



D Series Sensors for Humidity and Temperature Measurement

Type DI Room version Optional display

- dynamic MELA® humidity sensing element
- with integrated measuring chamber
- easy to install
- operating temperatures up to 60°C

Technical data

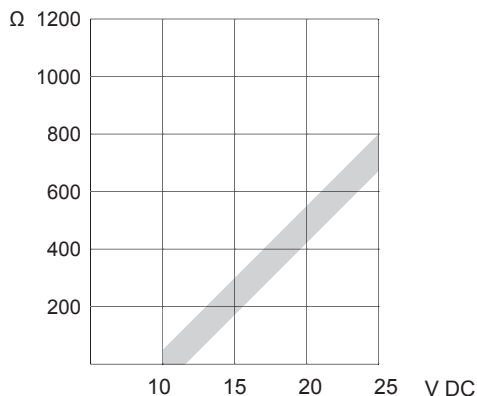
Humidity

| | |
|---|----------------------|
| measuring element | capacitive MELA FE09 |
| output range | 0...100 %RH |
| measuring uncertainty | |
| 40...60 %RH | |
| (at 23°C / U _B =24 V DC) | ±2.5 %RH |
| 10...40 %RH or 60...90 %RH | |
| (at 23°C / U _B =24 V DC) | ±3 %RH |
| influence of temperature (ref. to 23°C) | typ. ±0.05 %RH/K |

Temperature

| | |
|---|---|
| measuring element | Pt1000 |
| output ranges | 0...+50°C -30...+70°C 0...+100°C further ranges on request |
| measuring uncertainty | |
| (U _B =24 V DC) | |
| voltage output 10°C...40°C | ±0.25 K |
| current output 10°C...40°C | ±0.4 K |
| influence of temperature <10°C or >40°C | typ. ±0.01 K/K |

Load at current output



One special feature of the room version is the integral measuring chamber which is separate from the transmitter electronics. This ensures effective ventilation of the humidity and temperature sensing elements.

The measured values are analysed based on individually recorded calibration values in the flash memory and are digitally processed to issue the voltage and current signals.

The room version enclosure has a simple, robust locking mechanism. The transmitter electronics can be found in the upper section of the enclosure. Once the lower section has been installed in the chosen location, the upper section can be mounted and secured at a later date without the use of tools.

Electrical data

| | |
|---|---|
| outputs | 0...1 V 0...10 V 4...20 mA |
| voltage supply | see type survey |
| consumption of electronics (voltage output) | typ. 7 mA |
| min. load resistance (voltage output) | ≥10 kΩ |
| load R _L (current output) | $R_L(\Omega) = \frac{\text{voltage supply} - 10 \text{ V}}{0,02 \text{ A}} \pm 50 \Omega$ |

electromagnetic compatibility ref. EN 61326-1 and EN 61326-2-3

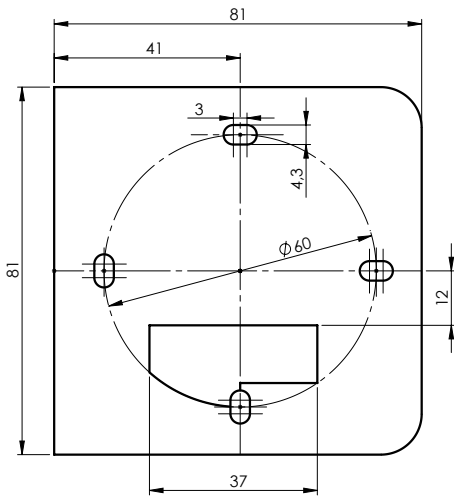
Options

| | |
|---------|---|
| display | 2 lines 3 digits + 1 decimal place display approx. 21 x 40 mm ² digit height approx. 8 mm |
|---------|---|

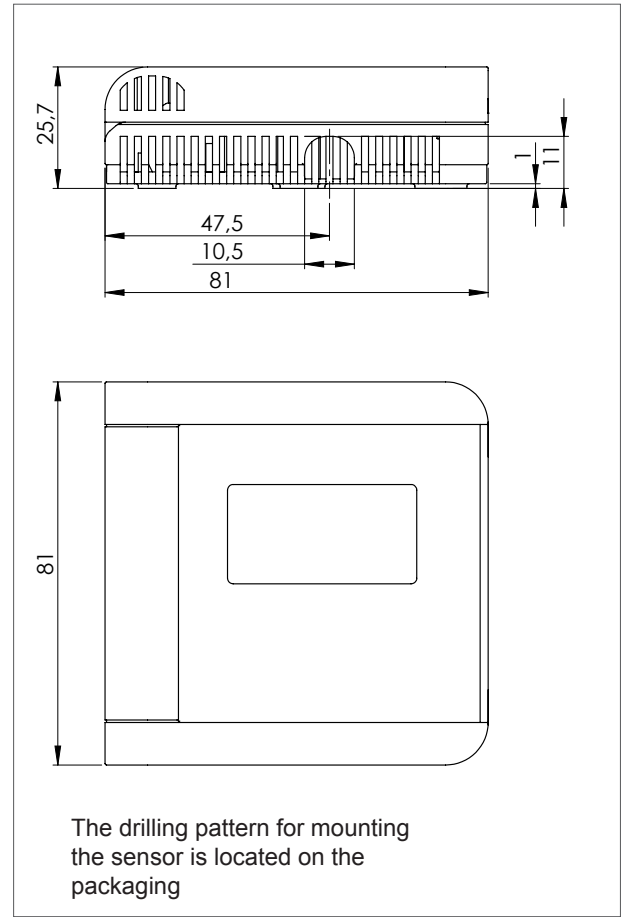
General data

| | |
|------------------------------------|-----------------------------------|
| measuring medium | air, pressureless, non-aggressive |
| operating temperatures | -30...+60°C |
| storage temperatures | -40...+85°C |
| connection | connecting terminals |
| wire diameter per connector | max. 1.5 mm ² |
| cable diameter | |
| → surface cable | max. 7 mm |
| | (5 mm recommended) |
| → in-wall cable | |
| see: mounting instructions, page 4 | |
| degree of protection | IP 30D |
| material of housing | ABS |
| color of housing | RAL 9003 / signal white |

Drilling pattern



Dimensions



Type survey DIF

Humidity sensor

| Type | Housing | Physical variable | Output signal corresponds to | Signal output | Voltage-supply U_B |
|------|----------------------------------|-------------------|------------------------------|---------------|------------------------------|
| DIF | Room version optional display | relative humidity | 0...100 %RH | 0...1 V | 6...30 V DC 6...26 V AC |
| | | | | 0...10 V | 15...30 V DC 13...26 V AC |
| | | | | 4...20 mA | 10...25 V DC |

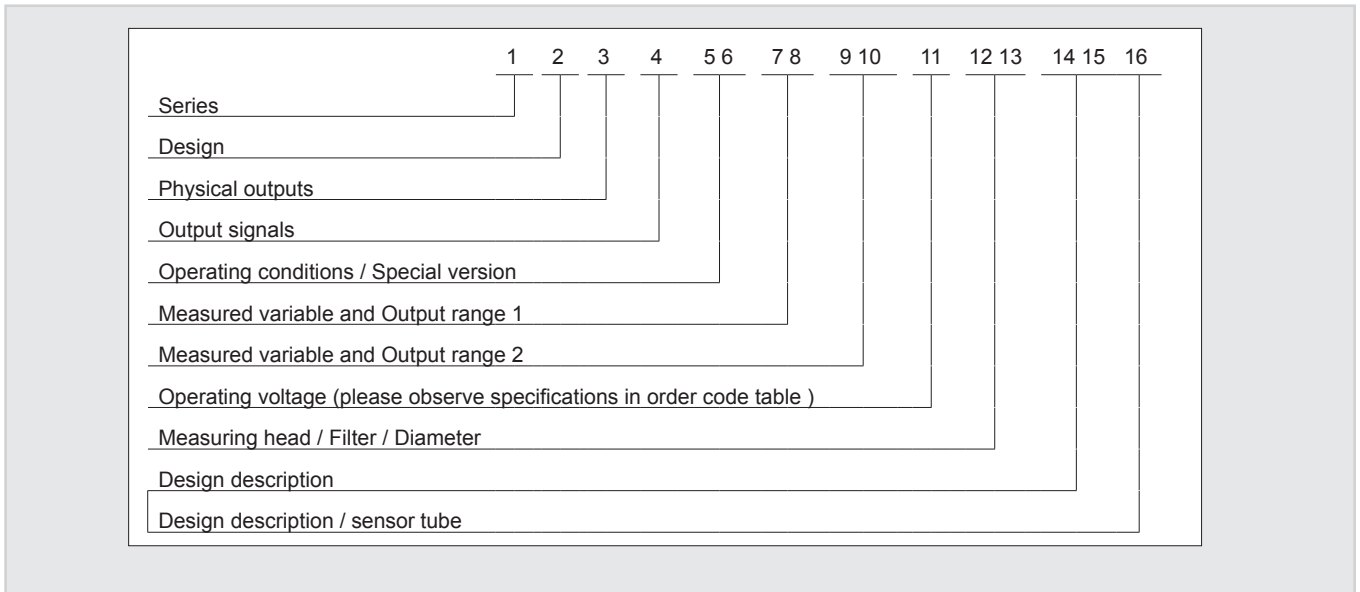
Type survey DIK

Humidity and temperature sensor

| Type | Housing | Physical variable | Output signal corresponds to | Signal output | Voltage-supply U_B |
|------|----------------------------------|-------------------|--|---------------|------------------------------|
| DIK | Room version optional display | relative humidity | 0...100 %RH | 2 x 0...1 V | 6...30 V DC 6...26 V AC |
| | | temperature | -30...+70°C 0...+100°C 0...+50°C | 2 x 0...10 V | 15...30 V DC 13...26 V AC |
| | | | | 2 x 4...20 mA | 10...25 V DC |

Product key D Series

Thanks to the hx-converter the D Series offer a wide range of types.
The product no. of each type consists of a 16-digit alpha numeric code that describes the sensor
The product key enables you to order the exact type of sensor for your application.



Order codes for the D Series product key

| Digit | Technical Data | Options | Order code |
|-------|---|-------------------------------------|------------|
| 1 | Series | D Series | D |
| | | Room version | I |
| 3 | Physical outputs | Humidity sensor | F |
| | | Sensor with 2 active output signals | K |
| 4 | Output signals | 2x 0...1 V | 1 |
| | | 2x 0...10 V | 2 |
| | | 2x 4...20 mA | 3 |
| 5 6 | Working conditions / special version | Standard | 00 |
| 7 8 | Measured variable and output range 1 and | Relative humidity 0...100 % RH | F1 |
| | | Temperature -30...70°C | 37 |
| 9 10 | Measured variable and output range 2 | Temperature 0...100°C | 01 |
| | | Temperature 0...50°C | 05 |
| | | No signal | 00 |

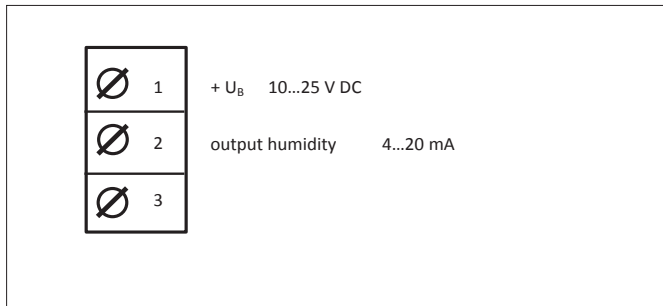
| Digit | Technical Data | Options | Order code |
|--|--|------------------------------------|-------------------|
| 7 8 | Measured value and output range 1 | Dew point -20...70°C Td | D2 |
| 9 10 | Measured value and output range 2 hx-values (as shown on the right) only available for industrial versions DKK and DWK | Enthalpy 0...80 kJ/kg | H1 |
| | | Mixing ratio 0...100 g/ kg dry air | X3 |
| | | Absolute humidity 0...100 g/m³ | A3 |
| | | Absolute humidity 0...20 g/m³ | A1 |
| | | Wet bulb temperature -10...50°C | W1 |
| | | No signal | 00 |
| | | 11 | Operating voltage |
| 15...30 V DC or 13...26 V AC / Sensors w. 0...10 V output signal | F | | |
| 10...25 V DC w. 4...20 mA output signal | A | | |
| | | Room version without filter | 00 |
| | | Room version without display - | 00 0 |
| | | Room version with display - | 0D 0 |

Order example

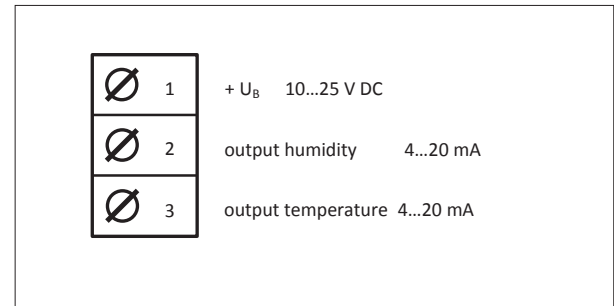
| | D | I | K | 2 | 00 | F1 | 37 | F | 00 | 0D | 0 |
|---|-------------------------------|---|---|---|----|----|----|---|----|----|---|
| Series: | D Series | | | | | | | | | | |
| Design: | Room version | | | | | | | | | | |
| Physical outputs: | 2 active output signals | | | | | | | | | | |
| Output signals: | 2 x 0...10 V | | | | | | | | | | |
| Working conditions / Special version: | Standard | | | | | | | | | | |
| Measured value and output range 1: | 0...100% RH | | | | | | | | | | |
| Measured value and output range 2: | -30...70°C | | | | | | | | | | |
| Operating voltage (Please observe specifications in the order code table) | 15...30 V DC / 13 ... 26 V AC | | | | | | | | | | |
| Measuring head / Filter / Diameter: | -- | | | | | | | | | | |
| Design description / options | room version with display | | | | | | | | | | |

Connection diagrams

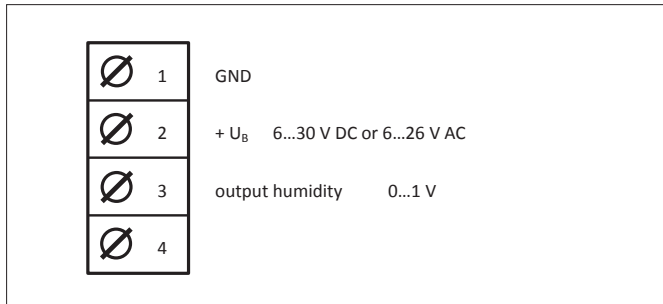
DIF 4...20 mA



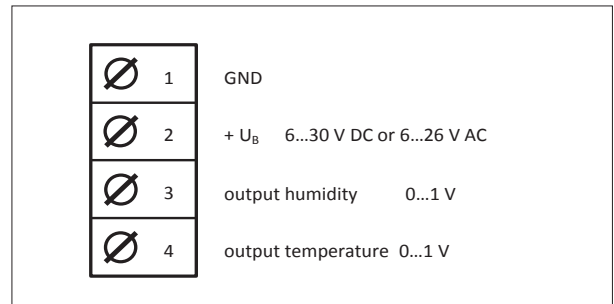
DIK 2 x 4...20 mA



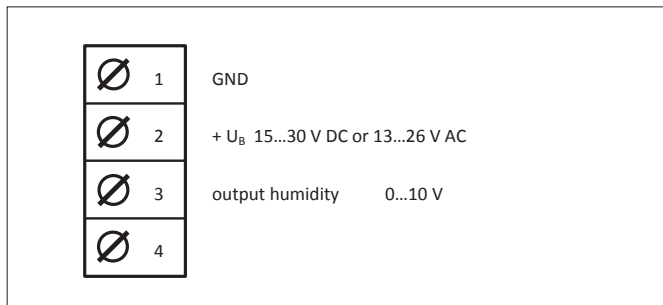
DIF 0...1 V DC



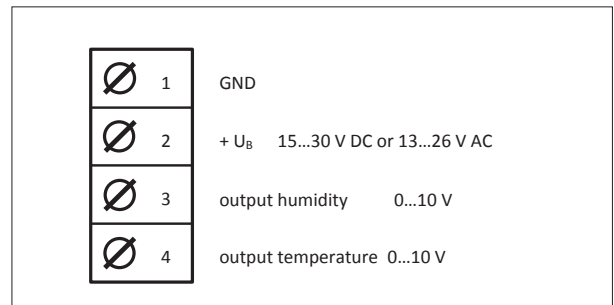
DIK 2 x 0...1 V DC



DIF 0...10 V DC



DIK 2 x 0...10 V DC



ESD protection advice

The sensors of the D Series contain components, which can be damaged by the effects of electrical fields or by charge equalisation when touched.

The following protective measures must be taken when the housing of the sensor is to be opened for connection:

- Before opening the housing of the sensor, ensure electrical potential equalisation between you and your environment.
- Pay particular attention to ensure that this potential equalisation is maintained while you are working with the opened housing.

Mounting instructions

Position

Install the sensor at a place where characteristic levels of humidity occur. The measuring chamber should be located in streaming air. Avoid installation next to heaters, doors or on outer walls. Avoid places exposed to the sun.

Mounting on a patress

When mounting the sensor on a patress, avoid external air getting onto the measuring elements of the sensor by sealing it appropriately.

Connection to surface and in-wall cable

In order to insert the connection cable, prise the pre-cut part of the housing's base part open.

In order to insert a on-wall cable, the bars of the immersed part of the housings side can be removed.

Opening the housing

Apply a flat-headed screwdriver at the top in the locking slot and press inwards until the housing springs open.



Connection

The electrical connection must be carried out by properly qualified personnel only.

The sensor contains sensitive electrical components. When opening the housing, make sure you comply with the electrostatic discharge precautions.

Please pay attention to the voltage supply-adapted load (see diagram on page 2) when using sensors with a current output.

Lines to and from the sensor must not be installed parallel to strong electromagnetical fields.

If there is any chance of an electrical surge, please install surge protection devices.

User instructions

Dew formation

Dew formation does not damage the sensor, although measurement readings are corrupted until all moisture on and around the sensing element has dried up completely.

Damaging influences

Depending on type and concentration, agents that are corrosive and contain solvents, can result in faulty measurements and can cause the sensor to break down.

Substances deposited on the sensor (e. g. resin aerosols, lacuer aerosols, smoke deposits etc.) are damaging as they eventually form a water-repellent film.

This information is based on current knowledge and is intended to provide details of our products and their possible applications. It does not, therefore, act as a guarantee of specific properties of the products described or of their suitability for a particular application. It is our experience that the equipment may be used across a broad spectrum of applications under the most varied conditions and loads. We cannot appraise every individual case. Purchasers and/or users are responsible for checking the equipment for suitability for any particular application. Any existing industrial rights of protection must be observed. The quality of our products is guaranteed under our General Conditions of Sale. Data sheet DI_E. Issue July 2017. Subject to modifications.