

EE371

Compact Dew Point Sensor

The EE371 is dedicated for accurate and reliable monitoring of the dew point temperature (Td) in the range -60...60 °C Td (-76...140 °F Td), with pressure rating up to 100 bar (1450 psi). It is ideal for compressed air systems and industrial process control. Besides Td, the device measures also frost point temperature (Tf) or volume concentration (Wv).

High Accuracy

The innovative, monolithic E+E HMC01 humidity and temperature sensing element together with a sophisticated auto-calibration procedure leads to accuracy better than $\pm 2^{\circ}\text{C Td}$ ($\pm 3.6^{\circ}\text{F Td}$) and to excellent long term stability.

Analog Outputs and Display

The measured data is available on two freely configurable voltage or current outputs as well as on the LCD display.

Functional Design

The compact, robust metal enclosure, the swirling front-end and various process connections and sampling options allow for easy and comfortable design-in, mounting and operation.

Easy Configuration

An optional adapter and the free EE-PCS Product Configuration Software facilitate easy configuration and adjustment of the EE371.



Features

- Measuring range -60...60 °C Td (-76...140 °F Td)
- Accuracy of measurement $\pm 2^{\circ}\text{C Td}$ ($\pm 3.6^{\circ}\text{F Td}$)
- Autocalibration
- Pressure tight up to 100 bar (1450 psi)
- 360° axial rotatable enclosure
- Inspection certificate according to DIN EN 10204 – 3.1

Autocalibration

Dew point temperatures in the range of -60...-20 °C (-76...-4 °F) at room temperature correspond to relative humidity values of 0.08...5.37 % RH. The measurement of these low humidity values is not possible with conventional capacitive measurement methods. For the EE371 a special autocalibration procedure is utilized to achieve high accuracy measurements at lowest dew points too.

Technical Data

Measurands

Dew point (Td)

Dew point sensor

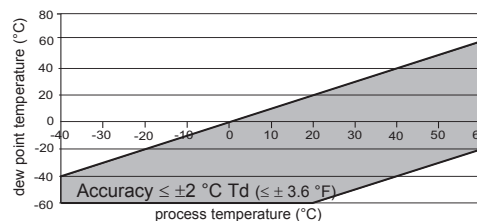
Measuring range

Accuracy ¹⁾

HMC01

-60...60 °C Td (-76...140 °F Td)

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



Response time t_{90}

80 sec. -20 °C Td → -40 °C Td (-4 °F Td → -40 °F Td)
 10 sec. -40 °C Td → -20 °C Td (-40 °F Td → -4 °F Td)

Volume concentration

Measuring range

20...20000 ppm

Accuracy at 20 °C (68 °F) and 1013 mbar (14.7 psi)

$\pm 5 \text{ ppm} + 9 \% \text{ from measured value}$

¹⁾ The accuracy statement includes the uncertainty of the factory calibration with an enhancement factor $k=2$ (2-times standard deviation). The accuracy was calculated in accordance with EA-4/02 and with regard to GUM (Guide to the Expression of Uncertainty in Measurement).

Outputs

Two freely selectable and scaleable
analogue outputs for Td, Tf, Wv

0-1 V / 0-5 V / 0-10 V ¹⁾ -1 mA < I_L < 1 mA

4-20 mA / 0-20 mA

R_L < 500 Ohm¹⁾

R_L = load resistance

General

Supply voltage

10...30 V DC

Current consumption at 24 V DC

voltage output: typ. 40 mA / during autocalibration: 100 mA

current output: typ. 80 mA / during autocalibration: 140 mA

Pressure range

0...20 bar (0...290 psi) / 0...100 bar (0...1450 psi)

Housing / protection class

Al Si 9 Cu 3 / IP65

Electrical connection

7-pole industrial plug: DIN VDE 0627 / IEC 61984

wire cross-section: 0.25 - 1 mm²

cable connection: PG 11

Sensor protection

stainless steel sintered filter

Working temperature range

probe: -40...70 °C (-40...158 °F)

electronics: -40...60 °C (-40...140 °F)

with LC display: -20...50 °C (-4...122 °F)

Storage temperature range

-40...60 °C (-40...140 °F)

Electromagnetic compatibility

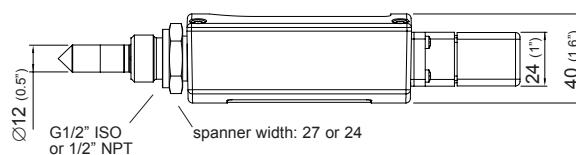
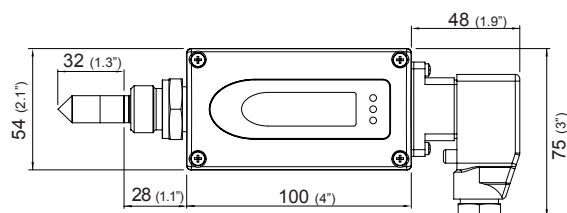
EN61326-1 EN61326-2-3 ICES-003 ClassB

Industrial Environment FCC Part15 ClassB



¹⁾ minimum supply voltage 15V DC

Dimensions in mm (inch)



Sampling Cells

Basic Sampling Cell

The basic sampling cell is suitable for the pressure range 0...64 bar (0...928 psi). It allows a simple installation of the dew point sensor into an existing or self-constructed sampling system.

ISO NPT
 1 = G 1/2" or 1/2"
 2 = G 1/4" or 1/4"
 3 = G 1/4" or 1/4"

HA050103 ISO
HA050105 NPT



Sampling Cell with Quick Connector and Bleed Screw

The sampling cell is optimized for the pressure range 0...10 bar (0...145 psi). The air flow can be adjusted with the bleed screw. The G 1/2" ISO version features a quick connector suitable for standard DN7.2 connection, which allows for the sampling cell to be mounted and removed without process interruption.

1 = G 1/2" ISO
 2 = Bleed screw
 3 = Quick connector

HA050102



1 = 1/2" NPT
 2 = Bleed screw
 3 = 1/4" NPT

HA050107



Sampling Cell for Atmospheric Dew Point

The sampling cell is optimized for measuring the atmospheric dew point temperature of compressed air with pressure range 0...10 bar (0...145 psi). It features a quick connector suitable for standard DN7.2 air connection, which allows for the sampling cell to be mounted and removed without process interruption. The pressure in the sampling cell can be set by the needle valve.

1 = G 1/2" ISO
 2 = Quick connector

HA050106



Ordering Guide

			EE371-T
Hardware	Pressure range	up to 20 bar (290 psi)	E
		up to 100 bar (1450 psi)	I
	Pressure tight feedthrough	G1/2" male thread 1/2" NPT thread	HA03 HA07
Software	Display	without display	no code
		with display	D08
	Output 1	dew point temperature Td [°C/°F]	C
		frost point temperature Tf [°C/°F]	D
		volume concentration Wv [ppm]	P
	Output 2	dew point temperature Td [°C/°F]	C
		frost point temperature Tf [°C/°F]	D
		volume concentration Wv [ppm]	P
	Type of output signal	0-1 V	1
		0-5 V	2
		0-10 V	3
		0-20 mA	5
		4-20 mA	6
	Measured value units for Td / Tf	metric / SI	no code
		non metric / US	E01
	Scaling range for Td outputs ¹⁾ in °C or °F	-40...60	Td02
		-10...50	Td03
		-60...20	Td65
	Scaling range for Tf outputs ¹⁾ in °C or °F	-40...60	Tf02
		-10...50	Tf03
		-60...20	Tf65
	Scaling range for Wv ²⁾ output	0...100 ppm	X01
		0...500 ppm	X02
		0...1 000 ppm	X03

1) Other Td/Tf scalings refer to data sheet „Scaling of the outputs“ at www.epluse.com/EE371

2) Other measurement ranges upon request

Order Example

EE371-TEHA07D08CC3-Td02-Td02

Pressure range: up to 20 bar (290 psi)
 Pressure tight feedthrough: 1/2" NPT thread
 Display: with display
 Output 1: dew point temperature [Td]
 Output 2: dew point temperature [Td]
 Output signal: 0-10 V
 Measured value unit: metric
 Scaling range output 1: -40...60 °C
 Scaling range output 2: -40...60 °C

Accessories

- Basic sampling cell ISO HA050103
- Basic sampling cell NPT HA050105
- Sampling cell with quick connector HA050102
- Sampling cell with 1/4" NPT HA050107
- Sampling cell for atmospheric dew point HA050106
- Product configuration adapter see data sheet EE-PCA
- Product configuration software EE-PCS (free download: www.epluse.com/configurator)