

# EE220 Series

## Humidity / Temperature Transmitter with interchangeable probes

Unique for the EE220 series are the interchangeable sensing probes.

The calibration data is stored in the probes, therefore a probe replacement does not affect the accuracy of EE220.

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 EE220 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 / 10V or current 4 - 20mA (2 wire) EE220-outputs are available, of which the temperature output can be scaled according to the application (see ordering guide).

EE220 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.

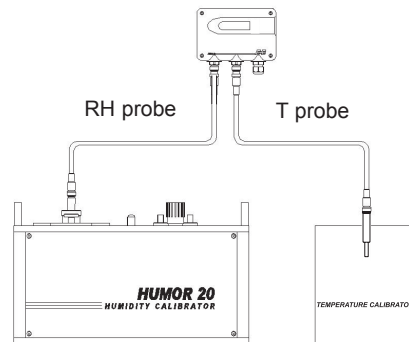
Duct mounting can be done easily with the optional duct mounting kit.



### 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: EE220-xxx2x).

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



### Reference probes

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

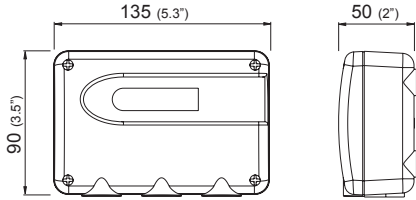
- pharmaceutical industry
- clean rooms
- storage rooms
- green houses
- cooling chambers

### Features

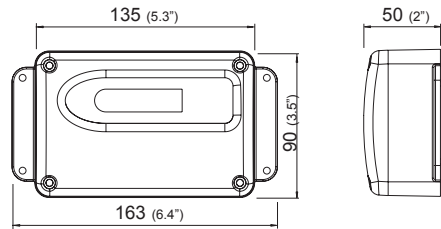
- interchangeable probes
- remote sensing probe up to 10m (32.8ft)
- measuring range 0...100% RH / -40...80°C (-40...176°F)
- optional display
- easy field loop-calibration

## Housing dimensions (mm)

### polycarbonate housing



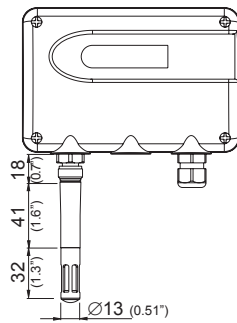
### metal housing



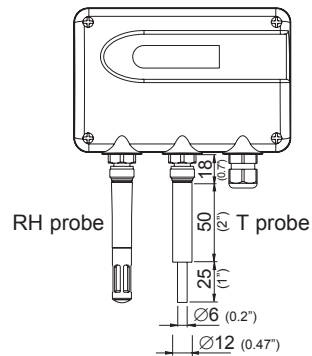
For use in harsh industrial environments all models of EE220 series are available in a robust metal housing. (Interchangeable probes are also available in metal version.) The smooth surface and the rounded outlines allow the use in clean room applications.

## Probe dimensions (mm)

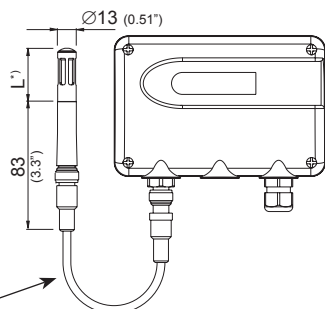
### with one RH&T probe EE220-xxx1x



### with two separate probes for RH and T EE220-xxx2x



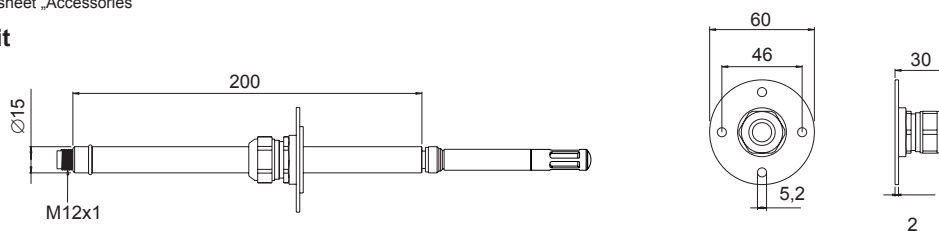
### with one remote RH&T probe EE220-xxx1x +HAxxxx



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

\*) L = Filter length see Datasheet „Accessories“

### duct mounting kit HA010209



## Technical Data

### Sensing probe

refer to data sheet of respective sensing probe

### Outputs

0...100% RH/ xx...yy°C <sup>2)</sup> (temperature output scale according to Txx ordering code)	0 - 1V 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 $\frac{mV}{^{\circ}C}$	resp. 1 $\frac{\mu A}{^{\circ}C}$

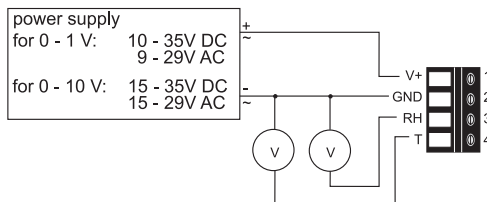
### General

Supply voltage			
for 0 - 1V output	10 - 35V DC	or	9 - 29V AC
for 0 - 10V output	15 - 35V DC	or	15 - 29V AC
for 4 - 20mA output	10 - 35V DC		
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)	
Material	PC or Al Si 9 Cu 3		
Protection class of housing	IP65; Nema 4		
Electromagnetic compatibility	EN61326-1	EN61326-2-3	ICES-003 ClassB FCC Part15 ClassB
Working temperature range of electronics	-40...60°C (-40...140°F)		
Storage temperature range	-40...60°C (-40...140°F)		

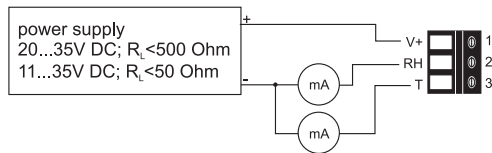
1) Refer to ordering guide

## Connection Diagram

### EE220- x1x - x3x



### EE220- x6x



## Overview of Sensing Probes

Application	Picture	Measuring Range	Accuracy	Order Code
<b>Humidity/Temperature Probes</b>				
RH/T probe for standard applications		0...100% RH -40...80°C (-40...176°F)	±2% RH (0...90% RH) ±3% RH (90...100% RH) ±0.1°C (±0.18°F) at 20°C (68°F)	EE07-PFT1
RH/T probe for clean room applications, food and pharmaceutical industry		0...100% RH -40...80°C (-40...176°F)	±2% RH (0...90% RH) ±3% RH (90...100% RH) ±0.1°C (±0.18°F) at 20°C (68°F)	EE07-MFT9
RH/T module for installation in small spaces or unobtrusive mounting		0...95% RH -40...85°C (-40...185°F)	±3% RH (10...100% RH) at 21°C (69.8°F) ±0.3°C (±0.54°F) at 20°C (68°F)	EE03-FT9
<b>Temperature Probes</b>				
T probe for standard applications		-40...80°C (-40...176°F)	±0.1°C (±0.18°F) at 20°C (68°F)	EE07-PT1
T probe for clean room applications, food and pharmaceutical industry		-40...80°C (-40...176°F)	±0.1°C (±0.18°F) at 20°C (68°F)	EE07-MT

## Ordering Guide

Position 1 - Convertor		EE220-																																										
<b>Hardware Configuration</b>																																												
<b>Housing</b>	metal housing polycarbonate housing	M P																																										
<b>Output</b>	0-1V 0-10V 4-20mA	1 3 6																																										
<b>Model</b>	wall mounting - cable gland M16x1.5 wall mounting - rear cable outlet	A F																																										
<b>Number of probes</b>	1 (for probe RH/T) 2 (for probe RH+T)	1 2																																										
<b>Display</b>	without Display with Display	D07																																										
<b>Plug (only for type A)</b>	without plug 1 plug for power supply and outputs	C03																																										
<b>Software Configuration</b>																																												
<b>T-Unit</b>	°C °F	E01																																										
<b>T-Scaling</b>	<table border="0"> <tr> <td>-40...60</td> <td>(T02)</td> <td>0...120</td> <td>(T16)</td> <td>-20...50</td> <td>(T48)</td> </tr> <tr> <td>-10...50</td> <td>(T03)</td> <td>-30...60</td> <td>(T20)</td> <td>-40...176</td> <td>(T80)</td> </tr> <tr> <td>0...50</td> <td>(T04)</td> <td>0...80</td> <td>(T21)</td> <td>0...140</td> <td>(T85)</td> </tr> <tr> <td>0...60</td> <td>(T07)</td> <td>-40...80</td> <td>(T22)</td> <td>0...176</td> <td>(T86)</td> </tr> <tr> <td>-30...70</td> <td>(T08)</td> <td>-20...80</td> <td>(T24)</td> <td>32...120</td> <td>(T90)</td> </tr> <tr> <td>-10...70</td> <td>(T11)</td> <td>-20...60</td> <td>(T25)</td> <td>32...140</td> <td>(T91)</td> </tr> <tr> <td>-40...120</td> <td>(T12)</td> <td>-30...50</td> <td>(T45)</td> <td>32...132</td> <td>(T96)</td> </tr> </table>	-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 data sheet „T-Scalings“
-40...60	(T02)	0...120	(T16)	-20...50	(T48)																																							
-10...50	(T03)	-30...60	(T20)	-40...176	(T80)																																							
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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)																																							
<b>Position 2 - Probe</b>																																												
<b>Humidity / Temperature</b>	probe RH/T (polycarbonat) probe RH/T (metal) module RH/T	EE07-PFTx EE07-MFTx EE03-FT9																																										
<b>Temperature</b>	probe T (polycarbonat) probe T (metal)	EE07-PTx EE07-MT																																										
<b>Position 3 - Probe cable</b>																																												
<b>Cable for EE07</b>	2m (6.6ft) 5m (16.4ft) 10m (32.8ft)	HA010801 HA010802 HA010803																																										
<b>Cable for EE03</b>	2m (6.6ft) 5m (16.4ft)	HA010328 HA010329																																										

## Accessories / Replacement Parts

(For further information see data sheet „Accessories“)

- Display + housing cover in metal (D07M)
- Display + housing cover in polycarbonate (D07P)
- Duct mounting kit (HA010209)
- Probe cable 2m (6.6ft) / 5m (16.4ft) / 10m (32.8ft) (HA0108xx)
- Bracket for rail installation\* (HA010203)
- External supply unit (V02)
- Reference probes (HA010403)

\*Note: Only for plastic housing, not for metal housing

## Order Example

### Position 1 - Convertor:

#### EE220-M3A1C03/T07

housing: metal housing  
 output: 0-10V  
 model: wall mounting - cable gland M16x1.5  
 number of sensor slots: 1  
 display: without display  
 plug: 1 plug for power supply and outputs  
 T-Unit: °C  
 scaling of T-output: 0...60°C

### Position 2 - Probe:

#### EE07-MFT9

probe: probe RH/T (metal)  
 filter: metal grid filter (stainless steel)

### Position 3 - Probe cable:

1x HA010802  
 5m (16.4ft) cable for EE07