Galltec +mela

Product info sheet no. C 2.5
Humidity/-temperature sensors
Compact sensors with plug-in connection

CE

Description

Mela®-**humidity/-temperature sensors** in the PC.S and PC.S-ME series are compact sensors in a rod-type design with plug-in connection to measure relative humidity and temperature (individually or together) with high precision in air and other non-aggressive gases. They can be used for a wide range of applications.
The scope of delivery includes the coupling plug without a cable. All the sensors in the series are equipped with a **ZE 17-type** gauze filter (resp.   **ZE 20** membrane filter for -ME design). We recommend that you use the version with the **ZE 21/22 ¹⁾** type sintered high-grade steel filter at high wind speeds or if the sensor is exposed to salt mist, sand or dust (near the sea, industrial estates etc.).
(filter programme see product info sheet no. F 5.1).
In the .../9 series the humidity sensor element is directly protected by a PTFE filter. The advantage of this is the improved temperature dynamics, in particular at low air speeds. In the …./9-ME series a glass Pt-100 is used.

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

Technical data

Humidity
measuring range .... 0...100% rh
accuracy (MR 5...95% rh at 10...40 °C) .... ±2% rh
  at <10 °C, >40 °C .... <0.1%/K additional

Temperature
measuring element (ref. DIN EN 60751) .... Pt 100 class B
  (class 1/3 DIN for -ME design)
measuring range .... -30...70°C
accuracy
  output: 0...1V (-27...80°) .... ±0.2 K
    0...10V (-29...80°C) .... ±0.2 K
    4...20mA .... -0.3 - 0.6 K
      (depending on the air speed)
    at <10°C, >40°C .... ±0.007K/K additional

Other data
ambient temperature .... -40...+80°C
degree of protection sensor/electronic IP30/IP65
degree of protection coupling IP40
degree of protection coupling in -ME design IP67
operating voltage
  current output .... 12...30V DC
  voltage output 0...10 V .... 15...30V DC
  voltage output 0...1 V .... 6...30V DC

load resistance 0...10 V/0...1 V .... ≥10kΩ/≥2 kΩ
load (current-output) .... acc. diagramm
power consumption
  0...10V, 2x 0...1V .... approx. 5mA
  0...1V .... < 1mA
minimum air speed (across the sensor):
  output: 0...10V, 2x 0...1V .... ≥0.5 m/s
    4...20mA, 2x 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
electromagnetic compatibility EN 61326-2-3

Type versions

Measured variable	Analogue output	Type Standard	Type Meteorology
F relative humidity	0...1 V	FPC1.S/x	FPC1.S/x-ME
	0...10 V	FPC2.S/x	FPC2.S/x-ME
	4...20 mA	FPC3.S/x	
C r.h. + T (passive)	0...1V + Pt100	CPC1.S/x	CPC1.S/x-ME
	0...10 V + Pt100	CPC2.S/x	CPC2.S/x-ME
	4...20 mA + Pt100	CPC3.S/x	
K r.h. + T (active)	2 x 0...1 V	KPC1.S/x	KPC1.S/x-ME
	2 x 0...10 V	KPC2.S/x	KPC2.S/x-ME
	2 x 4...20 mA	KPC3.S/x	
T temperature	0...1 V	TPC1.S/x	TPC1.S/x-ME
	0...10 V	TPC2.S/x	TPC2.S/x-ME
	4...20 mA	TPC3.S/x	
	Pt100	TPC5.S/x	TPC5.S/x-ME
weight	approx. 81 g		

/x please select the appropriate filter (refer also to data sheet F5.1)

Type standard gauze filter **ZE17** → **x=5**
Type meteorology membrane filter **ZE20** → **x=5**
Sintered high-grade steel filter **ZE21** → **x=6**
with integrated PTFE filter and protective basket **ZE16** → **x=9**

special types on demand

Application recommendations

Install the Mela®-humidity/temperature sensors at a place in the room, plant or equipment where characteristic levels of humidity occur. Avoid installing them close to heaters or windows or against outside walls.

The specified minimum air speed and - with current output - the load according to the operating voltage (diagram) should be complied with. 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 can enter. 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 61326-2-3 when it is in use, we recommend that you use a screened cable for connecting the sensors, and have this fitted to the sensor's attachment plug by a qualified electrician.
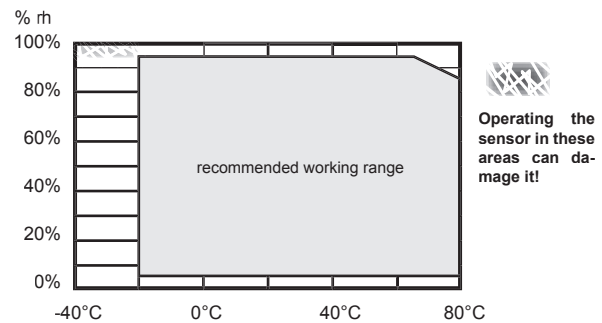
The protective filters should only be screwed off carefully to check functioning with the humidity standard.

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.
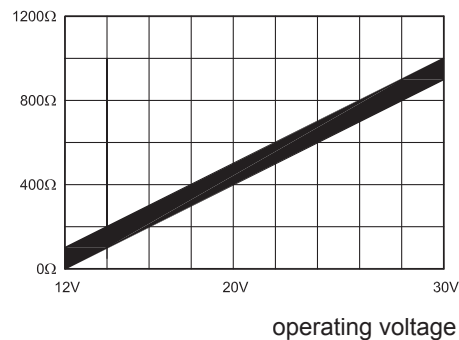
For mounting support we recommend the **console type 20.009** or the **attachment plate type ZA 20** (product info sheet no. F 5.1). In order to check functioning in the place of installation, we recommend that you use the **ZE 31/1-type** Mela® **humidity standard** (product info sheet no. F 5.2).

Please consult the *application instructions for the 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.
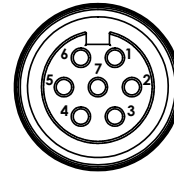
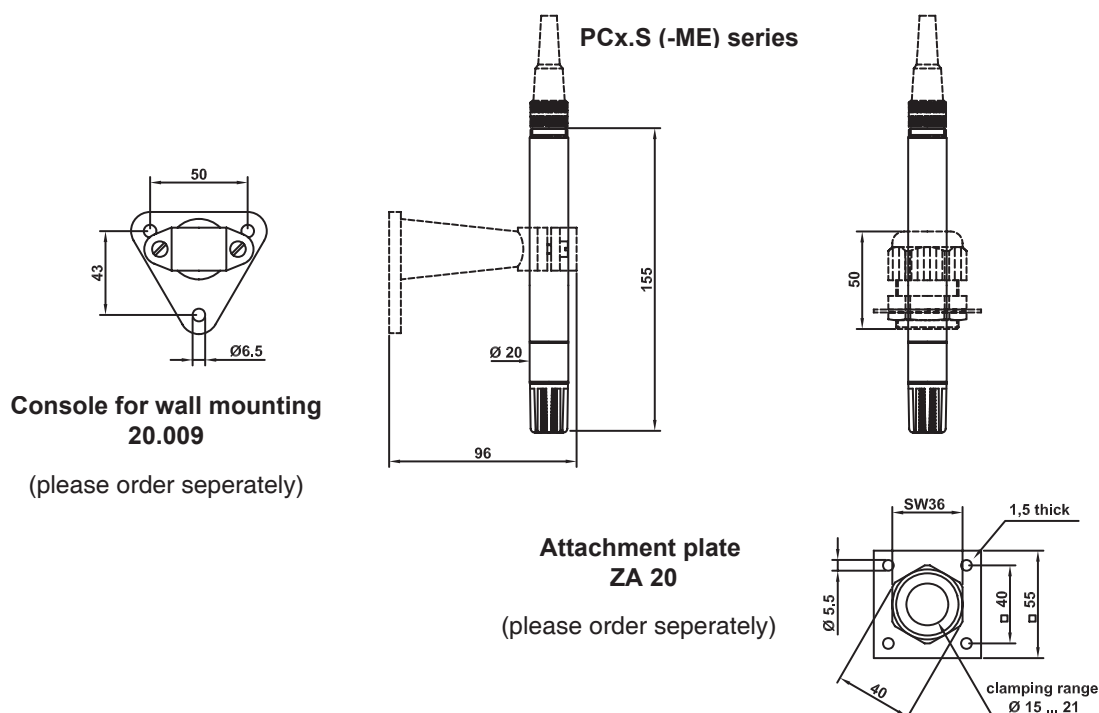### Tolerance validity range for humidity

recommended working range

Operating the sensor in these areas can damage it!

Load at current output:

operating voltage

Position of the sensor connections:

Dimensions

PCx.S (-ME) series

Console for wall mounting 20.009

(please order seperately)

Attachment plate ZA 20

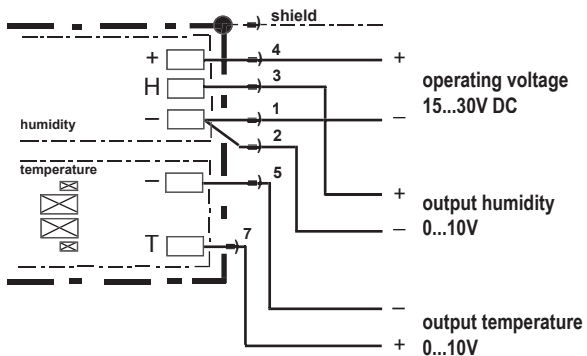(please order seperately)

Connection diagram

Humidity/- temperature sensors
Compact sensors with plug-in connection
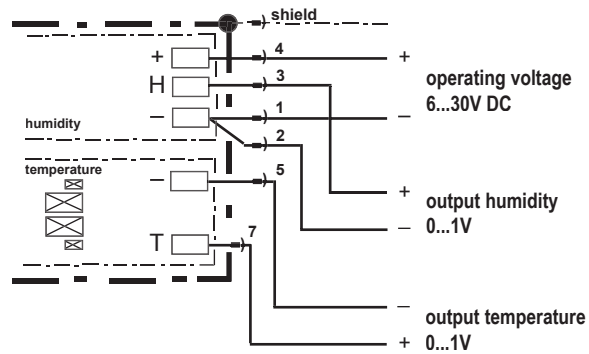series .S, .S-ME

Humidity/-temperature sensor
Output: 2 x 0...10V
(KPC2.S/x , -ME)

shield

+ 4 + operating voltage
H 3 15...30V DC
1
– 2

humidity

temperature

– 5 + output humidity
– 0...10V
T 7

– output temperature
+ 0...10V

Humidity/-temperature sensor
Output: 2 x 0...1V
(KPC1.S/x , -ME)

shield

+ 4 + operating voltage
H 3 6...30V DC
1
– 2

humidity

temperature

– 5 + output humidity
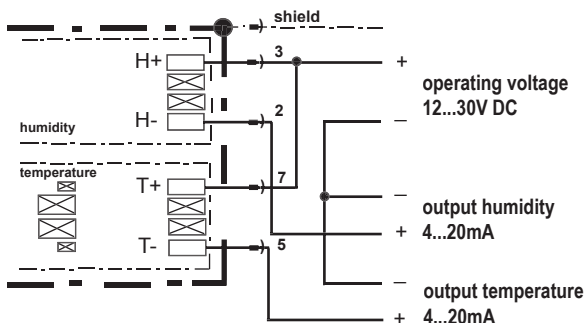– 0...1V
T 7

– output temperature
+ 0...1V

⚠ The electrical connection must only be carried out by properly qualified personnel.
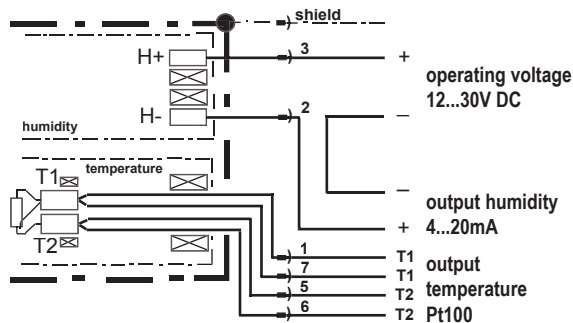
Humidity/-temperature sensor
Output: 2 x 4...20mA
(KPC3.S/x)

shield

H+ 3 + operating voltage
12...30V DC
H– 2 –

humidity

temperature

T+ 7 – output humidity
+ 4...20mA
T– 5

– output temperature
+ 4...20mA

Humidity/-temperature sensor
Output: 4...20mA, Pt100
(CPC3.S/x)

shield

H+ 3 + operating voltage
12...30V DC
H– 2 –

humidity

temperature

T1 –
output humidity
+ 4...20mA
T2

1 T1
7 T1 output
5 T2 temperature
6 T2 Pt100

Humidity/-temperature sensor
Output: 0...10V, Pt100
(CPC2.S/x , -ME)

shield

+ 4 + operating voltage
H 3 15...30V DC
2
–

humidity

temperature

T1
+ output humidity
– 0...10V
T2

1 T1
7 T1 output
5 T2 temperature
6 T2 Pt100
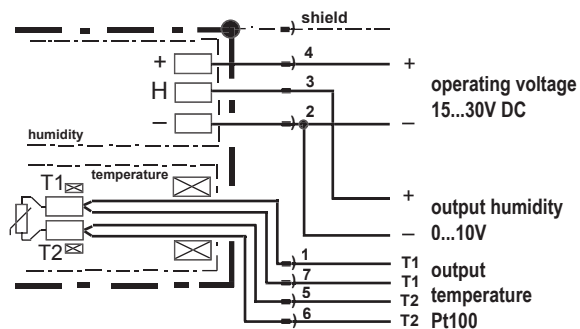
Humidity/-temperature sensor
Output: 0...1V, Pt100
(CPC1.S/x , -ME)
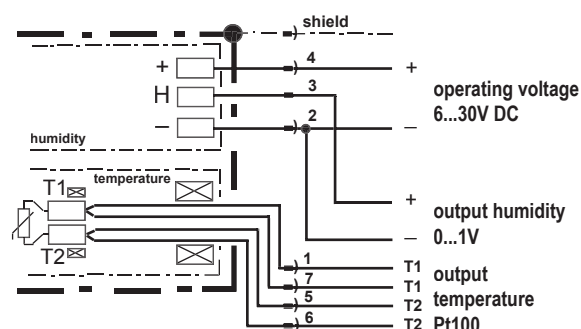
shield

+ 4 + operating voltage
H 3 6...30V DC
2
–

humidity

temperature

T1
+ output humidity
– 0...1V
T2

1 T1
7 T1 output
5 T2 temperature
6 T2 Pt100

Connection diagram

Humidity/- temperature sensors
Compact sensors with plug-in connection
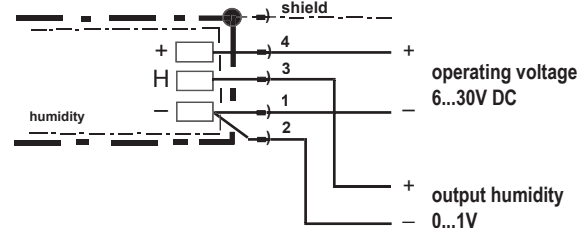series .S, .S-ME

Humidity sensor
Output: 0...10V
(FPC2.S/x , -ME)

shield
4
3 + operating voltage
1 15...30V DC
2 −
+ output humidity
− 0...10V
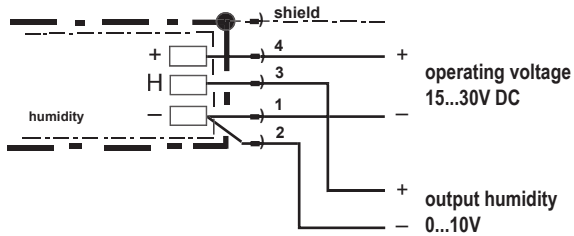
Humidity sensor
Output: 0...1V
(FPC1.S/x , -ME)

shield
4
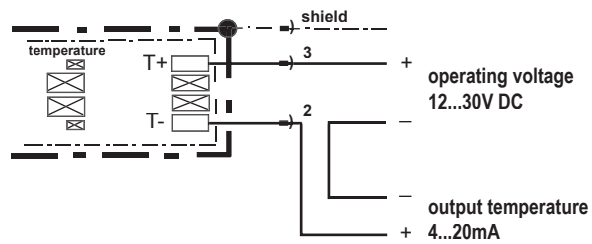3 + operating voltage
1 6...30V DC
2 −
+ output humidity
− 0...1V

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

Temperature sensor
Output: 4...20mA
(TPC3.S/x)
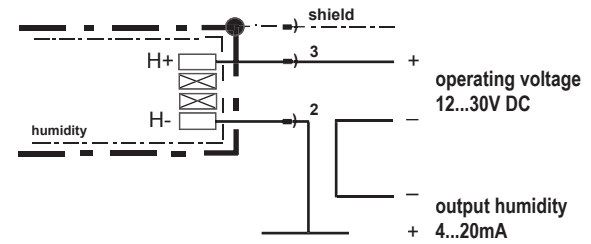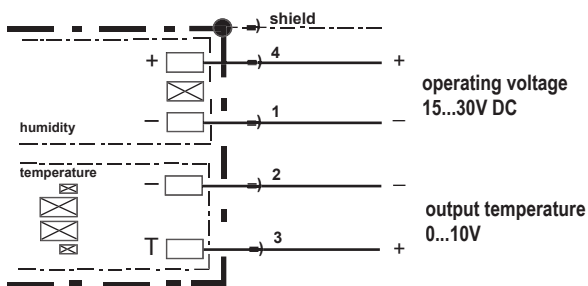

shield
3 + operating voltage
12...30V DC
2 −
− output temperature
+ 4...20mA

Humidity sensor
Output: 4...20mA
(FPC3.S/x)

shield
3 + operating voltage
12...30V DC
2 −
− output humidity
+ 4...20mA

Temperature sensor
Output: 0...10V
(TPC2.S/x , -ME)

shield
4 +
operating voltage
1 15...30V DC
2 −
output temperature
3 + 0...10V

Temperature sensor
Output: 0...1V
(TPC1.S/x , -ME)

shield
4 +
operating voltage
1 6...30V DC
2 −
output temperature
3 + 0...1V
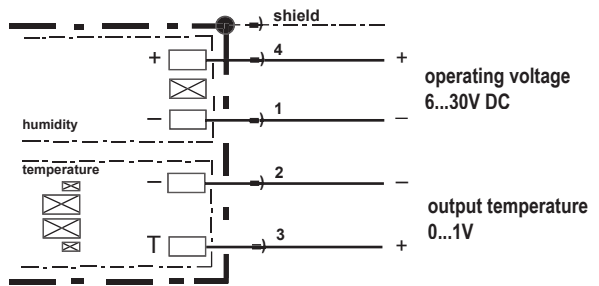
Temperature sensor
Output: Pt100
(TPC5.S/x , -ME)

shield
1 T1
7 T1 output
temperature
5 T2 Pt100
6 T2