

# EE22 Series

## Humidity / Temperature Transmitter with interchangeable probes

Unique for the EE22 series are the interchangeable sensing probes with connector.

The calibration data is stored in the probes, which are therefore interchangeable and probe replacement does not affect the performance of EE22.

The outstanding accuracy over the entire temperature range is based on very precise calibration methods and on the latest microprocessor technology. Well-proven E+E humidity sensor elements ensure excellent long-term stability.

For high temperature applications (up to +80°C / +176°F) or in case of limited space availability, the sensing probes can be connected to EE22 housing with cables (2m, 5m or 10m / 6.6ft, 16.4ft or 32.8ft) without any repercussions for the overall accuracy of the instrument.

Voltage 0 - 1 / 5 / 10V or current 4 - 20mA (2 wire) outputs are available, of which the temperature output can be scaled according to the application (see ordering guide).

EE22 is suitable for direct wall mounting and for installation on rails according to DIN EN 50022.

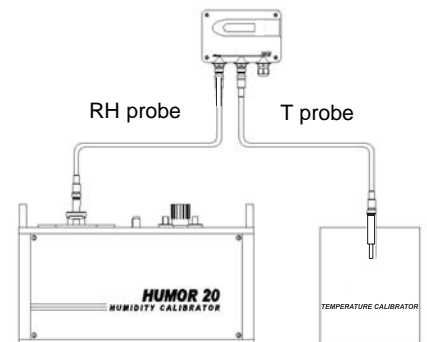
The optional display indicates the actual RH and T values.



## Field calibration of humidity and temperature

In the pharmaceutical and biotechnology industry a Loop-Calibration of the RH and T outputs, recommended by the FDA (Food and Drug Administration), can easily be performed utilizing separate RH and T probes (Type: EE22-xFTx2x).

The RH and T outputs can be adjusted with push buttons on the printed circuit board.



## Reference probes

**NEW** As useful accessories reference probes (incl. test report) representing fixed humidity and temperature values are available.

They shall be installed instead of the measuring probes to check function and accuracy of the evaluation unit.

One probe simulates high humidity and low temperature, the other low humidity and high temperature, to check the upper and lower end of both analogue outputs.



## Typical Applications

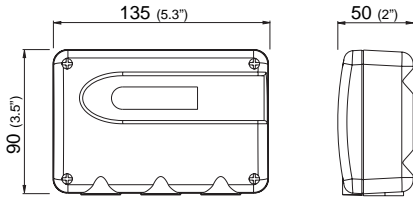
pharmaceutical industry  
clean rooms  
storage rooms  
green houses  
cooling chambers

## Features

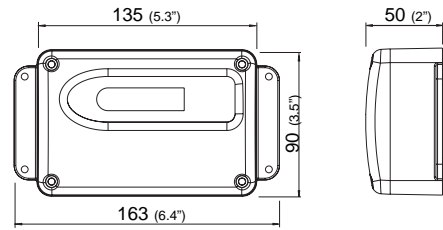
interchangeable probes  
remote sensing probe up to 10m (32.8ft)  
measuring range 0...100% RH / -40...80°C (-40...176°F)  
accuracy ±2% RH / ±0.2°C (±0.36°F)  
traceable calibration  
cost saving, easy loop-calibration of RH and T probes

## Housing

### polycarbonate housing



### metal housing



**NEW**

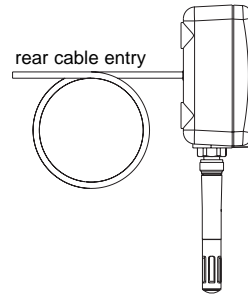
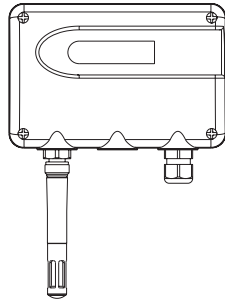
For use in harsh industrial environments all models of EE22 series are available in a robust metal housing.

**Code "M" in the ordering guide indicates a metal housing for the EE22 evaluation unit, as well as for the interchangeable probe(s).**

The smooth surface and the rounded outlines allow for the use in clean room applications.

## Models

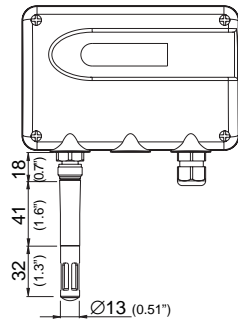
**Model A**  
 Wall mounting  
**EE22-xFTxAx**



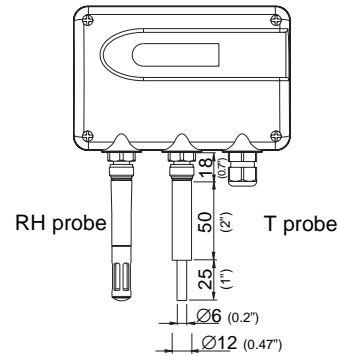
**Model F**  
 Wall mounting - rear cable outlet  
**EE22-xFTxFx**

## Probes

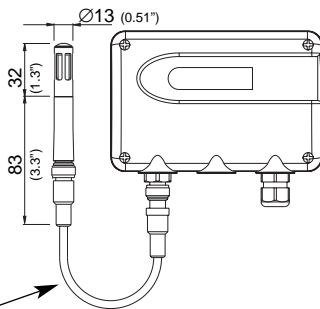
with one  
 RH&T probe  
**EE22-xFTx1x**



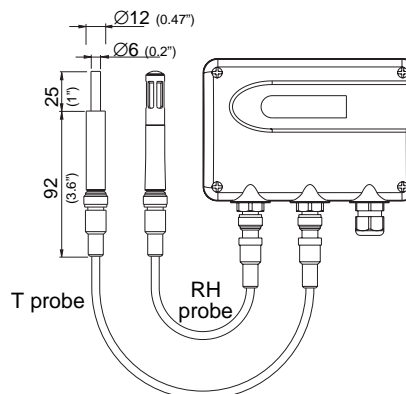
with two separate  
 probes for  
 RH and T  
**EE22-xFTx2x**



with one remote  
 RH&T probe  
**EE22-xFTx1x  
 +HAxxxx**



with two remote  
 separate probes  
 for RH and T  
**EE22-xFTx2x  
 +2x HAxxxx**



cable length	ordering code
2m (6.6ft)	<b>HA010801</b>
5m (16.4ft)	<b>HA010802</b>
10m (32.8ft)	<b>HA010803</b>

## Technical Data

### Measuring values of sensing probe

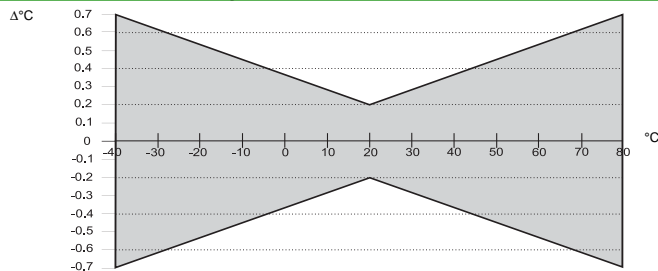
#### Relative Humidity

Sensor element <sup>1)</sup>	HC105	
Working range <sup>1)</sup>	0...100% RH	
Accuracy incl. hysteresis and nonlinearity at 20°C (68°F)	±2% RH (0...90%)	±3% RH (90...100%)
Temperature dependence of probe	< (0.025 + 0.0003 x RH) [%RH / °C]	
Response time with metal grid filter	< 15s (at 20°C / t <sub>90</sub> )	

#### Temperature

Sensor element	Pt1000 (tolerance class A, DIN EN 60751)
Working range sensing probe	fixed sensing probe: -40...60°C (-40...140°F) remote sensing probe: -40...80°C (-40...176°F)

Accuracy (typ.)



Response time	with combined RH/T probe: t <sub>63</sub> : typ. < 3min	with separated RH and T probes: t <sub>63</sub> : typ. < 6min
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### Outputs

0...100% RH/ xx...yy°C <sup>2)</sup> (temperature output scale according to Txx ordering code, page 27)	0 - 1V 0 - 5V / 0 - 10V 4 - 20mA (two wire)	-0.5mA < I <sub>L</sub> < 0.5mA -1mA < I <sub>L</sub> < 1mA R <sub>L</sub> < 500 Ohm
Temperature dependence of analogue outputs	max. 0.2 $\frac{mV}{°C}$ resp. 1 $\frac{\mu A}{°C}$	

### General

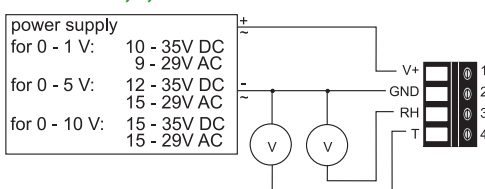
Supply voltage SELV for 0 - 1V output for 0 - 5V output for 0 - 10V output for 4 - 20mA output	10 - 35V DC or 9 - 29V AC 12 - 35V DC or 15 - 29V AC 15 - 35V DC or 15 - 29V AC 10 - 35V DC	SELV = Safety Extra Low Voltage
Load resistor for 4 - 20mA output	R <sub>L</sub> < $\frac{U_v - 10V}{0.02 A}$ [Ω]	
Current consumption	typ. 10mA for DC supply	typ. 20mA <sub>eff</sub> for AC supply
Electrical connection	screw terminals max. 2.5mm <sup>2</sup>	
Cable gland	M16x1.5 cable Ø 4.5 - 10 mm (0.18 - 0.39") (optional connector; type: Lumberg, RSF 50/11)	
Sensor protection	membrane filter, PTFE filter, metal grid filter (polycarbonate), metal grid filter (stainless steel)	
Material	housing: PC or Al Si 9 Cu 3	probe: PC or stainless steel
Protection class of housing	IP65; Nema 4	
Electromagnetic compatibility	EN 61000-6-3 EN 61000-6-2	FCC Part15 ClassB ICES-003 ClassB
Working temperature range of probe	-40...60°C (-40...140°F) / 80°C (176°F) for remote sensing probe	
Working temperature range of electronics	-40...60°C (-40...140°F)	
Storage temperature range	-40...60°C (-40...140°F)	

1) Refer to working range of humidity sensor HC105

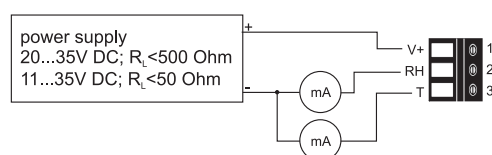
2) Refer to ordering guide

## Connection Diagram

### EE22-FT1,2,3xx



### EE22-FT6xx



## Ordering Guide

### Position 1 - Transmitter

**EE22-**

<b>Hardware Configuration</b>		
<b>Housing</b>	metal housing polycarbonate housing	<b>M</b> <b>P</b>
<b>Type</b>	humidity + temperature	<b>FT</b>
<b>Output</b>	0-1V 0-5V 0-10V 4-20mA	<b>1</b> <b>2</b> <b>3</b> <b>6</b>
<b>Model</b>	wall mounting - cable gland M16x1.5 cable Ø 4.5 - 10 mm (0.18 - 0.39") wall mounting - rear cable outlet	<b>A</b> <b>F</b>
<b>Probe</b>	1 probe RH&T 2 separate probes for RH and T	<b>1</b> <b>2</b>
<b>Filter</b>	membrane filter stainless steel sintered filter PTFE filter metal grid filter (polycarbonate) metal grid filter (stainless steel)	<b>1</b> <b>3</b> <b>5</b> <b>6</b> <b>9</b>
<b>Display</b>	without display with display	<b>D07</b>
<b>Plug</b>	without plug 1 plug for power supply and outputs	<b>C03</b>
<b>Sensor coating</b>	without coating with coating	<b>HC01</b>
<b>Calibration</b>	standard calibration high humidity calibration	<b>CA1</b>
<b>Software Configuration</b>		
<b>T-Unit</b>	°C °F	<b>E01</b>
<b>Scaling of T-output in °C or °F</b>	-40...60 (T02)    0...120 (T16)    -20...50 (T48) -10...50 (T03)    -30...60 (T20)    -40...176 (T80) 0...50 (T04)    0...80 (T21)    0...140 (T85) 0...60 (T07)    -40...80 (T22)    0...176 (T86) -30...70 (T08)    -20...80 (T24)    32...120 (T90) -10...70 (T11)    -20...60 (T25)    32...140 (T91) -40...120 (T12)    -30...50 (T45)    32...132 (T96)	Select according to Ordering Guide (Txx)  Other T-scaling refer to page 11
<b>Position 2 - Probe cable</b>		
<b>Cable length</b>	2m (6.6ft) 5m (16.4ft) 10m (32.8ft)	<b>HA010801</b> <b>HA010802</b> <b>HA010803</b>

## Accessories / Replacement Parts

(For further information see data sheet "Accessories", page 58)

- Replacement probe RH&T in polycarbonate (EE07-PFTx)
- Replacement probe T in polycarbonate (EE07-PTx)
- Replacement probe RH&T in metal (EE07-MFTx)
- Replacement probe T in metal (EE07-MT)
- Display + housing cover in metal (D07M)
- Display + housing cover in polycarbonate (D07P)
- probe cable 2m (6.6ft) / 5m (16.4ft) / 10m (32.8ft) (HA0108xx)
- bracket for rail installation (HA010203)
- external supply unit (V02)
- RH calibration set (HA0104xx)
- Reference probes (HA010403)
- Filter caps (HA0101xx)

## Order Example

### Position 1 - Transmitter:

#### EE22-MFT2A26C03/T07

housing: metal housing  
 type: humidity + temperature  
 output: 0-5V  
 model: wall mounting - cable gland M16x1.5  
 probe: 2 separate probes for RH and T  
 filter: metal grid filter (polycarbonate)  
 display: without display  
 plug: 1 plug for power supply and outputs  
 sensor coating: without coating  
 calibration: standard calibration  
 T-Unit: °C  
 scaling of T-output: 0...60°C

### Position 2 - Probe cable:

#### 2x HA010802

cable length: 2x 5m (2x 16.4ft)

EE22