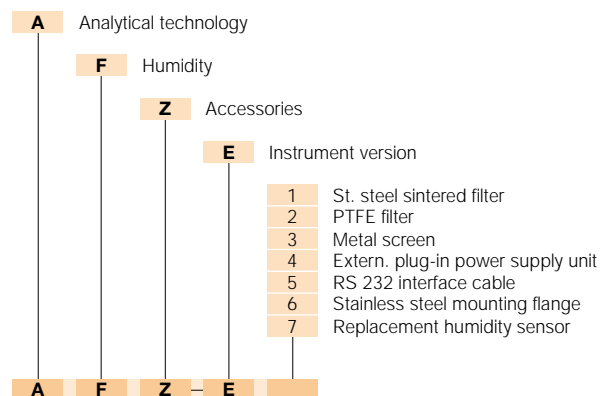
### Type codes



#### AFK-E 2 with display



### Type codes Accessories



### Wall mounting

