# HUMIMAP 20 Series

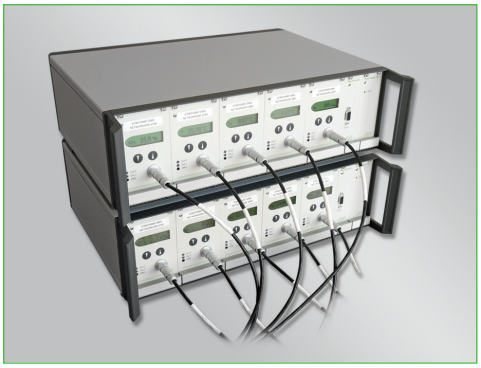
**Multi-channel measuring system for measurement of relative humidity, temperature, dew point, absolute humidity…**

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.

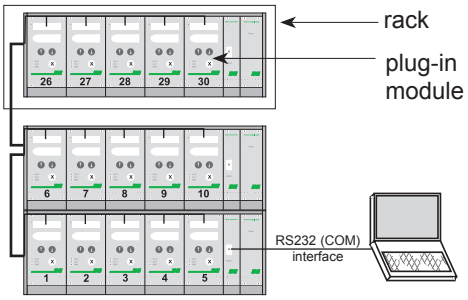
In addition to the relative humidity and temperature the HUMIMAP 20 can calculate and output related psychometric values, like dew point temperature, mixing ratio, absolute humidity etc.

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.

## 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.



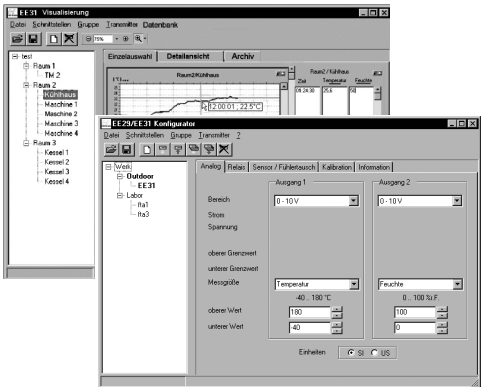

## Software

### 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.

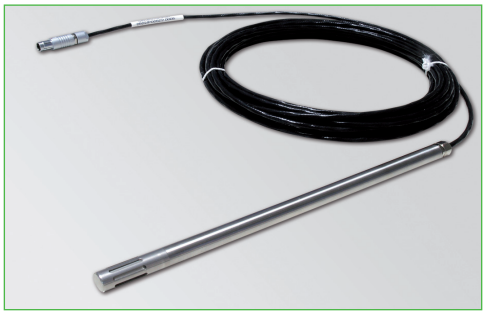


## Functions HUMIMAP 20

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

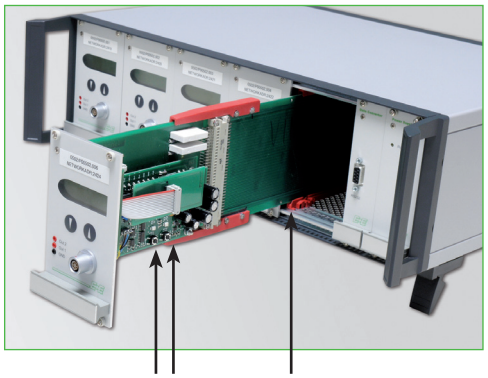
## Interchangeable sensing probe

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.




## 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

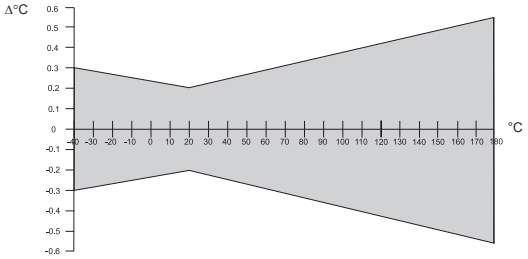
# Technical Data

## 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] ΔT = 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)]

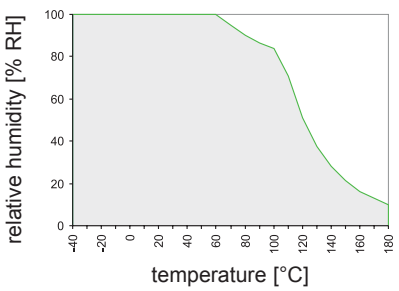
| | | from | up to | units |
|---|---|---|---|---|
| Humidity | RH | 0 | 100 | % RH |
| Temperature | T | -40 (-40) | 180 (356) | °C (°F) |
| Dew point temperature | Td | -80 (-112) | 100 (212) | °C (°F) |
| Frost point temperature | Tf | -80 (-112) | 0 (32) | °C (°F) |
| Wet bulb temperature | Tw | 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 CE |
| | 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