

# EE220

## Humidity and Temperature Transmitter with Interchangeable Probes

The innovative, modular EE220 humidity (RH) and temperature (T) transmitter consists of a basic unit and various pluggable, interchangeable probes.

The basic unit can accommodate one combined EE07 RH and T probe or two separate EE07 probes, one for RH and one for T. The EE07 probes are available in plastic or in stainless steel enclosure and can be plugged onto the basic unit either directly or with M12 extension cables up to 10 m (32.8 ft) long. An optional kit facilitates the mounting of the probes in a duct.

The EE220 basic unit is available with polycarbonate or with metal enclosure, suitable for wall mount or for installation on rails (DIN EN 50022). For pharma and food industry the basic unit features a rear cable inlet.

The measured values are available on two analogue voltage or current (2-wire 4 – 20 mA) outputs, as well as on the optional display.

One or two point adjustment for RH and T of the transmitter can be easily performed with push buttons on the electronics board of the EE220 basic unit. Alternatively, the EE07 probes can be adjusted individually with the EE-PCA Product Configuration Adapter (see EE07 data sheet).

For surface moisture monitoring or for the early detection of condensation danger, EE220 can accommodate the EE03 RH & T module (see data sheet EE03).



### Typical Applications

- Pharma, biotech
- Incubators and clean rooms
- Cool chambers
- Storage rooms

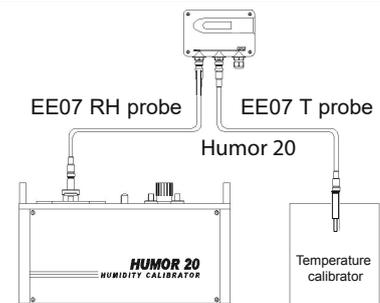
### Features

- Interchangeable probes
- Outstanding accuracy and long term stability
- Easy loop calibration
- Wide temperature working range

### Field Loop Calibration

A loop calibration or adjustment in the field, as required by the FDA (Food and Drugs Administration) regulated industries is easily possible for the EE220 with two separate probes. Using extension cables, the EE07 probes can be dropped into calibrators without dismantling the EE220 basic unit.

The illustration shows the EE07 RH probe placed into the Humor 20 high end portable humidity calibrator and the EE07 T probe in a dry block calibrator.



## Reference Probes

A functional and accuracy check of the EE220 basic unit can be performed using reference probes instead of the regular EE07 probes. These are certified by individual test report and available for two pairs of fix RH and T values:

- RH = 10 % and T = 45 °C (113 °F)
- RH = 90 % and T = 5 °C (41 °F)

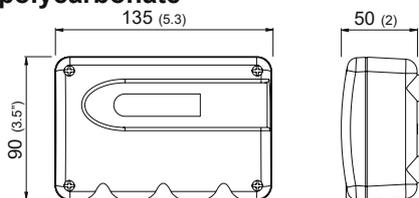


## Sensor Protection by E+E Proprietary Coating

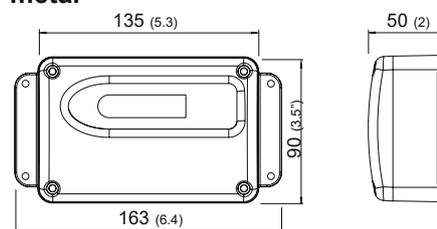
The E+E proprietary sensor coating is a hygroscopic layer applied to the active surface of the RH sensing element. The coating extends substantially the life-time and the measurement performance of the E+E sensor in corrosive environment. Additionally, it improves the sensor's long term stability in dusty, dirty or oily applications by preventing stray impedances caused by deposits on the active sensor surface.

## Dimensions (mm/inch)

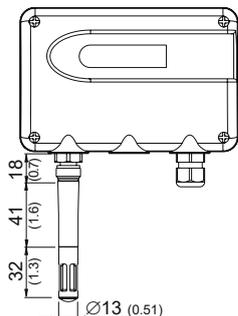
### polycarbonate



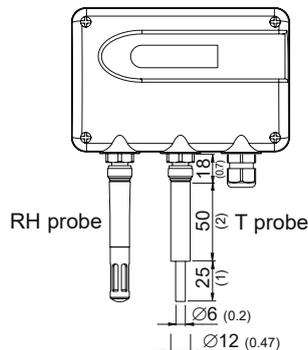
### metal



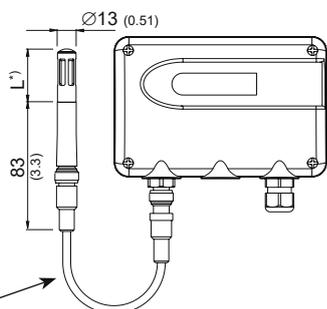
### with one RH&T probe EE220-xxx1x



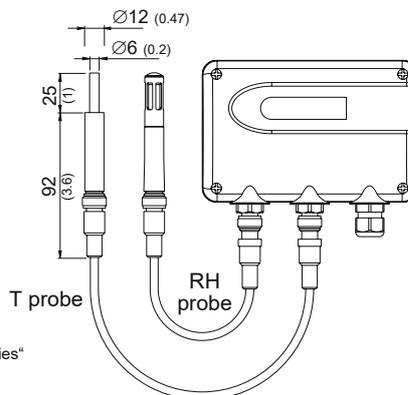
### with two separate probes for RH and T EE220-xxx2x



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



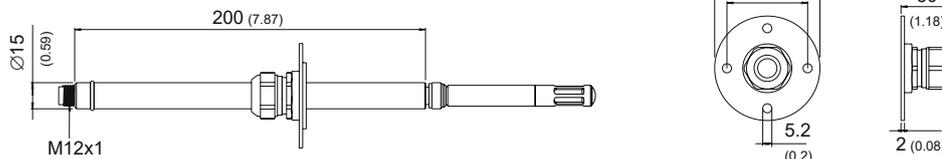
### with two remote separate probes for RH and T EE220-xxx2x +2x HAxxxx



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

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

### duct mounting kit HA010209



## Technical Data

### Outputs

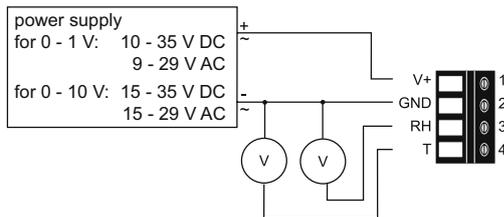
0...100 % RH (T output scale according to ordering code)	0 - 1 V 0 - 10 V 4 - 20 mA (2-wire)	-0.5 mA < I <sub>L</sub> < 0.5 mA - 1 mA < I <sub>L</sub> < 1 mA R <sub>L</sub> < 500 Ohm
T dependence of analogue outputs	max. 0.2 mV/°C	resp. 1 µA/°C

### General

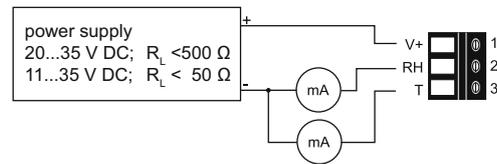
Supply voltage (Class III) 	10 - 35 V DC or 15 - 35 V DC	or	9 - 29 V AC or 15 - 29 V AC
for 0 - 1 V output	10 - 35 V DC		9 - 29 V AC
for 0 - 10 V output	15 - 35 V DC		15 - 29 V AC
for 4 - 20 mA output	10 - 35 V DC		
Load resistor for 4 - 20 mA output	$R_L < \frac{U_v - 10V}{0.02 A} [\Omega]$		
Current consumption	typ. 10 mA for DC supply		typ. 20 mA <sub>eff</sub> for AC supply
Electrical connection	screw terminals max. 2.5 mm <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 enclosure	PC or Al Si 9 Cu 3		
Protection rating enclosure	IP65 / NEMA 4		
Electromagnetic compatibility	EN 61326-1	EN 61326-2-3	
Working temperature range basic unit	-40...60 °C (-40...140 °F)		
Storage temperature range	-40...60 °C (-40...140 °F)		

## Connection Diagram

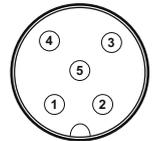
### EE220- x1x - x3x



### EE220- x6x



### Option C03



- 1... brown .... T
- 2... white ..... RH
- 3... blue ..... NC
- 4... black ..... GND
- 5... grey ..... V+

## Sensing Probes (for technical data and ordering guide see EE03 and EE07 data sheets)

Humidity/Temperature Probes		Measuring Range
EE07 RH/T probe, polycarbonate		0...100 % RH -40...80 °C (-40...176 °F)
EE07 RH/T probe, stainless steel for clean rooms, food and pharmaceutical industry		0...100 % RH -40...80 °C (-40...176 °F)
EE03 RH/T module for surface moisture, detection of condensation danger		0...95 % RH -40...85 °C (-40...185 °F)
Temperature Probes		Measuring Range
EE07 T probe, polycarbonate		-40...80 °C (-40...176 °F)
EE07 T probe, stainless steel for clean rooms, food and pharmaceutical industry		-40...80 °C (-40...176 °F)

## Scope of Supply

### EE220 Basic Unit

- EE220 according to ordering guide
- Cable gland M16 x 1.5
- Test report according to DIN EN 10204-3.1
- User Guide

### Probe (EE03 or EE07)

- EE03 or EE07 according to ordering guide
- Test report according to DIN EN 10204-3.1 (only EE07)

### Probe Cable for EE03 or EE07

- Probe cable according to ordering guide

## Ordering Guide

The EE220 basic unit does not include the sensing probes, which are to be ordered separately. The order shall include three positions:

- EE220 basic unit
- EE07 probes or EE03 modules
- Probe cables, optional for EE07 probes and compulsory for EE03 modules.

### Position 1: EE220 Basic Unit

		EE220			
Hardware Configuration	Enclosure	Metal	M		
		Polycarbonate	P		
	Output	0 - 1 V	1		
		0 - 10 V	3		
		4 - 20 mA	6		
	Model	Wall mount - cable gland M16x1.5	A		
Wall mount - rear cable inlet		F			
Number of probes accommodated	One combined RH & T probe	1			
	One RH probe and one T probe	2			
Display	Without display	no code			
	With display	D07			
Connection (only for type A)	Cable gland	no code			
	1 plug for power supply and outputs	C03			
Software Configuration	T unit	°C	no code		
		°F	E01		
	T output scale	-40...60 (T02)	0...120 (T16)	-20...50 (T48)	Txx
		-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)	
		Other T scale according to data sheet „Scaling of the outputs“			

### Position 2 - Probes

See EE03 and EE07 ordering guide in the corresponding data sheets at [www.epluse.com](http://www.epluse.com).

### Position 3 - Probe cables

TYPE		
Cable for EE07 (optional)	2 m (6.6 ft)	HA010801
	5 m (16.4 ft)	HA010802
	10 m (32.8 ft)	HA010803
Cable for EE03 (compulsory)	2 m (6.6 ft)	HA010328
	5 m (16.4 ft)	HA010329

## Order Example

### Position 1 - Basic Unit:

#### EE220-M3A1C03/T07

Enclosure: Metal  
 Output: 0 - 10 V  
 Model: Wall mount - cable gland M16x1.5  
 Number of probes accommodated: One combined RH & T probe  
 Display: Without display  
 Connection (only for type A): 1 plug for power supply and outputs  
 T-Unit: °C  
 T-Scaling: 0...60 °C

### Position 2 - Probe:

#### EE07-M1HS2F9

Enclosure: Stainless steel  
 Model: Humidity and temperature  
 Filter: Stainless steel grid  
 Coating: Without

### Position 3 - Probe cable:

#### 1x HA010802

Type: 5 m (16.4 ft) cable for EE07

## Accessories

- Display and metal front cover D07M
- Display and polycarbonate front cover D07P
- Duct mounting kit HA010209
- Extension cable for EE07 2 m (6.6 ft) / 5 m (16.4 ft) / 10 m (32.8 ft) HA010801/02/03
- Bracket for rail installation (polycarbonate enclosure only) HA010203
- Power supply adapter V03
- Reference probes set (2 probes) HA010403