

# EE35 Series

## 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°C Td (-76...140°F Td), with a Td measurement accuracy of ±2°C (±3.6°F).

Two freely configurable and scaleable 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°C (-76...-4°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°C Td (-76°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

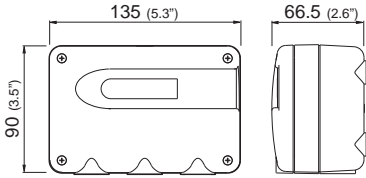
- measuring range -60...60°C Td (-76...140°F Td)**
- accuracy of measurement ±2°C Td (±3.6°F Td)**
- traceable calibration**
- alarm output for dew point**
- autocalibration**

## Housing Dimensions (mm)

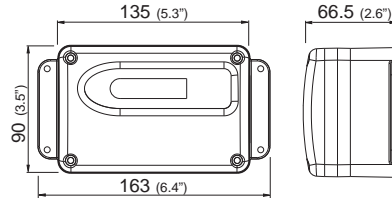
## Installation Example

### Housing:

polycarbonate housing

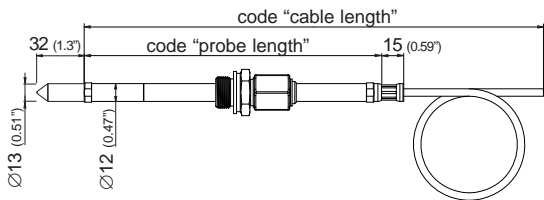


metal housing



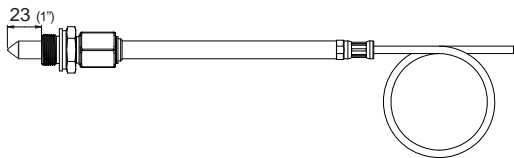
For use in harsh industrial environments the EE35 series is available in a robust metal housing.

### Model:

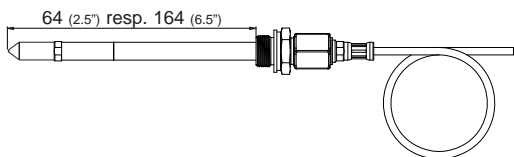


#### EE35-xEx

Remote probe for T up to 60°C (140°F)  
and pressure-tight up to 20bar (300psi)  
Probe material: stainless steel

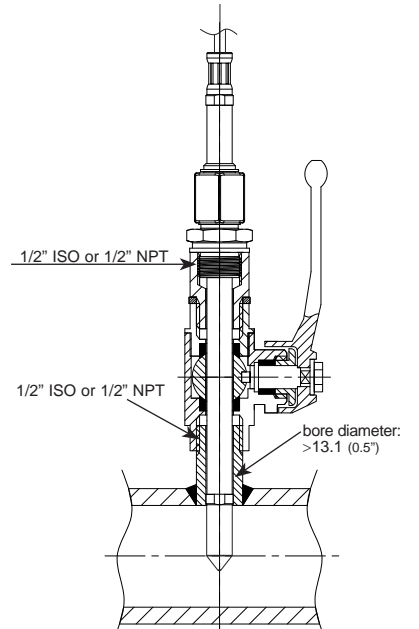


minimum installation depth

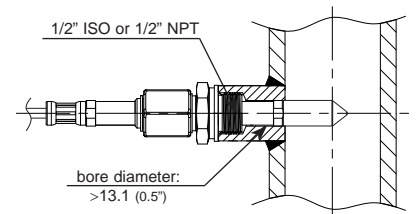


maximum installation depth

### ball valve installation (pressure-tight up to 10bar/145psi)

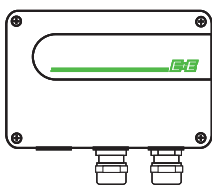


### fixed installation (pressure-tight up to 20bar/300psi)



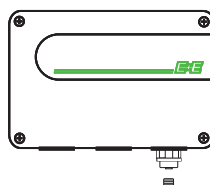
## Connection Versions

### Standard



2x M16x1.5

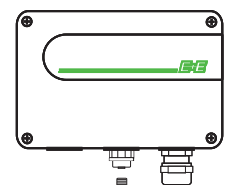
### Plug Option C03



Lumberg  
RKC 5/7

Power supply +  
Analogue output

### Plug Option C06



Lumberg  
RSC 5/7

M16x1.5

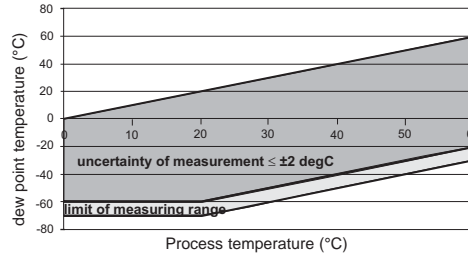
## Technical Data

### 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

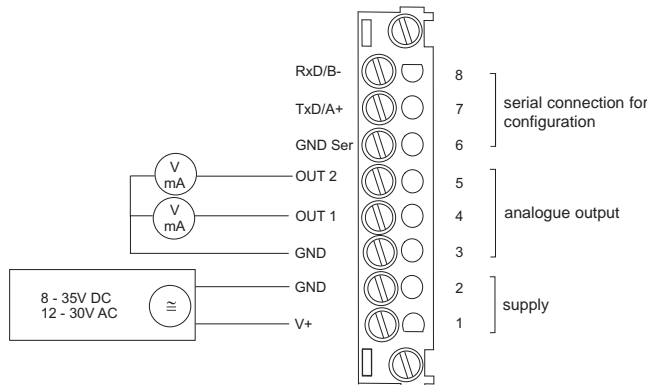
### General

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  
 Industrial Environment FCC Part15 ClassB **CE**

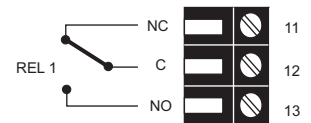
### Technical Data for Options

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					
Housing	metal housing			M	
	polycarbonate housing			P	
Type	pressure tight			E	
Cable length (incl. probe length)	1m (3.3ft)			01	
	2m (6.6ft)			02	
	5m (16.4ft)			05	
Probe length	100mm (3.9")			3	
	200mm (7.9")			5	
Pressure tight feedthrough	1/2" male thread			HA03	
	1/2" NPT thread			HA07	
Display	without display				
	with display			D05	
Alarm output <sup>1)</sup>	without relay				
	with relay			SW	
Plug	cable glands				
	1 plug for power supply and outputs			C03	
	1 cable thread / 1 plug for RS232			C06	
Probe	fixed				
	pluggable			P01	
Td Calibration	standard -40...60°C (-40...140°F)				
	special calibration -60...60°C (-76...140°F)			CA02	
Supply voltage	8...35V DC / 12...30V AC				
	integrated power supply 100...240V AC, 50/60Hz <sup>2)</sup>			V01	
Software Configuration					
Physical parameters of the outputs	temperature	T	[°C/°F]	output 1	B
	dew point temperature	Td	[°C/°F]	output 2	C
	frost point temperature	Tf	[°C/°F]		D
Type of output signals	0-5V				2
	0-10V				3
	0-20mA				5
	4-20mA				6
T / Td / Tf Unit	°C				
	°F				E01
Scaling of T-output	-40...60 (T02)	-60...20 (T65)	-40...100 (T79)	output T	Select according to ordering guide (Txx) Other T-scaling refer to page 165
	-50...50 (T27)	-50...100 (T66)	-40...140 (T83)		
	-80...20 (T63)	-20...70 (T73)	-60...120 (T97)		
	-60...60 (T64)	20...140 (T77)			
Scaling of Td/Tf-output	-40...60 (T02)	0...60 (T07)	-60...60 (T64)	output Td resp. Tf	Select according to ordering guide (Tdx resp. Tfx) Other Td/Tf-scaling refer to page 165
	-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) | - Interface cable for PCB                       | (HA010304) |
| - Ball valve set 1/2" NPT                  | (HA050104) | - Interface cable for plug C06                  | (HA010311) |
| - Display + housing cover in metal         | (D05M)     | - Bracket for installation onto mounting rails* | (HA010203) |
| - Display + housing cover in polycarbonate | (D05P)     | - Sealing element                               | (HA050308) |
| - Stainless steel sintered filter          | (HA010103) |   |            |
- \*Note: Only for plastic housing, not for metal housing

## Order Example

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

Housing:	metal housing	Output 1:	T
Type:	pressure tight	Output 2:	Td
Cable length:	2m (6.6ft)	Output signal:	0-20mA
Probe length:	200mm (7.9")	Measured value unit:	metric
Pressure tight feedthrough:	1/2" male thread	Scaling of T-output:	-40...60°C
Display:	with display	Scaling of Td-output:	-40...60°C
Alarm output:	without relay		
Plug:	cable glands		
Sensing probe:	pluggable		
Td Calibration:	standard		
Supply voltage:	8...35V DC / 12...30V AC		

EE35