

## EE35

## Industrial Transmitter for Dew Point Measurement

Exact dew point monitoring is increasingly playing a more important role in many industrial applications, such as drying processes, air pressure pipelines, etc. For these purposes the multifunctional EE35 Series offers the ideal features.

The EE35 Series is based on a functional, user-friendly housing concept and on the proven polymer humidity sensors of the HC Series.

A specially developed autocalibration process enables measurements in a measurement range of  $-60...60^{\circ}\text{C Td}$  ( $-76...140^{\circ}\text{F Td}$ ), with a Td measurement accuracy of  $\pm 2^{\circ}\text{C}$  ( $\pm 3.6^{\circ}\text{F}$ ).

Two freely configurable and scalable analogue outputs are available for the two measurement values (Td, T).

An optional hygrostat output, which can be set by means of a potentiometer, provides an alarm signal in a simple way when a threshold of the permitted dew point is exceeded.

An optional display for the measurement values and the associated MIN/MAX values allows a quick overview of the current situation.



### Autocalibration

Dew points in the range of  $-60...-20^{\circ}\text{C}$  ( $-76...-4^{\circ}\text{F}$ ) at room temperatures correspond to relative humidity values of 0.08...5.37% RH. The measurement of such low humidity values is not possible with conventional capacitive measurement methods. For the EE35 Series, a special autocalibration process is used to compensate for the usual drift effects and thus to achieve high accuracy measurements also at  $-60^{\circ}\text{C Td}$  ( $-76^{\circ}\text{F Td}$ ).

### Installation

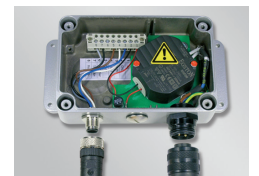
In addition to the direct mounting of the dew point probe, a ball valve installation enables the mounting and removal of the probe without having to interrupt the running process.

### Alarm Output

An optional alarm module with one relay output is available for control and alarm purposes. The setting of the Td threshold can be easily done with the potentiometer on the printed circuit board.

### Integrated power supply

A power supply, integrated in the back module of the housing, can be ordered optionally (100...240V AC, 50/60Hz; ordering code V01). The power supply V01 is available for both polycarbonate and metal housing and comes standard with two plugs for supply and outputs to allow an easy connection.



### Typical Applications

industrial processes  
 monitoring of air pressure pipelines  
 warehouses  
 drying processes  
 paper industries  
 chemical industries

### Features

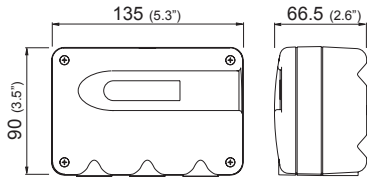
measuring range  $-60...60^{\circ}\text{C Td}$  ( $-76...140^{\circ}\text{F Td}$ )  
 accuracy of measurement  $\pm 2^{\circ}\text{C Td}$  ( $\pm 3.6^{\circ}\text{F Td}$ )  
 traceable calibration  
 alarm output for dew point  
 autocalibration

## Housing Dimensions (mm)

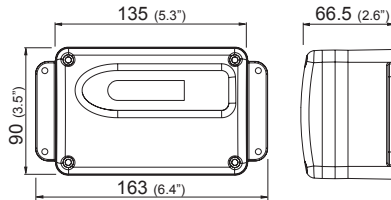
## Installation Example

### Housing:

polycarbonate housing

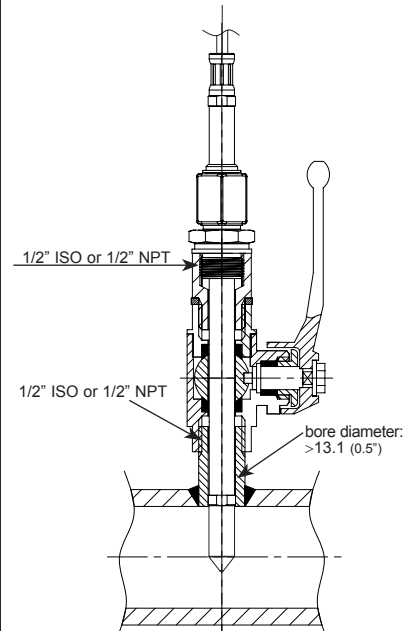


metal housing

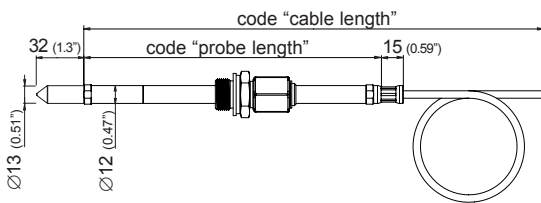


For use in harsh industrial environments the EE35 series is available in a robust metal housing.

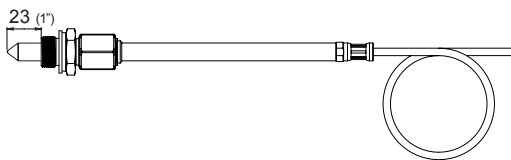
**ball valve installation**  
(pressure-tight up to 20bar/290psi)



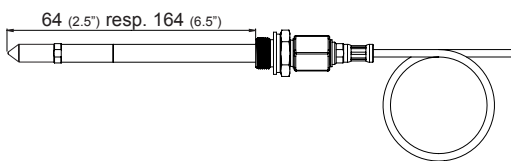
### Model:



**EE35-xEx**  
Remote probe for T up to 60°C (140°F)  
and pressure-tight up to 20bar (290psi)  
Probe material: stainless steel

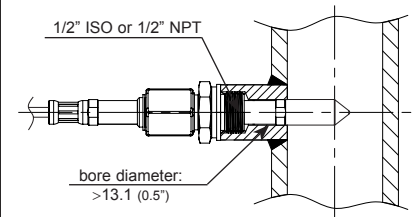


minimum installation depth



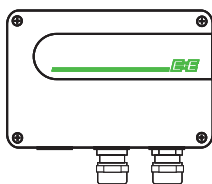
maximum installation depth

**fixed installation**  
(pressure-tight up to 20bar/290psi)



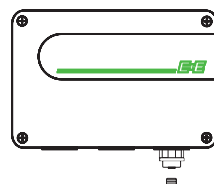
## Connection Versions

### Standard



2x M16x1.5

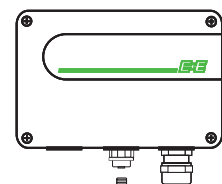
### Plug Option C03



Lumberg  
RKC 5/7

Power supply +  
Analogue output

### Plug Option C06



Lumberg  
RSC 5/7

M16x1.5

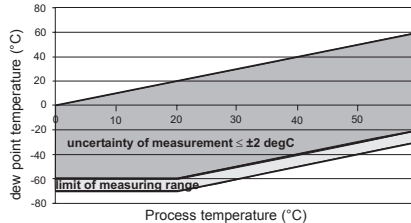
## Technical Data

### Measuring Quantities

#### Dew point

Humidity sensor  
 Measuring range  
 (below 0°C / 32°F the transmitter outputs frostpoint)  
 Accuracy  
 Traceable to intern. standards,  
 administrated by NIST, PTB, BEV...

HC1000-400  
 standard calibration: -40...60°C (-40...140°F)  
 special calibration: -60...60°C (-76...140°F)  
 ≤ ±2°C (≤ ±3.6°F)



Response time  $t_{90}$   
 80 sec. -20°C → -40°C (-4°F → -40°F)  
 10 sec. -40°C → -20°C (-40°F → -4°F)

#### Temperature

Sensor Pt1000 DIN A  
 Measuring range 0...60°C (32...140°F)  
 Accuracy of temperature measurement at 20°C (68°F) ±0.2°C (±0.36°F)  
 Sensitivity error at full scale ±0.1°C (±0.18°F)  
 Temperature dependence of electronics < 0.005°C/°C

### Outputs

Two freely selectable and scaleable analogue outputs  
 xx...yy°C T, Td/Tf / xx...yy°C respectively

0 - 5V -1mA <  $I_L$  < 1mA  
 0 - 10V -1mA <  $I_L$  < 1mA  
 4 - 20mA  $R_L$  < 500 Ohm  
 0 - 20mA  $R_L$  < 500 Ohm

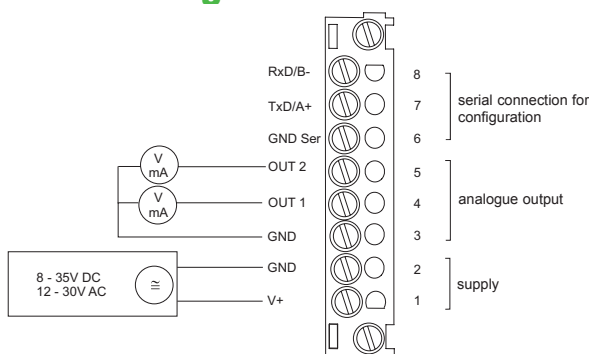
### General

Supply voltage 8...35V DC  
 12...30V AC (optional 100...240V AC, 50/60Hz)  
 Current consumption - voltage output typ. 40mA, with autocalibration: 100mA  
 - current output typ. 80mA, with autocalibration: 140mA  
 Pressure range 0...20bar (0...300psi)  
 Housing / protection class PC or Al Si 9 Cu 3 / IP65; Nema 4  
 Cable gland M16 x 1.5 (option: plug) cable Ø 4.5 - 10 mm (0.18 - 0.39")  
 Electrical connection screw terminals up to max. 1.5mm<sup>2</sup> (AWG 16)  
 Sensor protection stainless steel sintered filter  
 Working temperature range probe: -40...60°C (-40...140°F)  
 electronic: -40...60°C (-40...140°F)  
 with LC display: -20...50°C (-4...122°F)  
 with alarm module: -40...60°C (-40...140°F)  
 Storage temperature range -40...60°C (-40...140°F)  
 Electromagnetic compatibility according to EN 61326-1 EN61326-2-3 ICES-003 ClassB **CE**  
 Industrial Environment FCC Part15 ClassB

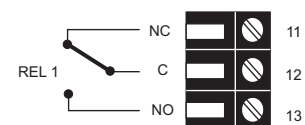
### Technical Data for Options

Display graphical LC display (128x32 pixels), with integrated push-buttons for selecting parameters Td or T and MIN/MAX functions  
 Alarm output for Td/Tf - range: -60...40°C Td (-60...40°F Td) adjustable with the potentiometer on the printed circuit board  
 - 1 switch contact  
 - 250V AC/6A or 28V DC/6A

### Connection Diagram



#### Terminal configuration - Alarm output



## Ordering Guide EE35

### EE35-

Hardware Configuration								
<b>Housing</b>	metal housing						M	
	polycarbonate housing						P	
<b>Type</b>	pressure tight						E	
<b>Cable length</b>	1m (3.3ft)						01	
<b>(incl. probe length)</b>	2m (6.6ft)						02	
	5m (16.4ft)						05	
<b>Probe length</b>	100mm (3.9")						3	
	200mm (7.9")						5	
<b>Pressure tight feedthrough</b>	1/2" male thread						HA03	
	1/2" NPT thread						HA07	
<b>Display</b>	without display							
	with display						D05	
<b>Alarm output<sup>1)</sup></b>	without relay							
	with relay						SW	
<b>Plug</b>	cable glands							
	1 plug for power supply and outputs						C03	
	1 cable thread / 1 plug for RS232						C06	
<b>Probe</b>	fixed							
	pluggable						P01	
<b>Td-Calibration</b>	standard -40...60°C (-40...140°F)							
	special calibration -60...60°C (-76...140°F)						CA02	
<b>Supply voltage</b>	8...35V DC / 12...30V AC							
	integrated power supply 100...240V AC, 50/60Hz <sup>2)</sup>						V01	
Software Configuration								
<b>Physical parameters of the outputs</b>	temperature	T	[°C/°F]		output 1		B	
	dew point temperature	Td	[°C/°F]		output 2		C	
	frost point temperature	Tf	[°C/°F]				D	
<b>Type of output signals</b>	0-5V						2	
	0-10V						3	
	0-20mA						5	
	4-20mA						6	
<b>Measured value unit</b>	metric [°C]							
	non metric [°F]						E01	
<b>Scaling of T-output</b>	-40...60	(T02)	-60...20	(T65)	-40...100	(T79)	output T	Select according to ordering guide (Txx) <small>Other T-scaling refer to data sheet „T-Scalings“</small>
	-50...50	(T27)	-50...100	(T66)	-40...140	(T83)		
	-80...20	(T63)	-20...70	(T73)	-60...120	(T97)		
	-60...60	(T64)	20...140	(T77)				
<b>Scaling of Td/Tf-output</b>	-40...60	(T02)	0...60	(T07)	-60...60	(T64)	output Td resp. Tf	Select according to ordering guide (Tdx resp. Tfx) <small>Other Td/Tf-scaling refer to data sheet „T-Scalings“</small>
	-10...50	(T03)	0...80	(T21)	32...120	(T90)		
	0...50	(T04)	-40...80	(T22)	32...140	(T91)		
	0...100	(T05)	-20...80	(T24)	32...132	(T96)		

1) Combination alarm output and plugs is not possible (with cable glands only) / combination alarm output and integrated power supply is not possible

2) Integrated power supply includes 2 plugs for power supply and outputs / further plug options are not possible

## Accessories

- Ball valve set 1/2" ISO (HA050101)
- Ball valve set 1/2" NPT (HA050104)
- Display + housing cover in metal („D05M“)
- Display + housing cover in polycarbonate („D05P“)
- Stainless steel sintered filter („HA010103“)

- Interface cable for PCB („HA010304“)
- Interface cable for plug C06 („HA010311“)
- Bracket for installation onto mounting rails\* („HA010203“)
- Sealing element (HA050308)

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

## Order Example

### EE35-ME025HA03D05P01/BC5-T02-Td02

Housing: metal housing  
 Type: pressure tight  
 Cable length: 2m (6.6ft)  
 Probe length: 200mm (7.9")  
 Pressure tight feedthrough: 1/2" male thread  
 Display: with display  
 Alarm output: without relay  
 Plug: cable glands  
 Sensing probe: pluggable  
 Td Calibration: standard  
 Supply voltage: 8...35V DC / 12...30V AC

Output 1: T  
 Output 2: Td  
 Output signal: 0-20mA  
 Measured value unit: metric  
 Scaling of T-output: -40...60°C  
 Scaling of Td-output: -40...60°C