



Product info sheet no. C 2.4
Humidity/temperature sensor
 Meteorological design

Description

Mela®-humidity/temperature sensors in the PC-ME and RC-ME series are compact sensors in a rod-type design with a fixed connecting cable (5 m) or with a robust aluminium connecting head and terminal screws and a high degree of accuracy, which have been specially developed for meteorological applications. The **ZE 20-type** membrane filter, which is fitted as standard, provides the element with reliable protection outdoors. We recommend that you use the version with the **ZE 21-type** sintered high-grade steel filter at particularly high wind speeds or if the sensor is exposed to salt mist and sand (close to the sea, desert, mountains, areas with high wind speeds, and the likes).

Use of capacitive humidity sensor elements is a guarantee of:

- high long-term stability
- almost linear characteristic curve
- good dynamic performance
- resistance to dew formation
- small hysteresis.

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
 Response time (at calm air) < 20 sec

Temperature

Measuring element (DIN EN 60751) Pt 100 1/3 DIN
 Measuring range -30...+70°C
 Accuracy
 Output: 0...1V (-27...70°C) ±0.2 K
 0...10V (-29...70°C) ±0.2 K
 4...20mA (RC) ±0.3 K
 at <10°C, >40°C ±0.007K/K additional

Other data

Ambient temperature -40...+80°C
 Degree of protection sensor/electronic IP 30/IP 65
 Operating voltage
 U-output 0...10V 15...30V DC
 U-output 0...1V 6...30V DC
 I-output 12...30V DC
 min. load resistance 0...10V/0...1V ≥10kΩ/≥2kΩ
 Load (current-output) acc. diagramm
 Power consumption
 0...10V, 2 x 0...1V <5mA
 0...1V <1mA
 Minimum air speed
 (across the sensor):
 Output: 0...10V, 2x0...1V ≥0.5m/s
 4...20mA, 2 x 0...10V ≥1.5m/s
 2x 4...20mA ≥1.5 m/s
 Self-heating Pt 100 (1m/s, 2mA, 20°C) 0.1 K
 Electromagnetic compatibility
 Emitted interference EN 55011 cl. B
 Noise immunity EN 50082-2
 „subject to technical modifications“

Type versions

Measuring unit	Analogue output	with	with
		membrane filter ZE 20	sintered filter ZE 21
F rel. humidity	0...10 V	FPC 2/5 - ME	FPC 2/6 - ME
	0...1V	FPC 1/5 - ME*)	FPC 1/6 - ME*)
C r.h. + temp.	0...10 V, Pt 100	CPC 2/5 - ME	CPC 2/6 - ME
	0...1 V, Pt 100	CPC 1/5 - ME*)	CPC 1/6 - ME*)
K r.h. + temp.	2 x 0...10 V	KPC 2/5 - ME	KPC 2/6 - ME
	2 x 0...1 V	KPC 1/5 - ME	KPC 1/6 - ME
T Temperature	Pt 100	TPC 5/5 - ME	TPC 5/6 - ME
	0...10 V	TPC 2/5 - ME	TPC 2/6 - ME
	0...1 V	TPC 1/5 - ME	TPC 1/6 - ME
Weight		ca. 310 g	ca. 320 g

Measuring unit	Analogue output	with	with
		connecting head ZE 20	connecting head ZE 21
F rel. humidity	4...20 mA	FRC 3/5 - ME	FRC 3/6 - ME
	0...10 V	FRC 2/5 - ME	FRC 2/6 - ME
	0...1V	FRC 1/5 - ME	FRC 1/6 - ME
C r.h. + temp.	4...20 mA, Pt 100	CRC 3/5 - ME	CRC 3/6 - ME
	0...10 V, Pt 100	CRC 2/5 - ME	CRC 2/6 - ME
	0...1 V, Pt 100	CRC 1/5 - ME	CRC 1/6 - ME
K r.h. + temp.	2 x 4...20 mA	KRC 3/5 - ME	KRC 3/6 - ME
	2 x 0...10 V	KRC 2/5 - ME	KRC 2/6 - ME
	2 x 0...1 V	KRC 1/5 - ME	KRC 1/6 - ME
T Temperature	Pt 100	TRC 5/5 - ME	TRC 5/6 - ME
	4...20 mA	TRC 3/5 - ME	TRC 3/6 - ME
	0...10 V	TRC 2/5 - ME	TRC 2/6 - ME
	0...1 V	TRC 1/5 - ME	TRC 1/6 - ME
Weight		ca. 60 g	ca. 90 g

Special versions available on request

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 : March 2004 valid until 31.12.2008 C24_E. Subject to modifications, current version available at www.galltec.de. This issue supersedes all previous technical leaflets.

User instructions

Install the 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. Avoid direct sunlight.

The specified minimum air speeds and the operating voltage-adapted current at current-output (diagram) should be complied with. Deviations may lead to additional corrupted measurement readings because the sensor self-heats.

The sensor can be installed in any position. However, do not position it in a position 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 and directly around the sensor element has dried up.

In order to maintain interference immunity in accordance with EN 80082-2 when it is in use, we recommend that you use a screened cable for connecting the RC series sensors, and have this fitted into the sensor's EMC heavy-gauge conduit thread by a qualified electrician.

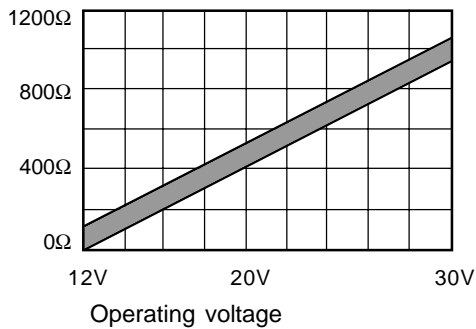
The protective filter should only be screwed off carefully to check functioning with a humidity standard.

Take care not to touch the highly sensitive sensor element. If necessary, soiled ZE 21-type sintered 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.

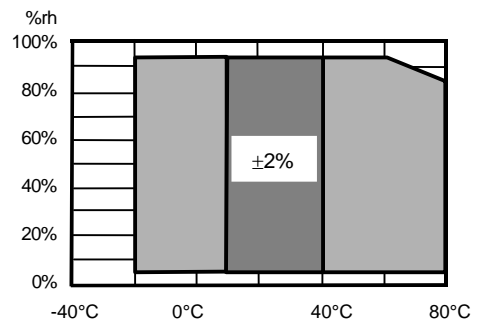
For mounting support we recommend a **console type 20.009** and an **attachment plate type ZA 20** (Product info sheet No. F5.1). In order to check functioning in the place of installation, we recommend that you use the **ZE 31/1-type humidity standard** (product info sheet no. F 5.2)

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.

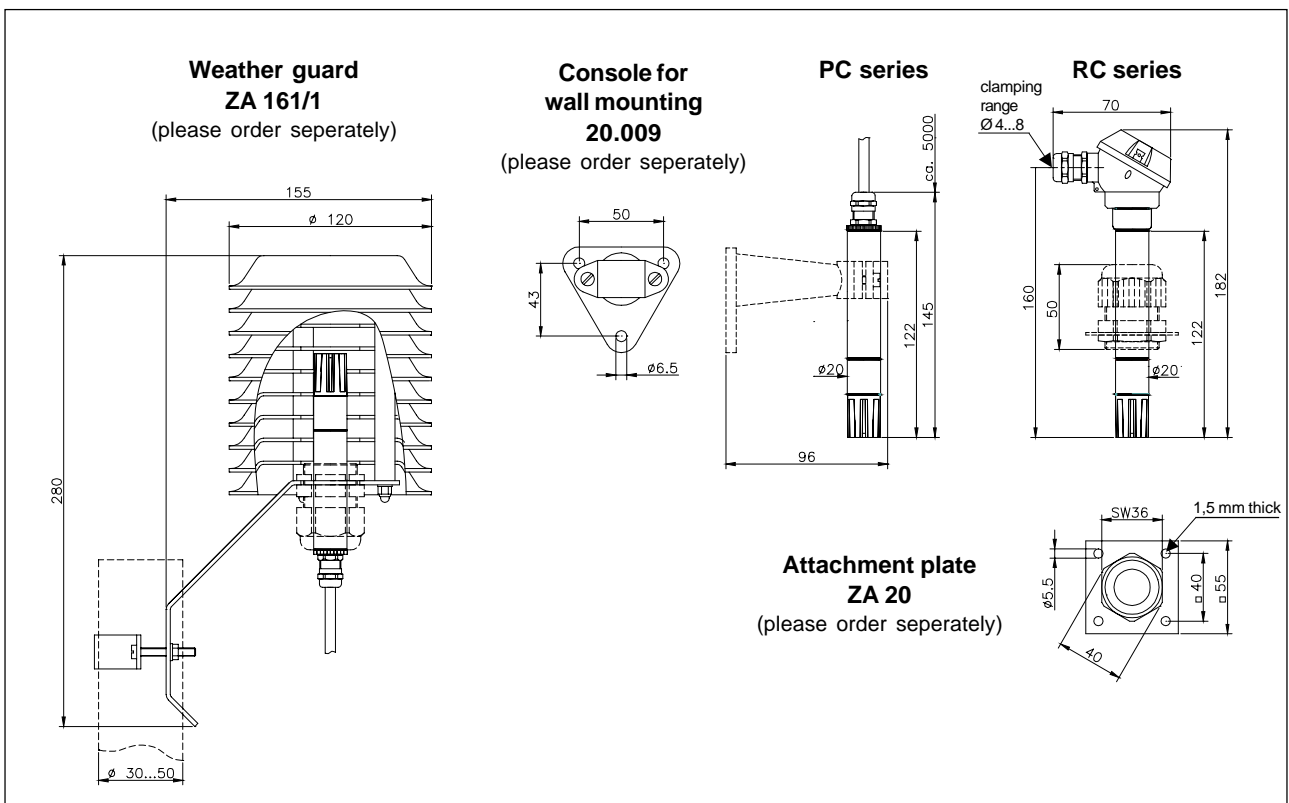
Load at current output



Tolerance validity range for humidity



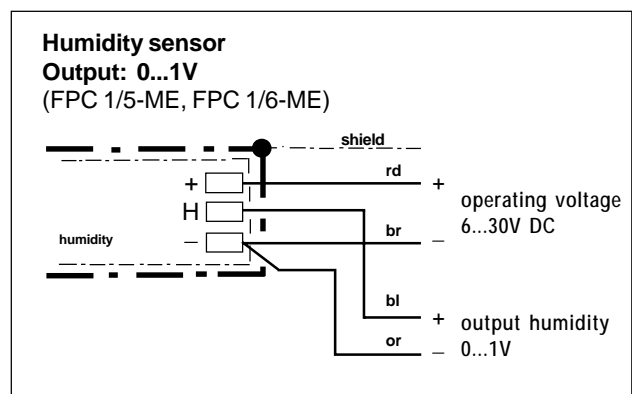
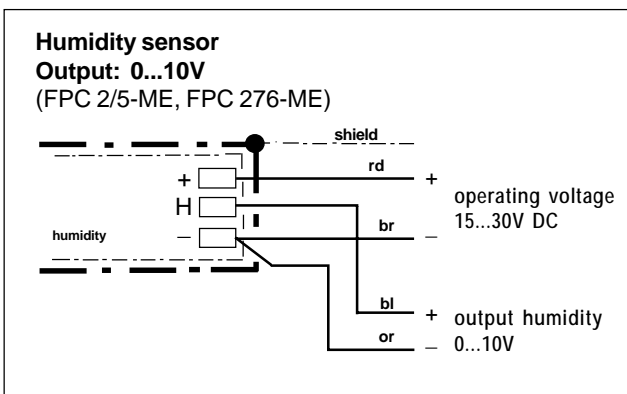
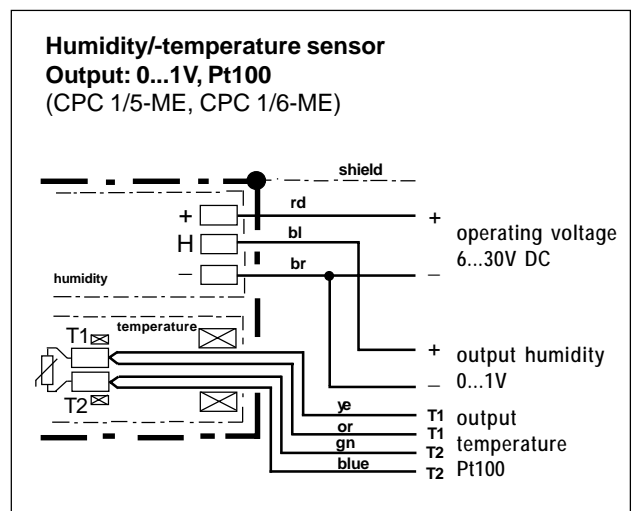
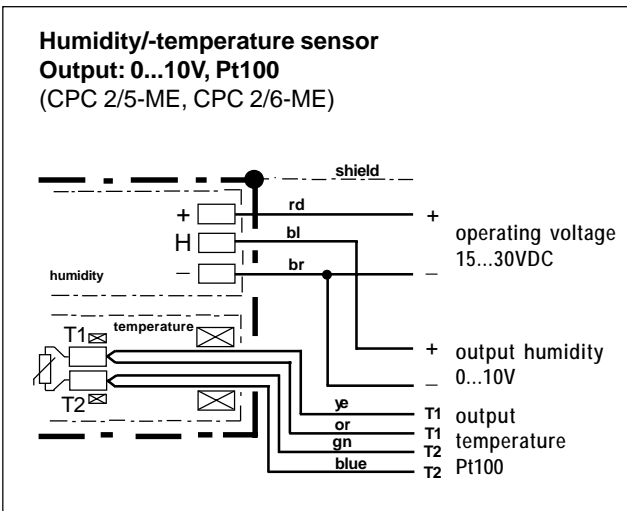
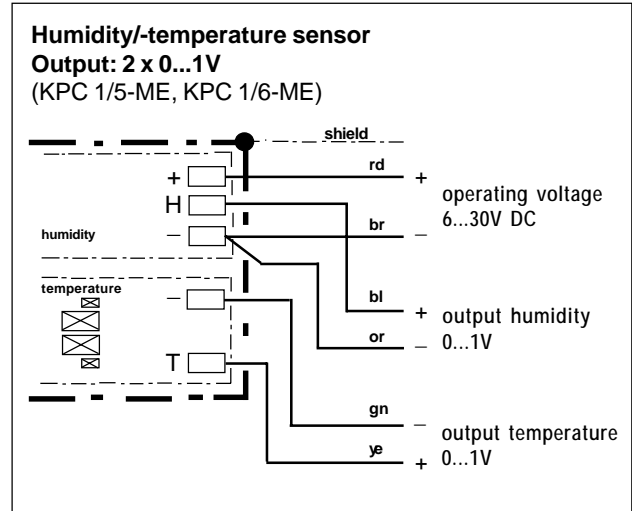
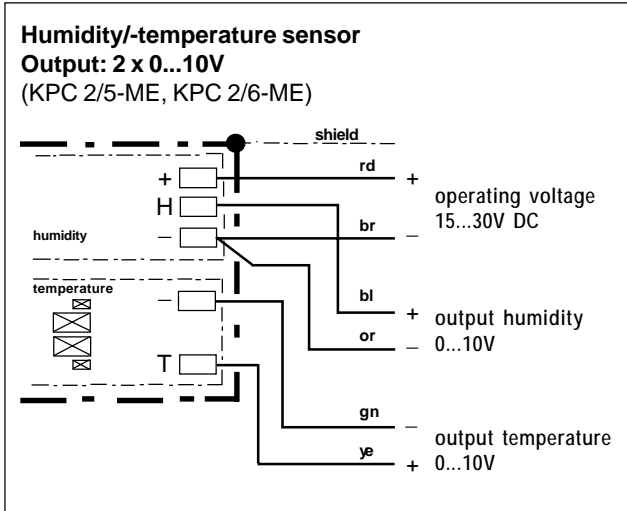
Dimensions



Connection diagram

Humidity/temperature sensors

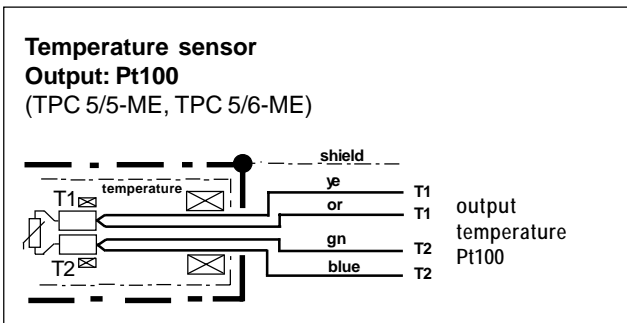
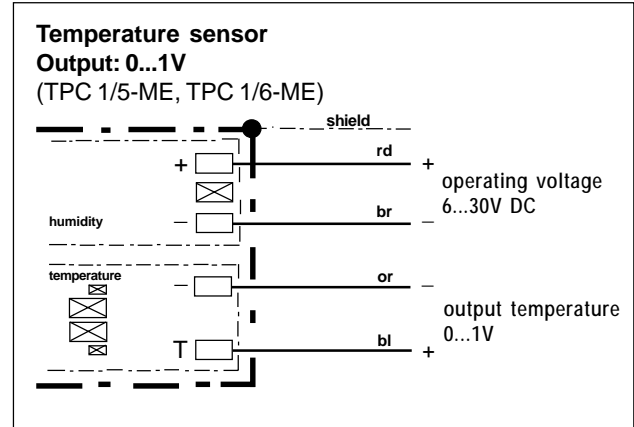
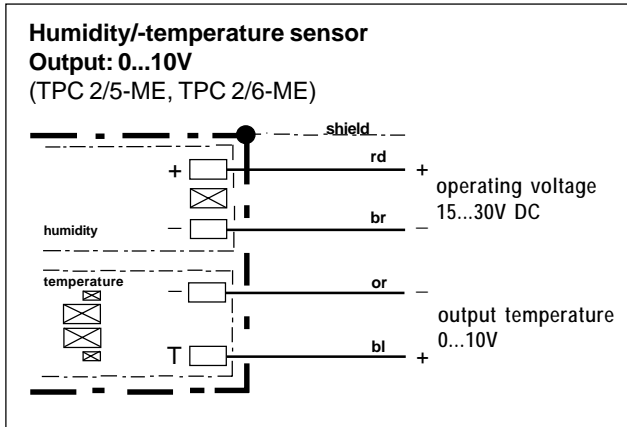
Meteorological design series PC-ME



Connection diagram

Humidity/temperature sensors

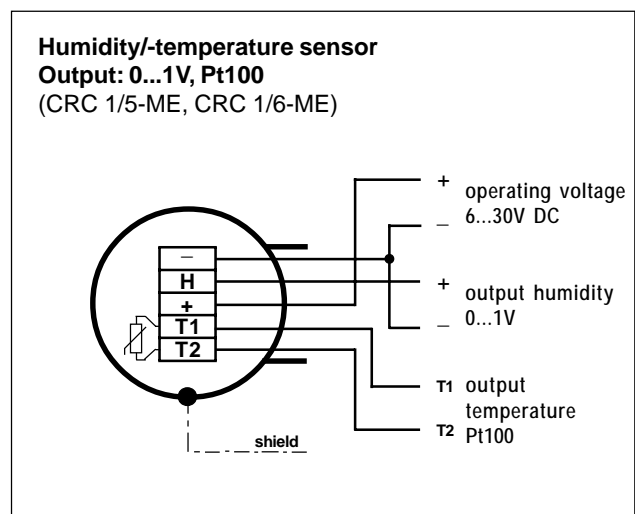
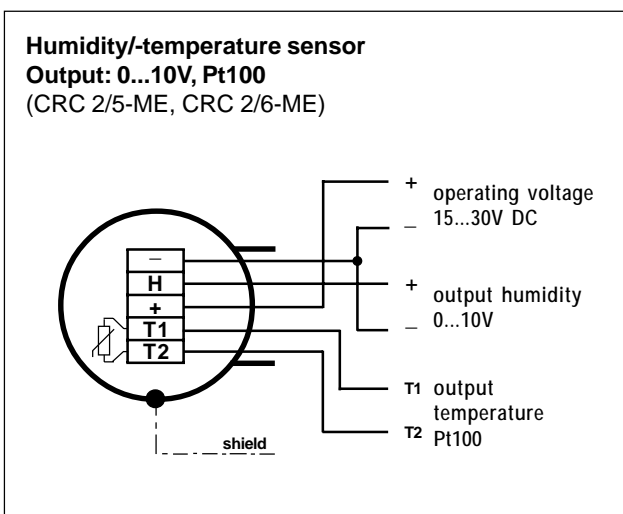
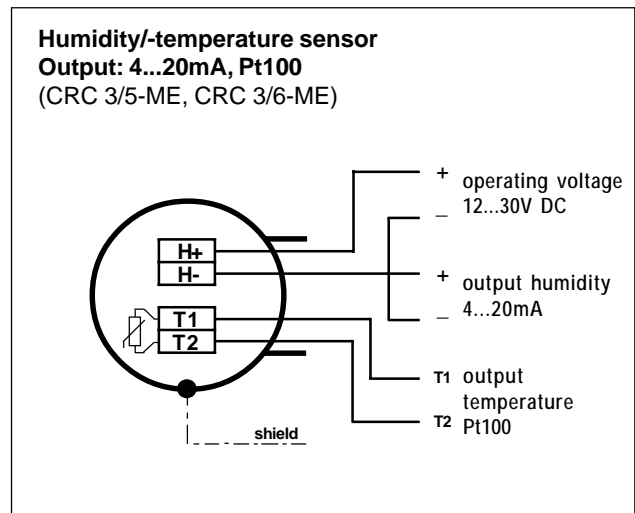
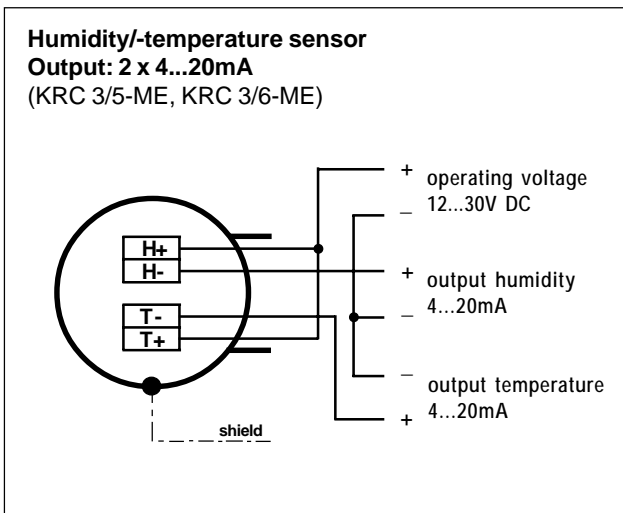
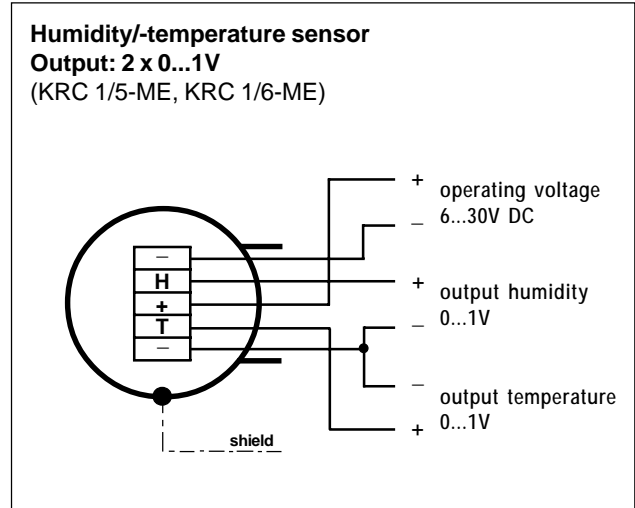
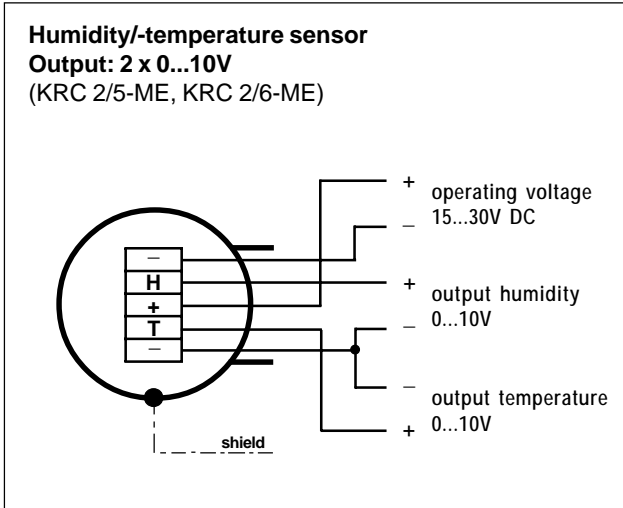
Meteorological design series PC-ME



Connection diagram

Humidity/temperature sensors

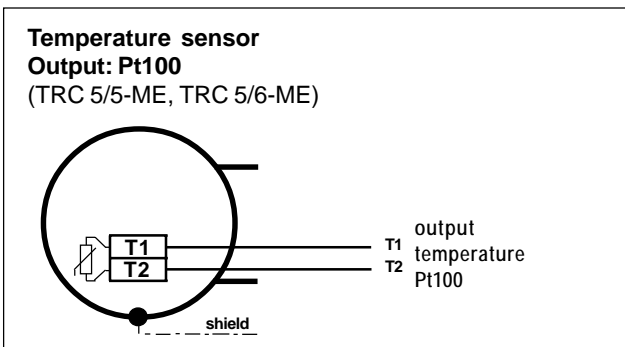
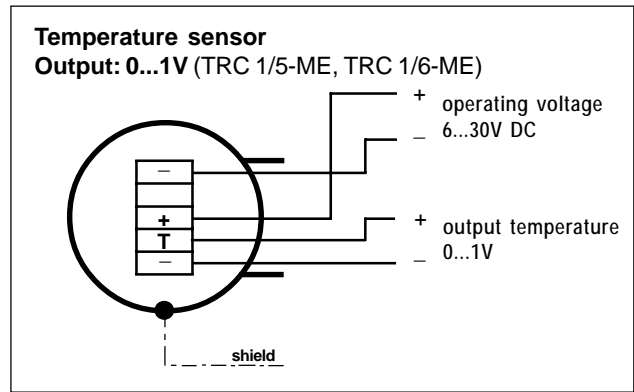
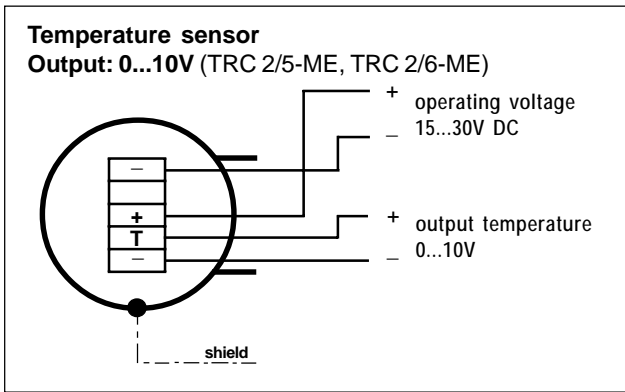
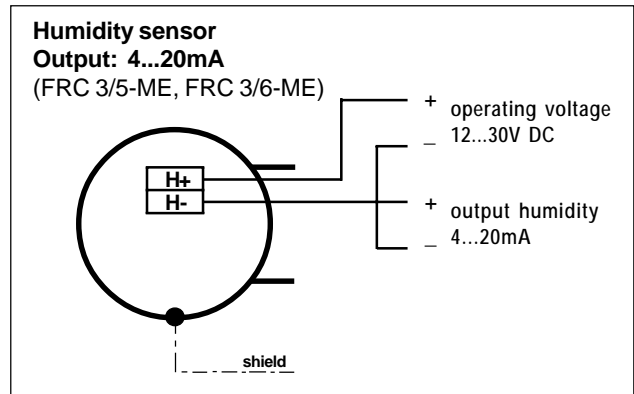
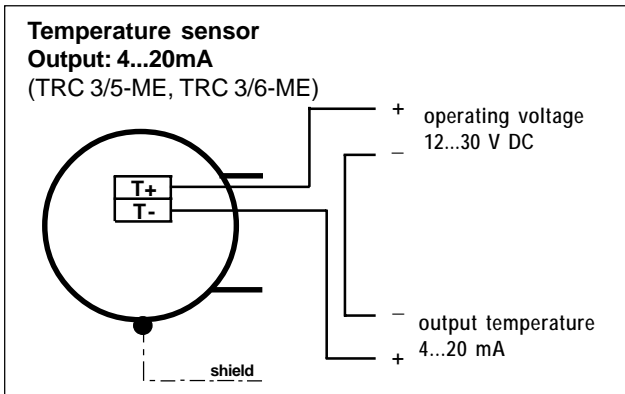
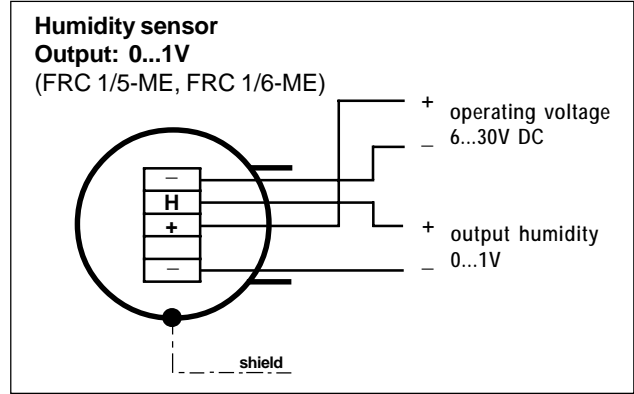
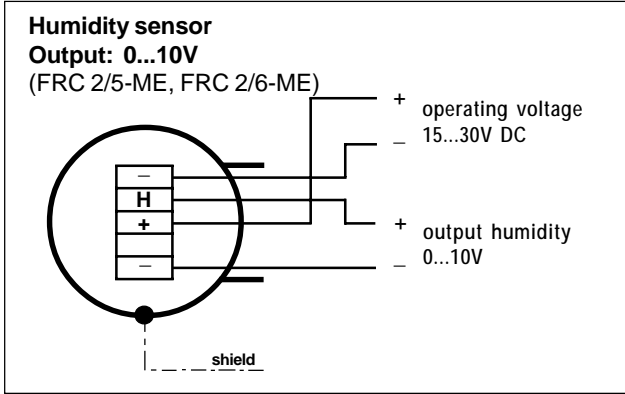
Meteorological design series RC-ME



Connection diagram

Humidity/temperature sensors

Meteorological design series RC-ME





User instructions

Filters, and in particular sintered filters, change the dynamic behaviour of the sensors. Wet filters yield corrupted measurements until they have dried out fully.

To avoid corrosion we recommend to treat the threads of filters ZE20...ZE22 slightly with acid-free grease.

Product info sheet no. F 5.1

Accessories

Filters and mounting supports

Description

The products on this info sheet are used for adapting sensors to the different places of application.

Filters protect the sensor against mechanical damage resulting from particle bombardment at relatively high air speeds and damaging deposits. The filters also keep harmful gases from the sensor. Deposits of oil and grease on the filter lead to corrupted measurements which can be rectified by changing the filter.

Mounting supports

ZA20: Attachment plate, suitable for mounting sensors of \varnothing 20 mm in ventilation ducts at up to 80°C.

ZA24: Attachment plate, suitable for mounting sensors of \varnothing 15 mm in ventilation ducts, at up to 200°C. (stainless steel base plate with with brass screw connections).

ZA 25: Attachment plate completely made of stainless steel, suitable for mounting sensors of \varnothing 15 mm, in ventilation ducts at up to 100°C. (stainless steel base plate with stainless steel screw connections).

ZA30: Mounting kit for a built-on humidity switch, comprising adhesive strips and heat conductivity paste, for mounting smooth surfaces.

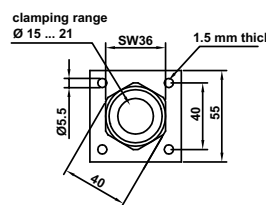
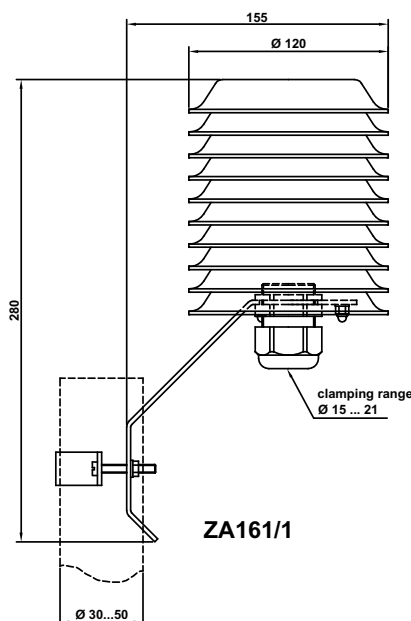
ZA161/1:

Weather guard, protects the sensors from product info sheet no. C 2.4 outdoors against rainfall and sun light.

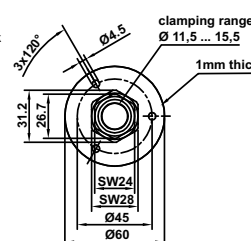
Wall console 20.009:

for mounting sensors \varnothing 20mm to walls

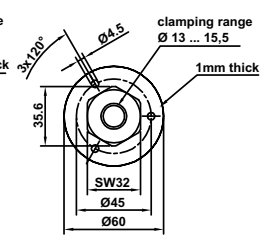
Dimensions



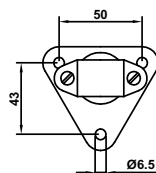
ZA20



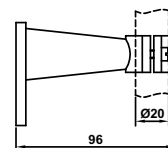
ZA24



ZA25



Console for wall mounting



20.009