

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.

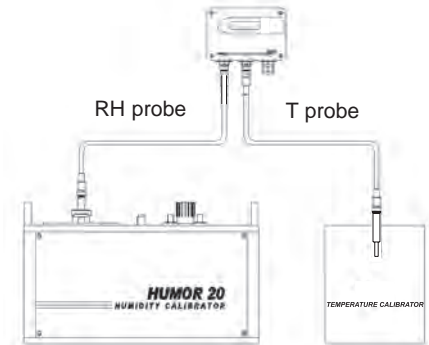
Duct mounting can be done easily with the optional duct mounting kit.



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

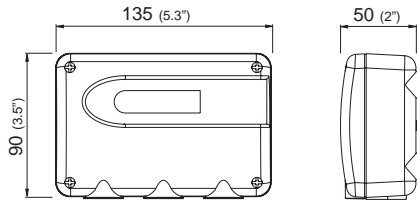
- pharmaceutical industry
- clean rooms
- storage rooms
- green houses
- cooling chambers

Features

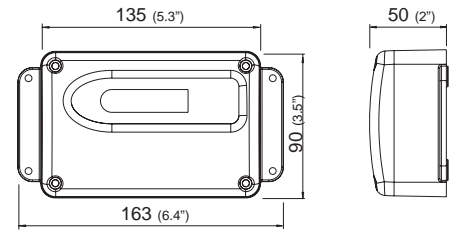
- interchangeable probes
- remote sensing probe up to 10m (32.8ft)
- measuring range 0...100% RH / -40...80°C (-40...176°F)
- optional display
- easy field loop-calibration

Housing dimensions (mm)

polycarbonate housing



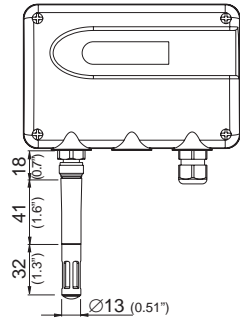
metal housing



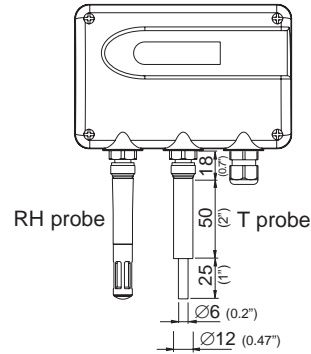
For use in harsh industrial environments all models of EE220 series are available in a robust metal housing. (Interchangeable probes are also available in metal version.) The smooth surface and the rounded outlines allow the use in clean room applications.

Probe dimensions (mm)

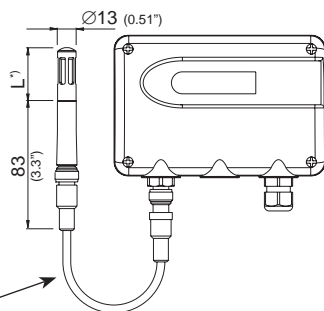
with one
 RH&T probe
 EE220-xxx1x



with two separate
 probes for
 RH and T
 EE220-xxx2x

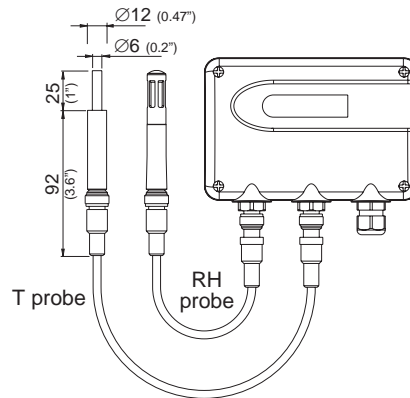


with one
 remote
 RH&T probe
 EE220-xxx1x
 +HAxxxx



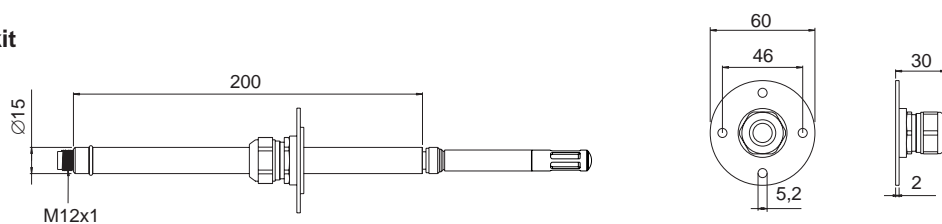
cable length	ordering code
2m (6.6ft)	HA010801
5m (16.4ft)	HA010802
10m (32.8ft)	HA010803

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



*) 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 ²⁾ (temperature output scale according to Txx ordering code)	0 - 1V 0 - 10V 4 - 20mA (two wire)	-0.5mA < I _L < 0.5mA -1mA < I _L < 1mA R _L < 500 Ohm
Temperature dependence of analogue outputs	max. 0.2 $\frac{mV}{^{\circ}C}$ resp. 1 $\frac{\mu A}{^{\circ}C}$	

General

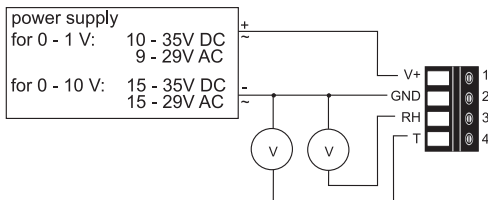
Supply voltage	10 - 35V DC or 9 - 29V AC	
for 0 - 1V output	10 - 35V DC	or 9 - 29V AC
for 0 - 10V output	15 - 35V DC	or 15 - 29V AC
for 4 - 20mA output	10 - 35V DC	
Load resistor for 4 - 20mA output	$R_L < \frac{U_L - 10V}{0.02A}$ [Ω]	
Current consumption	typ. 10mA for DC supply	typ. 20mA _{eff} for AC supply
Electrical connection	screw terminals max. 2.5mm ²	
Cable gland	M16x1.5 cable \varnothing 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)	



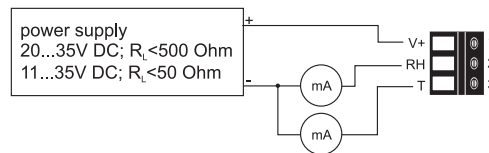
1) Refer to ordering guide

Connection Diagram

EE220- x1x - x3x



EE220- x6x



Overview of Sensing Probes

Application	Picture	Measuring Range	Accuracy	Order Code
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) Other T-scaling refer to data sheet „T-Scalings“
	-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)	
	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

Scaling of T-outputs

EE08, EE10, EE10-T, EE21, EE22, EE23, EE31, EE30EX, EE33, EE35, EE36, E371. EE381 EE75 and EE80

Following Txx defines the scaling of the outputs for **temperature (T)**, **dew point temperature (Td)**, **frost point temperature (Tf)** and **wet bulb temperature (Tw)**. The Txx codes are to be used in the order number of EE08, EE10, EE10-T, EE21, EE22, EE23, EE29, EE30EX, EE31, EE32, EE33, EE35, EE36, EE75 and EE80 transmitter series.

Please see the ordering guide at the end of each data sheet.

The limits of the temperature scale shall be within the temperature working range of respective EExx transmitter.

For T scale in °C, please use Txx code alone:

Example :

EE29-PFTD3025AB6-T57 T output scale: 4...20mA = -20...+140°C

For T scale in °F, please use E01-Txx:

Example:

EE31-PFTE3056AB5-E01-T57 T output scale: 0...10V = -20...+140°F

T01	-30...+40	T35	+100...+180	T69	0...+20	T103	-30...+100
T02	-40...+60	T36	0...+150	T70	-10...+25	T104	-60...+40
T03	-10...+50	T37	0...+130	T71	+50...+130	T105	-40...+40
T04	0...+50	T38	-40...+70	T72	+50...+140	T106	+10...+50
T05	0...+100	T39	-30...+20	T73	-20...+70	T107	0...+200
T06	-5...+45	T40	+20...+180	T74	-40...+356	T108	-112...+32
T07	0...+60	T41	+60...+110	T75	+32...+212	T109	-40...+32
T08	-30...+70	T42	-10...+100	T76	+32...+122	T110	-35...+50
T09	-30...+120	T43	-35...+35	T77	+20...+140	T111	-60...0
T10	-20...+120	T44	-40...+50	T78	-40...+248	T112	0...+30
T11	-10...+70	T45	-30...+50	T79	-40...+100	T113	-23...+85
T12	-40...+120	T46	0...+75	T80	-40...+176	T114	+60...+180
T13	+15...+25	T47	-20...+150	T81	-40...+250	T115	+10...+40
T14	-20...+100	T48	-20...+50	T82	-40...+350	T116	-80...+180
T15	+20...+120	T49	0...+170	T83	-40...+140	T117	+15...+35
T16	0...+120	T50	-10...+60	T84	-40...+300	T118	-70...+180
T17	0...+70	T51	-50...+70	T85	0...+140	T119	-25...+25
T18	-10...+40	T52	-40...+180	T86	0...+176	T120	-70...+60
T19	+10...+100	T53	+80...+120	T87	0...+248	T121	+55...+95
T20	-30...+60	T54	-30...+35	T88	0...+250	T122	-20...+20
T21	0...+80	T55	0...+40	T89	0...+350	T123	-80...+80
T22	-40...+80	T56	0...+5	T90	+32...+120		
T23	-30...+130	T57	-20...+140	T91	+32...+140		
T24	-20...+80	T58	+10...+30	T92	+32...+180		
T25	-20...+60	T59	-10...+30	T93	+32...+248		
T26	0...+180	T60	-20...+40	T94	+32...+250		
T27	-50...+50	T61	-5...+100	T95	+32...+300		
T28	-80...+60	T62	-5...+50	T96	+32...+132		
T29	-20...+180	T63	-80...+20	T97	-60...+120		
T30	0...+160	T64	-60...+60	T98	-60...+212		
T31	-5...+55	T65	-60...+20	T99	-110...+70		
T32	-80...0	T66	-50...+100	T100	-76...+140		
T33	-40...+160	T67	-80...+100	T101	+32...+350		
T34	-70...+40	T68	-40...+150	T102	-15...+25		