

# 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

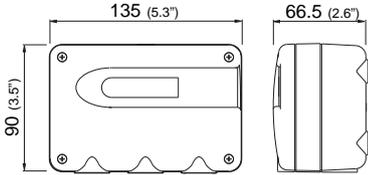
- measuring range -60...60°C Td (-76...140°F Td)**
- accuracy of measurement ±2°C Td (±3.6°F Td)**
- traceable calibration**
- alarm output for dew point**
- autocalibration**

## Housing Dimensions (mm)

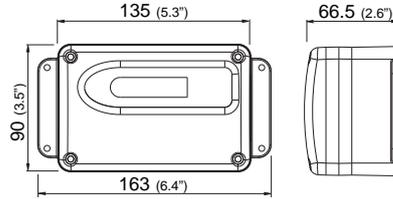
## Installation Example

### Housing:

polycarbonate housing

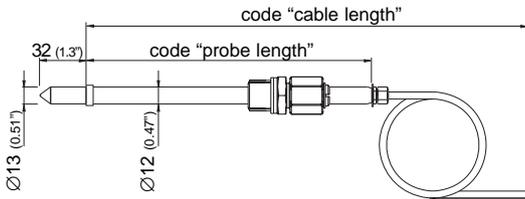


metal housing



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

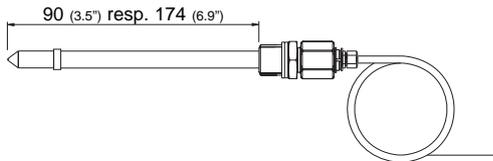
### Model:



**EE35-xEx**  
Remote probe for T up to 60°C (140°F)  
and pressure-tight up to 10bar (145psi)  
Probe material: stainless steel

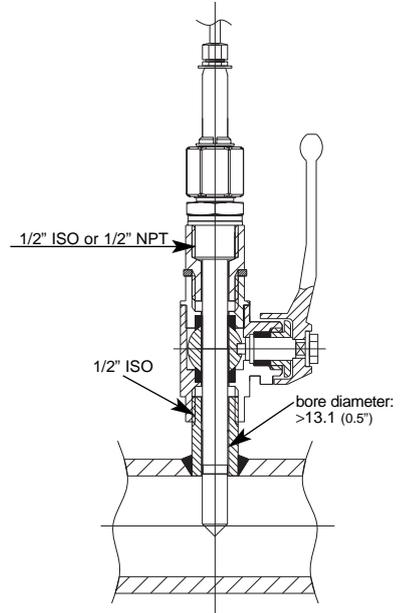


minimum installation depth

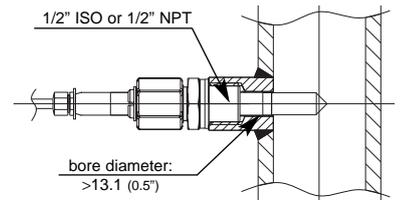


maximum installation depth

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

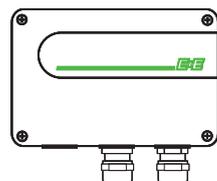


**fixed installation**  
(pressure-tight up to 10bar/145psi)



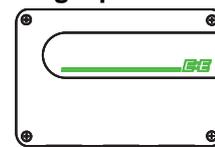
## Connection Versions

### Standard



2x M16x1.5

### Plug Option C03



Lumberg  
RKC 5/7

Power supply +  
Analogue output

## Technical Data

### Measuring Quantities

#### Dew point

Humidity sensor

Measuring range

(below 0°C / 32°F the transmitter outputs frostpoint)

Accuracy

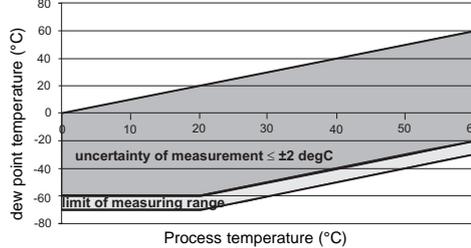
Traceable to intern. standards,  
 administrated by NIST, PTB, BEV...

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

0 - 10V

4 - 20mA

0 - 20mA

### 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...10bar (0...145psi)

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

EN61326-1:1997 + note1:1998

FCC Part15 ClassB

ICES-003 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

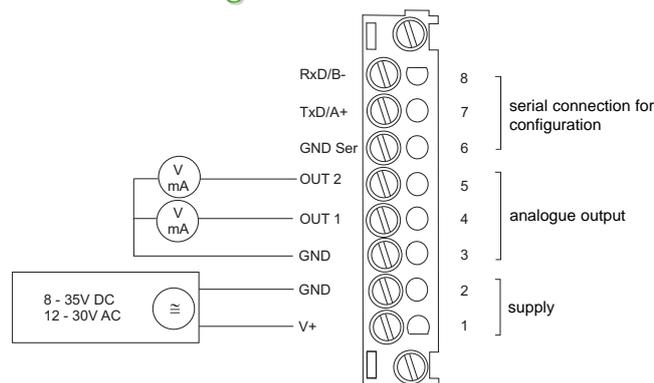
Alarm output for Td/Tf

- range: -60...40°C Td (-60...40°F Td) adjustable with the potentiometer on the printed circuit board

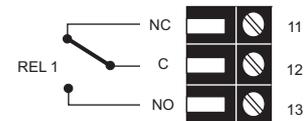
- 1 switch contact

- 250V AC/6A or 28V DC/6A

### Connection Diagram



#### Terminal configuration - Alarm output



## Ordering Guide EE35

**EE35-**

|   |   |  |
|---|---|--|
| <b>Hardware Configuration</b>             |   |  |
| <b>Housing</b>                            | metal housing<br>polycarbonate housing  | M<br>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")<br>200mm (7.9")  | 3<br>5   |
| <b>Pressure tight feedthrough</b>         | 1/2" male thread<br>1/2" NPT thread   | HA03<br>HA07   |
| <b>Display</b>                            | without display<br>with display   | D05  |
| <b>Alarm output <sup>1)</sup></b>         | without relay<br>with relay   | SW   |
| <b>Plug</b>                               | cable glands<br>1 plug for power supply for power supply and outputs  | C03  |
| <b>Probe</b>                              | fixed<br>interchangeable  | P01  |
| <b>Td Calibration</b>                     | standard -40...60°C (-40...140°F)<br>special calibration -60...60°C (-76...140°F)   | CA02   |
| <b>Supply voltage</b>                     | 8...35V DC / 12...30V AC<br>integrated power supply 100...240V AC, 50/60Hz <sup>2)</sup>  | V01  |
| <b>Software Configuration</b>             |   |  |
| <b>Physical parameters of the outputs</b> | temperature T [°C/°F] output 1<br>dew point temperature Td [°C/°F] output 2<br>frost point temperature Tf [°C/°F]   | B<br>C<br>D  |
| <b>Type of output signals</b>             | 0-5V<br>0-10V<br>0-20mA<br>4-20mA   | 2<br>3<br>5<br>6   |
| <b>T / Td / Tf Unit</b>                   | °C<br>°F  | E01  |
| <b>Scaling of T-output</b>                | -40...60 (T02)    -60...20 (T65)    -40...100 (T79)    output T<br>-50...50 (T27)    -50...100 (T66)    -40...140 (T83)<br>-80...20 (T63)    -20...70 (T73)    -60...120 (T97)<br>-60...60 (T64)    20...140 (T77)                  | Select according to ordering guide (Txx)<br>Other T-scaling refer to page 134                |
| <b>Scaling of Td/Tf-output</b>            | -40...60 (T02)    0...60 (T07)    -60...60 (T64)    output Td resp. Tf<br>-10...50 (T03)    0...80 (T21)    32...120 (T90)<br>0...50 (T04)    -40...80 (T22)    32...140 (T91)<br>0...100 (T05)    -20...80 (T24)    32...132 (T96) | Select according to ordering guide (Tdx resp. Tfxx)<br>Other Td/Tf-scaling refer to page 134 |

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 (HA050101)                       | - Interface cable (HA010304)                              |
| - Stainless steel sintered filter (HA010103)      | - Bracket for installation onto mounting rails (HA010203) |
| - Display + housing cover in metal (D05M)         | - Sealing element (HA050309)                              |
| - Display + housing cover in polycarbonate (D05P) |   |

## 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: interchangeable               |                                  |
| Td Calibration: standard                     |                                  |
| Supply voltage: 8...35V DC / 12...30V AC     |                                  |

EE35