

EE21 Series

High-Precision Humidity / Temperature Transmitter for HVAC Applications

Transmitters of the EE21 series have been developed for high-precision measurement of relative humidity and temperature.

EE21 transmitters are available for wall and duct mounting with or without the very useful snap in-mounting kit, which allows a quick and easy exchange of the transmitter. Outputs can be selected between voltage and current.

An optional radiation shield providing a forced ventilation is recommended for use in outdoor applications.

Special protection coating for the sensing element (code - HC) permits the permanent use in very polluted environments.

High humidity calibration is recommended for applications in high lasting humidities > 90% RH (Code - CA01).



Humidity Two-point Adjustment

With an easy routine via the push-buttons "UP" and "DOWN" on the circuit board the user can perform a fast and accurate two-point adjustment of relative humidity.



Typical Applications

- green houses
- storage rooms
- swimming halls
- meteorology

Features

- measuring range 0...100% RH
- accuracy $\pm 2\%$ RH
- traceable calibration
- working range $-40...60^{\circ}\text{C}$ ($-40...140^{\circ}\text{F}$)
- wettable
- excellent long term stability

Technical Data

Measuring values

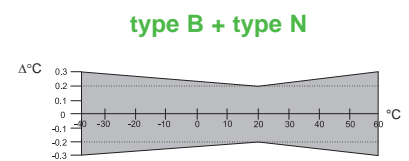
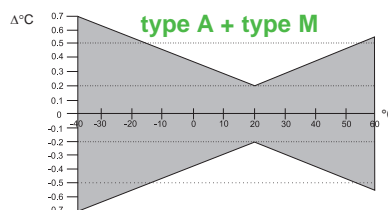
Relative Humidity

Sensor	HC1000 or HC1000C (with coating)	
Analogue output appropriate 0...100% RH	0-1V	$-0.5\text{mA} < I_L < 0.5\text{mA}$
	0-5V / 0-10V	$-1\text{mA} < I_L < 1\text{mA}$
	4-20mA (two wires)	$R_L < 500 \text{ Ohm}$
Working range ¹⁾	0...100% RH	
Accuracy at 20°C (68°F)	$\pm 2\%$ RH (0...90%)	$\pm 3\%$ RH (90...100%)
	Traceable to international standards, administrated by NIST, PTB, BEV...	
Hysteresis 10% - 80% - 10%	< 2% RH	
Temperature dependence of electronics	typ. 0.03% RH/°C	(0.02% RH/°F)
Temperature dependence of probe	typ. 0.03% RH/°C	(0.02% RH/°F)

Temperature

Sensor	Pt1000 (tolerance class A, DIN EN 60751)	
Analogue output $-40...60^{\circ}\text{C}$ ($-40...140^{\circ}\text{F}$)	0-1V	$-0.5\text{mA} < I_L < 0.5\text{mA}$
	0-5V / 0-10V	$-1\text{mA} < I_L < 1\text{mA}$
	4-20mA (two wires)	$R_L < 500 \text{ Ohm}$

Accuracy



Temperature dependence of electronics	typ. 0.01°C / °C
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General

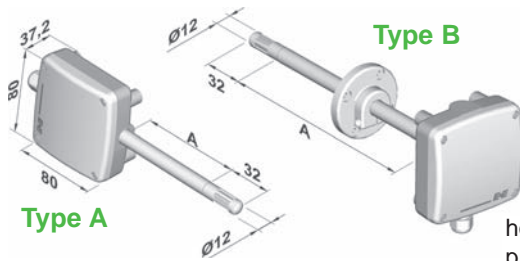
Supply	for 0 - 1V for 0 - 5V for 0 - 10V for 4 - 20mA	10 - 35V DC 12 - 35V DC 15 - 35V DC 10V + R _L x 0,02 < U _V < 35V DC; R _L < 500 Ohm	or	9 - 29V AC 15 - 29V AC 15 - 29V AC
Current consumption		for DC supply: typ. 5mA		for AC supply: typ. 15mA _{eff}
Electrical connection		screw terminals max. 1.5 mm ² (AWG 16)		
Cable gland		M16x1.5 or connection plug (only snap-in models N + M) cable Ø 4.5 - 10 mm (0.18 - 0.39")		
Sensor protection		membrane filter, sintered stainless steel filter, metal grid filter, PTFE filter		
Electromagnetic compatibility		EN61326-1 Industrial Environment	EN61326-2-3	ICES-003 ClassB FCC Part15 ClassB
Temperature ranges		working temperature probe: working temperature electronics: storage temperature:		-40...60°C (-40...140°F) -40...60°C (-40...140°F) -25...60°C (-13...140°F)



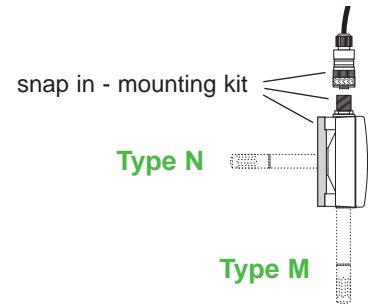
1) Please refer to working range of HC1000!

Dimensions (mm)

1 mm = 0.03937" / 1" = 25.4 mm

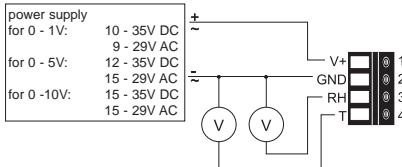


housing: PC
 protection class: IP65, Nema 4

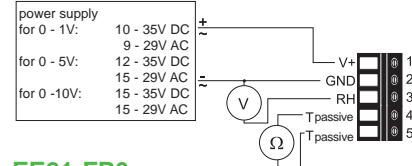


Connection Diagram

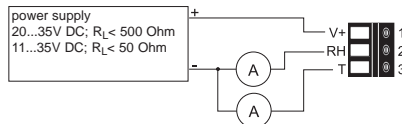
EE21-FT1/2/3xxx / EE21-F1/2/3xxx



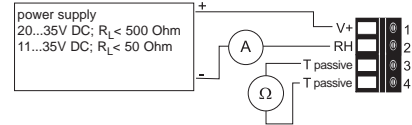
EE21-FP3xxx



EE21-FT6xxx / EE21-F6xxx



EE21-FP6xxx



Ordering Guide

MODEL	OUTPUT	T-SENSOR (only passive)	HOUSING TYPE	PROBE LENGTH (see dimensions "A")	FILTER
humidity + temperature (FT)	0 - 1 V (1)	Pt 100 DIN A (A)	wall mounting (A)	50 mm (1.9") (2)	membrane filter (1)
humidity (F)	0 - 5 V (2)	Pt 1000 DIN A (C)	duct mounting (B)	200 mm (7.9") (5)	sintered stainless steel filter(3)
humidity+temp. passive (FP)	0 - 10 V (3) 4 - 20 mA (6)		snap in - wall mounting ¹⁾ (M) snap in - duct mounting ¹⁾ (N)		metal grid filter (6)
EE21-					

COATING	CALIBRATION	T-UNIT	SCALING OF T-OUTPUT
no (no code)	standard (no code)	°C (no code)	-40...60 (T02) -40...140 (T83)
yes (HC01)	high humidity (CA01)	°F (E01)	-30...70 (T08) 0...176 (T86)
			-20...80 (T24) 32...132 (T96)
			other (Txx)

Order Example

EE21-FT3A26/T24

model: RH/T transmitter
 output: 0 - 10V
 housing type: wall mounting
 probe length: 50 mm (7.9")
 filter: metal grid filter
 sensor coating: no
 calibration: standard
 T-unit: °C
 Scaling of T-output: -20...80°C

1) Combination snap - in mounting and model FP is not possible

Accessories

- radiation shield (HA010501)
- filter caps (HA0101xx)

EE21

Scaling of T-outputs

EE08, EE10, EE10-T, EE21, EE22, EE23, EE29, EE30EX, EE31, EE32, EE33, EE35, EE36, 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		