Digitron Systems

HUMIMAP 20 Series

Multi-channel measuring system for measurement of relative humidity, temperature, dew point, absolute humidity…

Accurate monitoring of the humidity and temperature profile in a climatic chamber is increasingly important for quality assurance systems becoming more and more stringent. The multi-channel measuring system HUMIMAP 20 is an optimal solution to comply with these requirements.

The modular design of the system can easily be customized and warrants a cost effective solution to monitor the humidity and temperature profile and the occurring changes over time.

In addition to the relative humidity and temperature the HUMIMAP 20 can calculate and output related psychometric values, like dew point temperature, mixing ratio, absolute humidity etc.

The measured values are available on the serial RS232 interface and on the freely configurable and scaleable analogue output on the front and back side of the HUMIMAP 20.

HUMIMAP 20

Modular design

HUMIMAP 20 consists of single plug-in modules, which can be grouped together (max. 5 modules) in a 19" rack.
The modules are networked, even with modules in several other racks, to allow building a system for processing up to max. 32 measurement channels.


rack

plug-in module

RS232 (COM) interface
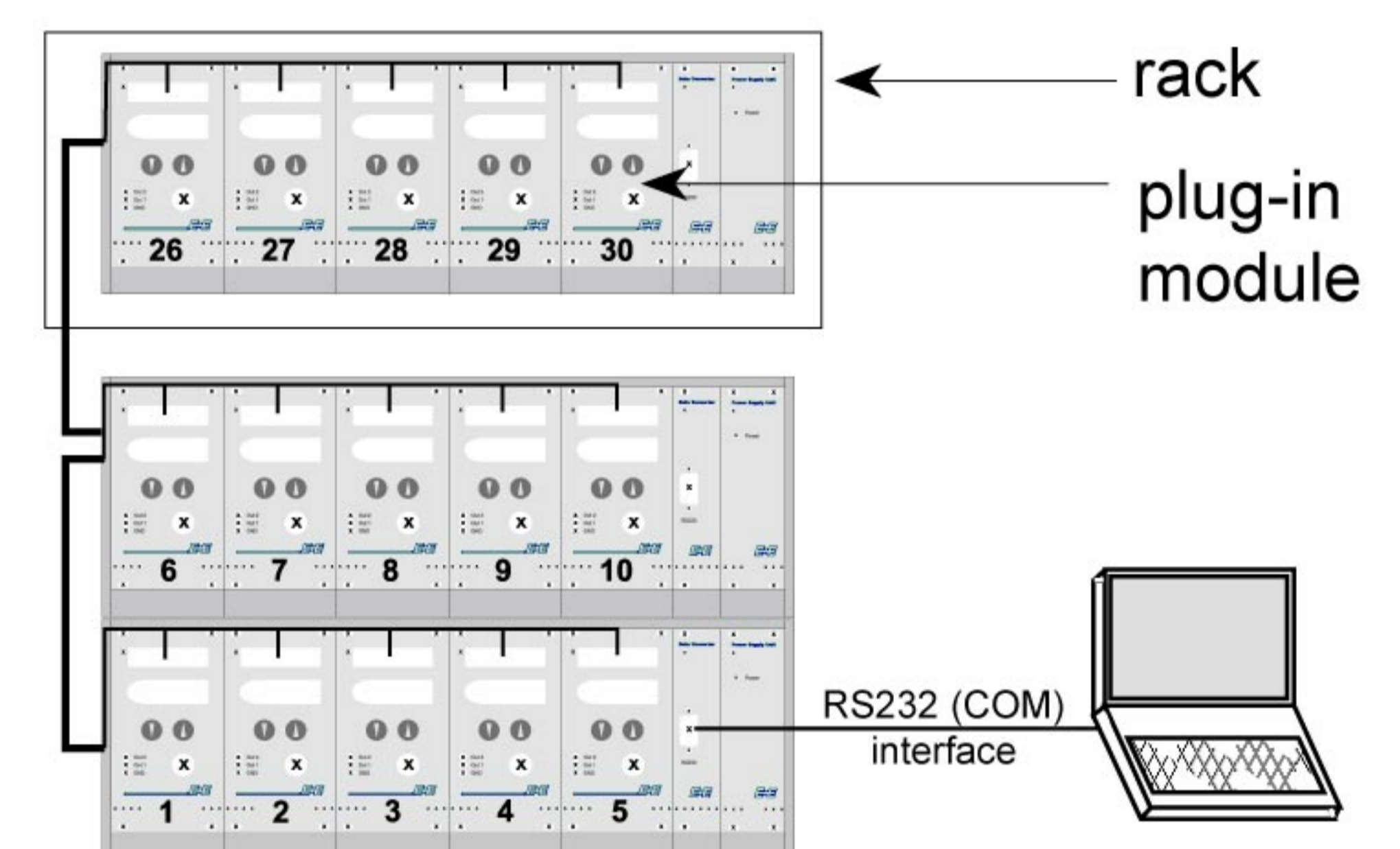
Software

Configuration software:
The user friendly configuration software is included in the scope of supply. It allows easy setup and customizing of the measurement system, such as the number of channels, assignment and scaling of analogue outputs, calibration, etc.

Data logging and analysis software:
Measurement data can be saved and processed by using the data logging and visualisation software.
Data can be displayed in graphs or tables, alarm levels set and alarm signals sent by email or SMS.
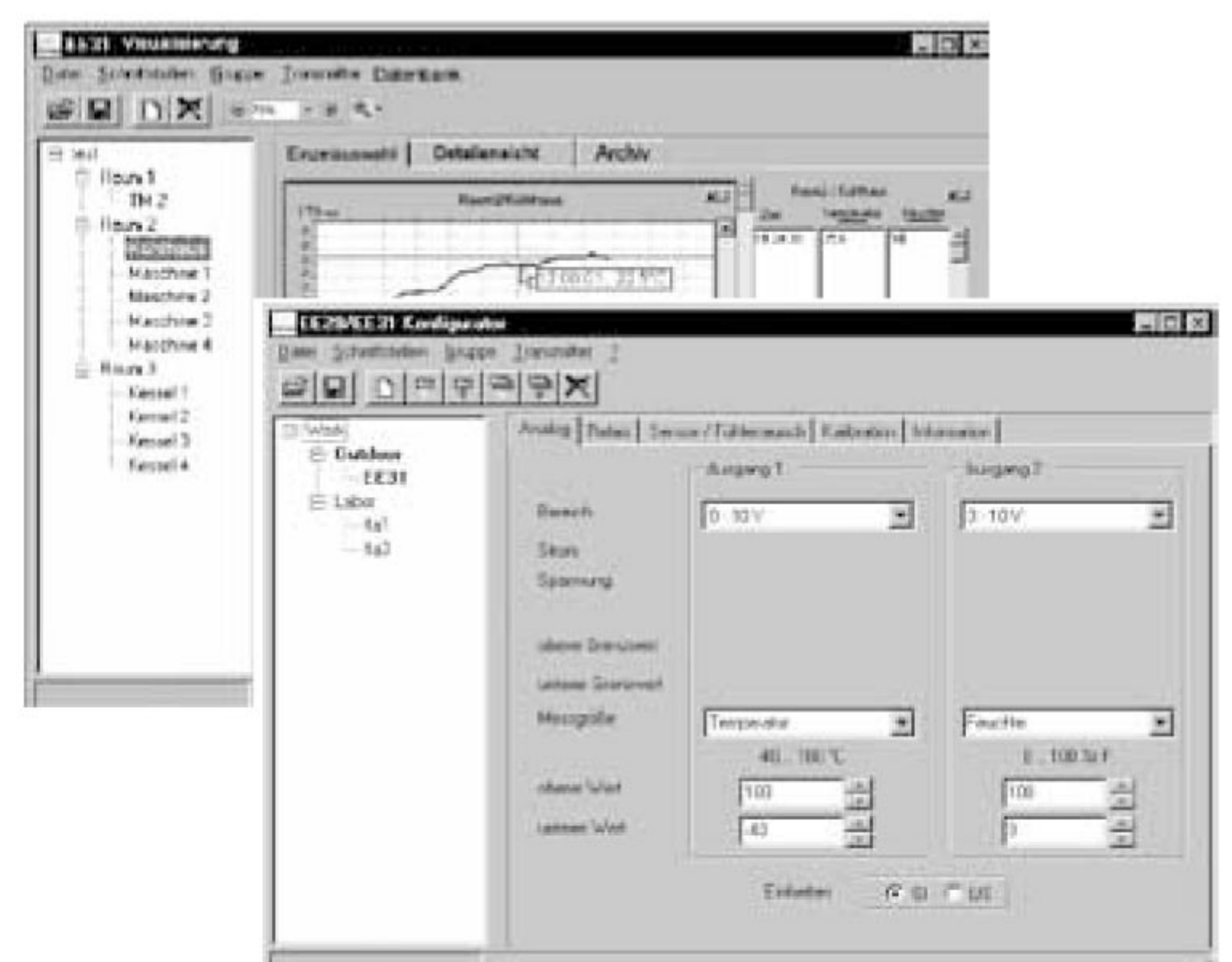
Functions HUMIMAP 20

measurement of relative humidity and temperature
calculated values h, r, dv, Tw, Td, Tf, e
expandable up to 32 channels (also later on)
two freely scaleable and configurable analogue outputs per plug-in module
remote sensing probe up to 20m (66ft), interchangeable
on-site adjustement for relative humidity and temperature
LED indication of status
local displays, selectable measurand incl. MIN/MAX indication
configuration and data output via RS232 interface
configuration software
data logging and analysis software

Interchangeable sensing probe

The HUMIMAP 20 sensing probes have a maximum cable length of 20m (66ft) and a quick connector.
The configuration software allows easy probe replacement without the need of recalibration.
A metal grid filter, specially designed for high humidity (even condensation) and high temperature, protects the sensor elements against mechanical stress and pollution.

Calibration and adjustment of plug-in modules

An adapter PCB allows easy calibration of an entire measurement loop (sensing probe, plug-in module, rack, data logging and analysis software) without interruption.
Using push buttons on the plug-in module the user can easily perform an one or two point adjustment of humidity and temperature. The adjustment can be done by using the standard configuration software.
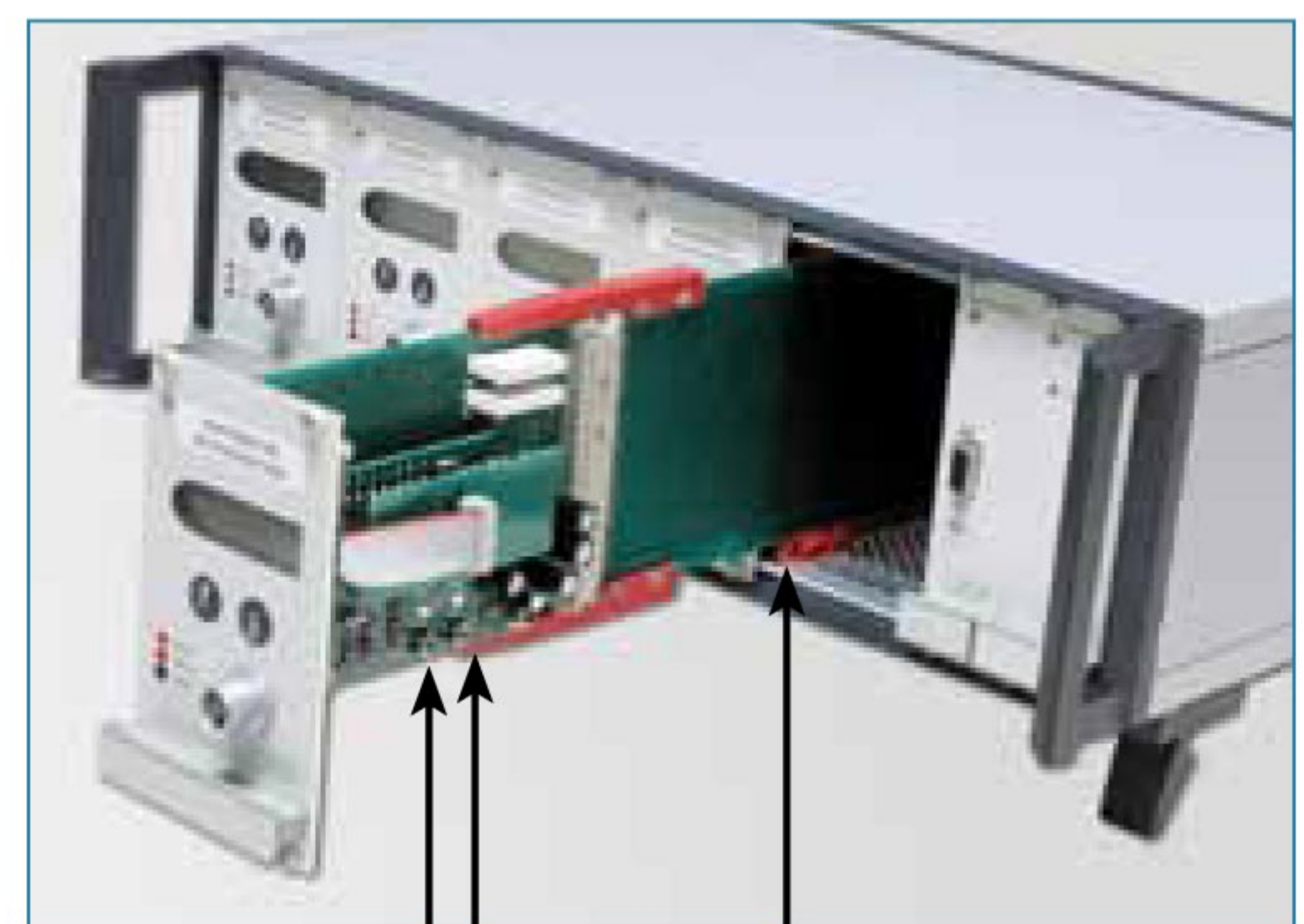
push-buttons for humidity / temperature calibration

adapter PCB

Scope of Supply

- 19" housing with plug-in module, power supply and RS485 to RS232 converter
- manual
- power cable
- RS232 cable
- RS485 uplink cable
- RS485 Y-splitter
- replacement fuse
- CD with configurator software
- CD with logger- and visualisation software
- CD with datasheet, manual and demo

- adapter PCB
- 19" plug-in module(s) according to order code
- calibration certificate
- 2mm plugs for analogue outputs on

  front side
- M12 connector for analogue outputs on
  back side

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HUMIMAP 20

Technical Data

Measuring values

Relative humidity

Humidity sensor[1]	HC1000-400
Working range[1]	0...100% RH
Accuracy *) (including hysteresis, non-linearity and repeatability, traceable to intern. standards, administrated by NIST, PTB, BEV...)	

-15...40°C (5...104°F)	≤90% RH	± (1.3 + 0.3%*mv) % RH
-15...40°C (5...104°F)	>90% RH	± 2.3% RH
-25...70°C (-13...158°F)		± (1.4 + 1%*mv) % RH
-40...180°C (-40...356°F)		± (1.5 + 1.5%*mv) % RH

Temperature dependence of electronics	typ. ± 0.01% RH/°C
Temperature dependence of sensing probe	typ. ± (0.002 + 0.0002 x RH[%]) x ΔT [°C] $\Delta T = T - 20°C$
Response time with metal grid filter 20°C (68°F) / t_{90}	< 15s

Temperature

Temperature sensor element	Pt1000 (Tolerance class A, DIN EN 60751)
Working range sensing head	-40...180°C (-40...356°F)
Accuracy	
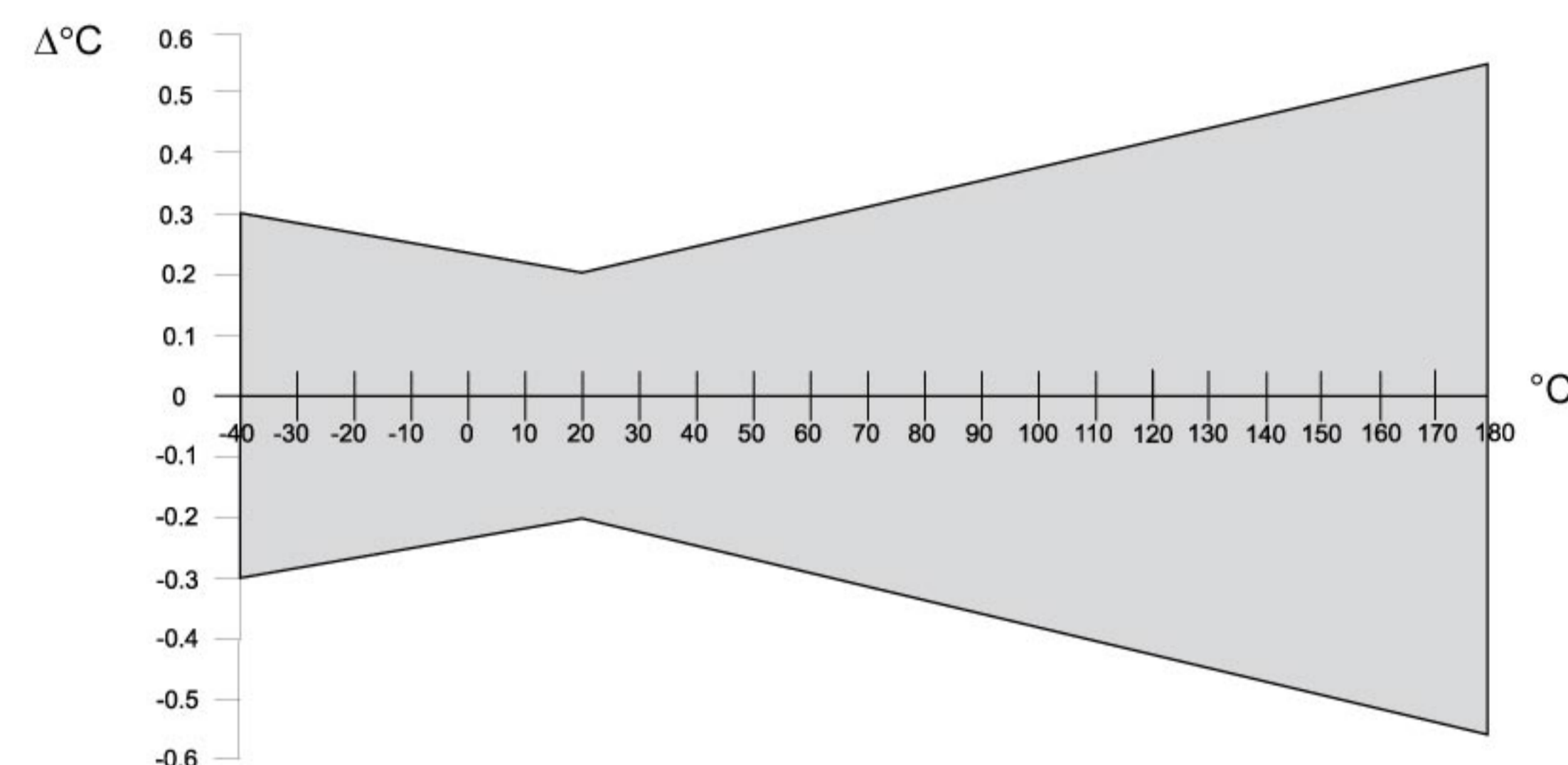
Temperature dependence of electronics	typ. ± 0.005°C/°C

Outputs

Digital output	RS232	
Two freely selectable and scaleable analogue outputs [2]	0 - 5V / 0 - 10V	-1mA < I_L < 1mA
	4 - 20mA / 0 - 20mA	R_L < 500 Ohm

Max. adjustable measurment range[2][3]

		from		up to		units	
Humidity	RH	0		100		% RH	
Temperature	T	-40	(-40)	180	(356)	°C	(°F)
Dew point temperature	Td	-80	(-112)	100	(212)	°C	(°F)
Frost point temperature	Tf	-80	(-112)	0	(32)	°C	(°F)
Wet bulb temperature	Tw	0	(32)	100	(212)	°C	(°F)
Water vapour partial pressure	e	0	(0)	1100	(15)	mbar	(psi)
Mixture ratio	r	0	(0)	999	(9999)	g/kg	(gr/lb)
Absolute humidity	dv	0	(0)	700	(300)	g/m³	(gr/f³)
Specific enthalpy	h	0	(0)	2800	(999999)	kJ/kg	(lbf/lb)

General

|		
Supply voltage	90...250V AC (50/60 Hz)	
System requirements for software	WINDOWS 2000 or later; serial interface	
Sensor protection	metal grid filter up to 180°C (356°F)	
Operating temperature range of electronics	-20...+50°C (-4...122°F)	
Storage temperature range	-40...+60°C (-40...140°F)	
Electromagnetic compatibility according to	EN61000-6-2	EN61000-6-4
	EN61010-1	
Display	graphical LC display (128x32 pixels), with integrated push-buttons for selecting parameters and MIN/MAX function	
Dimensions	463 x 150 x 362mm (18.2 x 6 x 14.3") (w x h x d)	

1) Refer to working range of the humidity sensor!   2) Can be easily changed by software.   3) Refer to accuracies of calculated values.

Working range humidity sensor
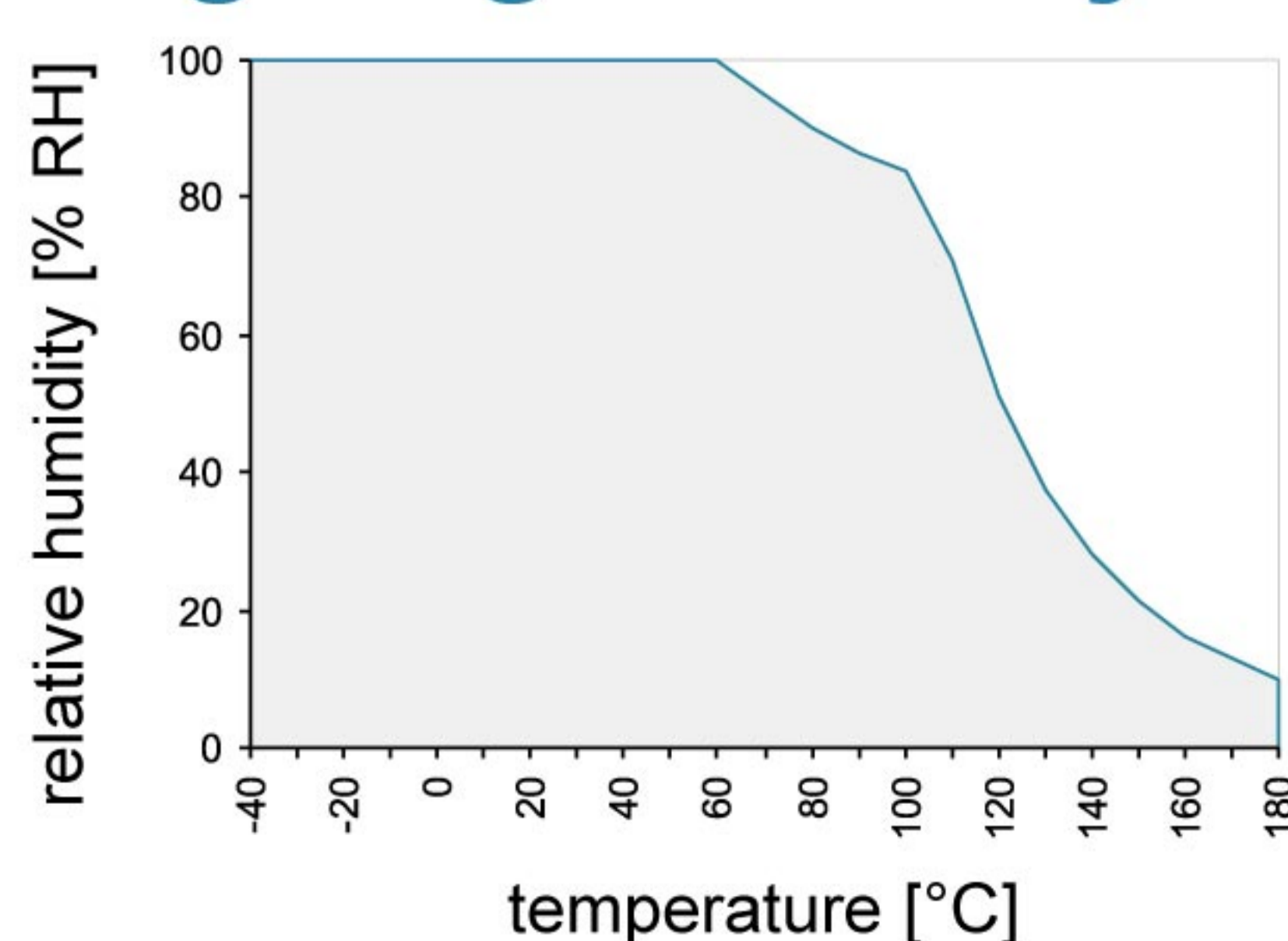
The grey area shows the allowed measurement range for the humidity sensor.

Operating points outside of this range do not lead to destruction of the element, but the specified measurement accuracy cannot be guaranteed.

Ordering Guide

					HUMIMAP20-
Hardware Configuration					
Number of plug-in modules	1 piece				01
	2 pieces				02
	3 pieces				03
	4 pieces				04
	5 pieces				05
Cable length	2m (7ft)				02
	5m (16ft)				05
	10m (33ft)				10
	20m (66ft)				20
Probe length	65mm (2.5")				2
Coating sensor	no				
	yes				HC01
Software Configuration					
Physical parameters of outputs	Relative Humidity	RH	[%]	(A)	output 1 — Select according to ordering guide (A - H,J)
	Temperature	T	[°C]	(B)	
	Dew point temperature	Td	[°C]	(C)	output 2 — Select according to ordering guide (A - H,J)
	Frost point temperature	Tf	[°C]	(D)	
	Wet bulb temperature	Tw	[°C]	(E)	
	Water vapour patial pressure	e	[mbar]	(F)	
	Mixture ratio	r	[g/kg]	(G)	
	Absolute humidity	dv	[g/m³]	(H)	
	Specific enthalpy	h	[kJ/kg]	(J)	
Type of output signal	0-5V				2
	0-10V				3
	0-20mA				5
	4-20mA				6
Measured value units	metric / SI				
	non metric / US				E01
Scaling of T-output Scaling of Td-output in °C or °F	-40...60 (T02)		-20...100 (T14)		output T — Select according to ordering guide (Txx)
	-10...50 (T03)		+20...120 (T15)		
	0...50 (T04)		0...120 (T16)		
	0...100 (T05)		0...80 (T21)		output Td — Select according to ordering guide (Tdxx)
	0...60 (T07)		-40...80 (T22)		
	-30...70 (T08)		-20...80 (T24)		
	-30...120 (T09)		-40...160 (T33)		Other T and Td-scaling refer to data sheet "T-Scalings"
	-20...120 (T10)		+20...180 (T40)		
	-40...120 (T12)		-40...180 (T52)		

Order Example

HUMIMAP20-02052HC01/AB6-T07

Number of plug-in modules:	2 pieces		Output 1:	relative humidity
Cable length:	5m		Output 2:	temperature
Probe length:	65mm		Type of output signal:	4-20mA
Coating sensor:	yes		Measured value units:	metric / SI
			Scaling of T-output:	0...60°C

Accessories / Replacement Parts

(For further information, see data sheet "Accessories")

- replacement probe   (Pxx)
- OEKD-certificate