**Product info sheet no. C 2.4**  
**Humidity/temperature sensor**

**Meteorological design**

*Mela*-humidity/temperature sensors in the PC-ME series with a fixed connecting cable (5 m), PK-ME series without cable or RC-ME series with a robust aluminium connecting head and terminal screws are compact sensors in a rod-type design. They have a high degree of accuracy and have been specially developed for meteorological applications. All the sensors in the series are fitted with the ZE20-type membrane filter.

We recommend that you use the version with the ZE 21/ZE22 type sintered high-grade steel filter (filter programme see product info sheet no. F 5.1) at high wind speeds or if the sensor is exposed to salt mist, sand or dust (near the sea, industrial estates etc.). The advantage of the .../9 series is the improved temperature dynamics, in particular at low air speeds.

1) In the series .../9 it is not possible to exchange the protective plastic basket ZE16 with other filters.

### Type Versions

<table>
<thead>
<tr>
<th>Measured variable</th>
<th>Output signals with filter ZE20 or ZE21 Pt-100 platinum chip</th>
<th>with integrated PTFE filter protection ZE16 Pt-100 glas</th>
</tr>
</thead>
<tbody>
<tr>
<td>F rel. humidity</td>
<td>0...10 V, FRC 3/x - ME</td>
<td>FRC 3/9 - ME</td>
</tr>
<tr>
<td>C r.h. + temp.</td>
<td>0...1 V, CRC 3/x - ME</td>
<td>CRC 3/9 - ME</td>
</tr>
<tr>
<td>T temperature</td>
<td>Pt 100, TRC 5/x - ME</td>
<td>TRC 5/9 - ME</td>
</tr>
<tr>
<td>weight</td>
<td>approx. 310 g</td>
<td>approx. 300 g</td>
</tr>
</tbody>
</table>

Sensor with 5 m cable  
Sensor without cable

* = C  
* = K  

<table>
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<tr>
<th>Measured variable</th>
<th>Output signals with filter ZE20 or ZE21 Pt-100 platinum chip</th>
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</tr>
</thead>
<tbody>
<tr>
<td>F rel. humidity</td>
<td>4...20 mA, FRC 3/x - ME</td>
<td>FRC 3/9 - ME</td>
</tr>
<tr>
<td>C r.h. + temp.</td>
<td>0...10 V, CRC 3/x - ME</td>
<td>CRC 3/9 - ME</td>
</tr>
<tr>
<td>T temperature</td>
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</table>

*) further temperature measuring elements on demand  
/
x please select the appropriate filter (refer also to data sheet F5.1)  
Series P*, RC

- membrane filter ZE20  
- sintered high-grade steel filter ZE21

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**Technical Data**

**Output 1: relative humidity**

measuring range 1  
0...100% rh  
accuracy (5...95%rh at 10...40°C)  
±2% rh  
influence of temperature <10°C, >40°C  
<0.1%K additional

**Output 2: temperature**

measuring range 2  
-30...+70°C  
output signal 2  
0...1V, 0...10V or 4...20mA  
accuracy  
0...1V (-27...70°C)  
±0.2 K  
0...10V (-20...70°C)  
±0.2 K  
4...20mA (RC)  
±0.3 K  
influence of temperature <10°C, >40°C  
±0.007 K/K additional measuring element (ref. DIN EN 60751)  
Pt 100 1/3 DIN class B

**Other data**

ambient temperature  
-40...+80°C  
degree of protection sensor/electronic  
IP 30/IP 65  
operating voltage  
voltage output 0...10V  
15...30 V DC  
voltage output 0...1V  
6...30 V DC  
current output  
≥10 kΩ or ≥2 kΩ  
load (current output)  
acc. diagramm  
power consumption  
0...10 V, 2 x 0...1V  
<5mA  
0...1V  
<1mA  
minimum air speed always at right angles to the sensor  
output: 0...10V, 2 x 0...1V  
≥0.5 m/s  
4...20mA, 2 x 0...10V  
≥1 m/s  
2x 4...20mA  
≥1.5 m/s  
self-heating coefficient Pt100 (v=2 m/s in air)  
0.2 K/mW  
Directive about electromagnetic compatibility  
2014/30/EU  
DIN EN 61326-1  
issue 07/13  
DIN EN 61326-2-3  
issue 07/13

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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 perfect quality of our products is guaranteed under our General Conditions of Sale. Issue: November 2017 C24_E. Subject to modifications.
Install the Mela®-humidity/temperature sensors in a place where characteristic climatic conditions can be measured. If it is used outdoors, it should ideally be used in a ZA 161/1-type weather guard (product info sheet no. F 5.1). Avoid direct sunlight.

The specified minimum air speed and - with current output - the load according to the operating voltage (diagram) should be complied with in the case of the VC series. Deviations may lead to additional measuring faults resulting of the self-heating of the sensor.

The sensor can be installed in any position. However, do avoid positions where water ingress can occur. Dew formation and splashes do not damage the sensor, although corrupted measurement readings are recorded until all the moisture on the filter has dried up.

In order to maintain interference immunity in accordance with EN 61326 when it is in use, we recommend that you use a screened cable (type recommended: 8x AWG 26 C UL, order no. 5339) for connecting the RC and PK series sensors, and have this fitted into the sensor’s EMC conduit thread by a qualified electrician. The protective filter should only be screwed off carefully to check functioning with a humidity standard.

It is important not to touch the highly sensitive sensor element in the process. If necessary, soiled filters can be screwed off and rinsed. When you screw them back on, bear in mind that sensors will not measure accurately again until they are completely dry. Sensors of the series.../9 can be completely and carefully cleaned in distilled water. It is not possible to exchange the PTFE filter on the humidity sensor element. For mounting support we recommend the console type 20.009 or the attachment plate type ZA 20 (product info sheet no. F 5.1). In order to check functioning in the place of installation, we recommend that you use the ZE 31/1-type Mela® humidity standard (product info sheet no. F 5.2).

Please consult the application notes for humidity sensing elements (product info sheet no. A 1) or check with the manufacturer for further information which you need to bear in mind when using humidity sensors with capacitive sensing elements.
The electrical connection must only be carried out by properly qualified personnel.
**Temperature sensor**

**Output: 0...10V**

(TPC 2/...-ME)

- Operating voltage: 15...30V DC
- Output temperature: 0...10V

**Temperature sensor**

**Output: 0...1V**

(TPC 1/...-ME)

- Operating voltage: 6...30V DC
- Output temperature: 0...1V

**Temperature sensor**

**Output: Pt100**

(TPC 5/...-ME)

- Shield: red
- Operating voltage: 15...30V DC
- Output temperature: Pt100

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**Humidity/temperature sensors**

Meteorological design  series PC-ME

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**Connection diagram**

The electrical connection must only be carried out by properly qualified personnel.
Humidity/-temperature sensor
Output: 2 x 0...10V
(KPK 2/...-ME)

Humidity sensor
Output: 0...10V
(FPK 2/...-ME)

Humidity sensor
Output: 0...1V
(FPK 1/...-ME)

Humidity sensor
Output: 0...10V
(FPK 2/...-ME)

Humidity/-temperature sensors
Meteorological design series PK-ME

The electrical connection must only be carried out by properly qualified personnel.
Humidity/-temperature sensors
Meteorological design series PK-ME

Connection diagram

Temperature sensor
Output: 0...10V
(TPK 2/...-ME)

humidity
+ T
- T
output
temperature
0...10V

Temperature sensor
Output: 0...1V
(TPK 1/...-ME)

humidity
+ T
- T
output
temperature
0...1V

Temperature sensor
Output: Pt100
(TPK 5/...-ME)

humidity
+ T1
- T1
output
temperature
Pt100

Temperature sensor
Output: Pt100
(TPK 5/...-ME)

humidity
+ T2
- T2
output
temperature
Pt100

The electrical connection must only be carried out by properly qualified personnel.
Humidity/-temperature sensors
Meteorological design series RC-ME

Connection diagram

Humidity/-temperature sensor
Output: 2 x 0...10V
(KRC 2/...-ME)

Humidity/-temperature sensor
Output: 2 x 0...1V
(KRC 1/...-ME)

Humidity/-temperature sensor
Output: 2 x 4...20mA
(KRC 3/...-ME)

Humidity/-temperature sensor
Output: 4...20mA, Pt100
(CRC 3/...-ME)

Humidity/-temperature sensor
Output: 0...10V, Pt100
(CRC 2/...-ME)

Humidity/-temperature sensor
Output: 0...1V, Pt100
(CRC 1/...-ME)

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

Operating voltage: 12...30V DC
Output humidity: 0...10V
Output temperature: 0...10V

Operating voltage: 6...30V DC
Output humidity: 0...1V
Output temperature: 0...1V

Operating voltage: 15...30V DC
Output humidity: 4...20mA
Output temperature: 4...20mA

Operating voltage: 15...30V DC
Output humidity: 0...10V
Output temperature: 0...10V

Operating voltage: 6...30V DC
Output humidity: 0...1V
Output temperature: 0...1V
Connection diagram

Humidity sensor
Output: 0...10V
(FRC 2/...-ME)

- H
+ 
- shield

+ operating voltage
15...30V DC
- output humidity
0...10V

Humidity sensor
Output: 0...1V
(FRC 1/...-ME)

- H
+ 
- shield

+ operating voltage
6...30V DC
- output humidity
0...1V

Temperature sensor
Output: 4...20mA
(TRC 3/...-ME)

+ operating voltage
12...30 V DC
- output temperature
4...20 mA

Temperature sensor
Output: 0...10V (TRC 2/...-ME)

+ operating voltage
15...30V DC
- output temperature
0...10V

Temperature sensor
Output: Pt100
(TRC 5/...-ME)

+ T1
- T2

output temperature
Pt100

Temperature sensor
Output: 4...20mA
(FRC 3/...-ME)

+ H
- 
+ shield

+ operating voltage
12...30V DC
- output humidity
4...20mA

Temperature sensor
Output: 0...1V
(TRC 1/...-ME)

+ T
- 
+ shield

+ operating voltage
6...30V DC
- output temperature
0...1V

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