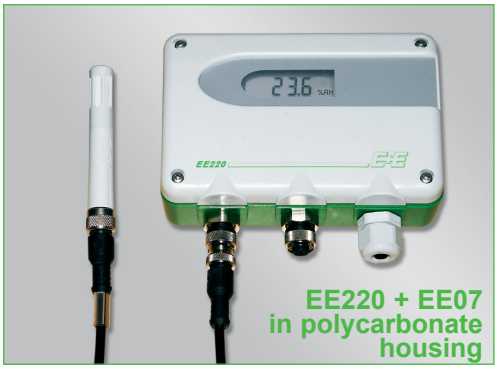
EE220 Series

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.



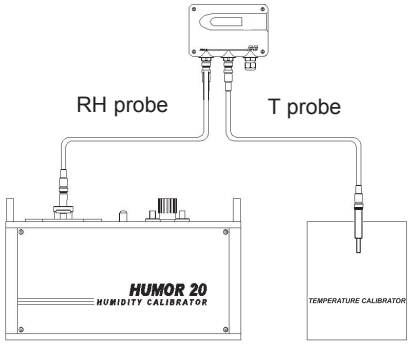
EE220 + EE07 in polycarbonate housing

EE220 + EE07 in metal housing

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

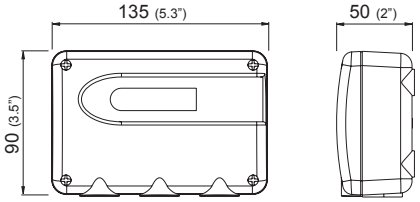
pharmaceutical industry
clean rooms
storage rooms
green houses
cooling chambers

Features

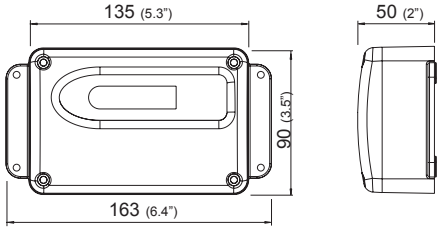
interchangeable probes
remote sensing probe up to 10m (32.8ft)
measuring range 0...100% RH / -40...80°C (-40...176°F)
optional display
easy field loop-calibration

Housing dimensions (mm)

polycarbonate housing



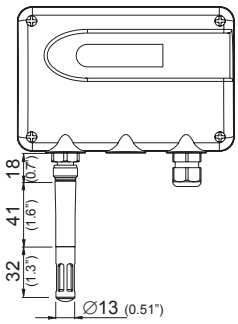
metal housing



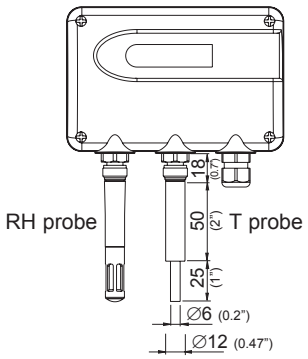
For use in harsh industrial environments all models of EE220 series are available in a robust metal housing. (Interchangeable probes are also available in metal version.)
The smooth surface and the rounded outlines allow the use in clean room applications.

Probe dimensions (mm)

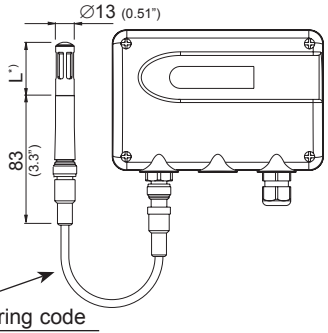
with one RH&T probe
EE220-xxx1x



with two separate probes for RH and T
EE220-xxx2x



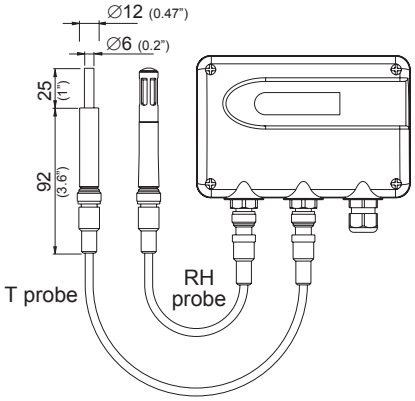
with one remote RH&T probe
EE220-xxx1x
+HAxxxx



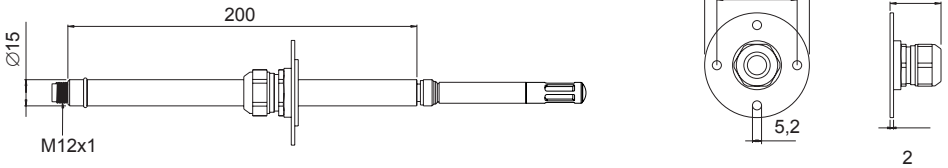
cable length	ordering code
2m (6.6ft)	HA010801
5m (16.4ft)	HA010802
10m (32.8ft)	HA010803

*) L = Filter lenght see Datasheet „Accessories“

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



duct mounting kit
HA010209



Technical Data

Sensing probe

refer to data sheet of respective sensing probe

Outputs

0...100% RH/ xx...yy°C[2]	0 - 1V	-0.5mA < I_L < 0.5mA
(temperature output scale according to	0 - 10V	-1mA < I_L < 1mA
Txx ordering code)	4 - 20mA (two wire)	R_L < 500 Ohm
Temperature dependence of analogue outputs	max. 0.2 $\frac{mV}{°C}$	resp. 1 $\frac{\mu A}{°C}$

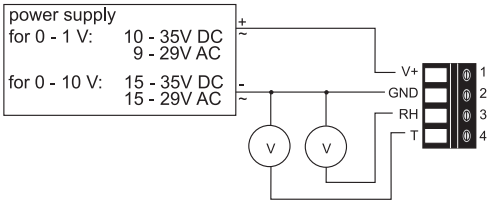
General

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	$R_L < \frac{U_v - 10V}{0.02\ A}$ [Ω]		
Current consumption	typ. 10mA for DC supply		typ. $20mA_{eff}$ for AC supply
Electrical connection	screw terminals max. $2.5mm^2$		
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 Industrial Environment	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)		

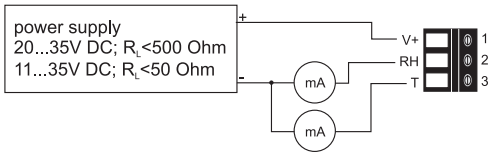
1) Refer to ordering guide

Connection Diagram

EE220- x1x - x3x



EE220- x6x



Overview of Sensing Probes

Application	Picture	Measuring Range	Accuracy	Order Code
Humidity/Temperature Probes				
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
Temperature Probes				
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-
Hardware Configuration			
Housing	metal housing		M
	polycarbonate housing		P
Output	0-1V		1
	0-10V		3
	4-20mA		6
Model	wall mounting - cable gland M16x1.5		A
	wall mounting - rear cable outlet		F
Number of probes	1 (for probe RH/T)		1
	2 (for probe RH+T)		2
Display	without Display		
	with Display		D07
Plug (only for type A)	without plug		
	1 plug for power supply and outputs		C03
Software Configuration			
T-Unit	°C		
	°F		E01
T-Scaling	-40...60 (T02)	0...120 (T16)	-20...50 (T48)	Select according to Ordering Guide (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)	Other T-scaling refer to data sheet „T-Scalings“
	-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)	
Position 2 - Probe			
Humidity / Temperature	probe RH/T (polycarbonat)		EE07-PFTx
	probe RH/T (metal)		EE07-MFTx
	module RH/T		EE03-FT9
Temperature	probe T (polycarbonat)		EE07-PTx
	probe T (metal)		EE07-MT
Position 3 - Probe cable			
Cable for EE07	2m (6.6ft)		HA010801
	5m (16.4ft)		HA010802
	10m (32.8ft)		HA010803
Cable for EE03	2m (6.6ft)		HA010328
	5m (16.4ft)		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