

EE355

Dew Point Sensor down to -60 °C Td (-76 °F Td)

The compact EE355 sensor measures dew point temperature (Td) down to -60 °C (-76 °F) at pressure up to 80 bar (1 160 psi). Besides Td, the sensor supplies also frost point temperature (Tf) and volume concentration (Wv) data and is ideal for monitoring compressed air networks and industrial drying processes.

Functionality and Reliability

The small size, robust stainless steel enclosure and wettable sensing element, together with various process connections and accessories lead to best performance even in challenging measurement tasks.

Measurement Performance

The measurement accuracy better than +/-2 °C Td rests on a sophisticated auto-calibration procedure. The excellent long term stability and resistance against pollutants minimize the EE355 maintenance needs.

Analogue and Digital Outputs

The Td, Tf and Wv measured data is available on the 4 - 20 mA analogue output and on the RS485 interface with Modbus RTU protocol. The wide scaling range of the analogue output simplifies the EE355 implementation in existing monitoring and control systems.

User Configurable and Adjustable

The free EE-PCS Product Configuration Software together with an optional adapter cable facilitates the configuration and adjustment of the EE355.



Features

Measurement performance

- » Dew point, frost point, volume concentration
- » E+E sensing element with auto-calibration
- » Dew point measurement range -60...+60 °C (-76...+140 °F)
- » Accuracy ±2 °C (±3.6 °F)
- » Wettable

Enclosure

- » Stainless steel 1.4404, IP65

Configurable and adjustable

- » Service interface
- » Free configuration software

Outputs

- » Current output 4 - 20 mA, wide scaling range
- » Modbus RTU
- » Industrial M12x1 connector

Process connection

- » Stainless steel
- » G 1/2" ISO or 1/2" NPT
- » Pressure rating 80 bar (1 160 psi)

Inspection certificate according DIN EN 10204-3.1

Technical Data

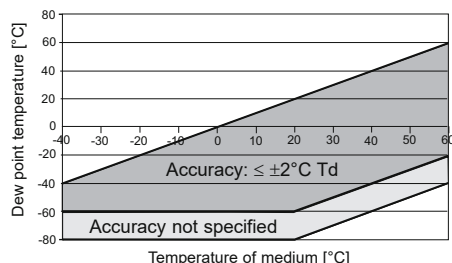
Measurands

Dew point (Td)

Measurement range

-60...60 °C Td (-76...140 °F Td)

Accuracy¹⁾



Response time t_{90}

< 5 min for step -20 °C Td (-4 °F Td) → -60 °C Td (-76 °F Td)
< 15 s for step -60 °C Td (-76 °F Td) → -20 °C Td (-4 °F Td)

Volume fraction of water vapour (Wv)

Measurement range

20...200 000 ppm

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

±(5 ppm + 9 % from measured value)

Outputs²⁾

Analogue output (scalable)

4 - 20 mA (3-wire technology) RL < 500 Ohm

Resolution

2 µA

Maximum adjustable scaling range

-100...80 °C Td (-148...176 °F Td)

Digital interface

RS485 (EE355 = 1 unit load)

Protocol

Modbus RTU


Default settings

Baudrate 9600³⁾, parity even, stop bits 1, slave ID 243

Temperature dependence

±5 ppm of the measuring range / °C (Deviating from 20 °C)

General

Supply voltage (Class III) 

18 - 28 V DC

Current consumption at 24 V DC

< 20 mA + load current /
100 mA + load current during auto-calibration

Pressure range

0...80 bar (0...1 160 psi)

Enclosure / protection class

Stainless steel 1.4404 (AISI 316L) / IP65 / NEMA 4.x

Electrical connection

M12x1, 5 poles, stainless steel 1.4404

Filter

Stainless steel sintered

Operating conditions

-40...70 °C (-40...158 °F) / 0...100 % RH

Storage conditions

-40...60 °C (-40...140 °F) / 0...95 % RH non-condensing

Electromagnetic compatibility

EN 61326-1 EN 61326-2-3 Industrial environment
FCC Part 15 ICES-003 ClassB



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

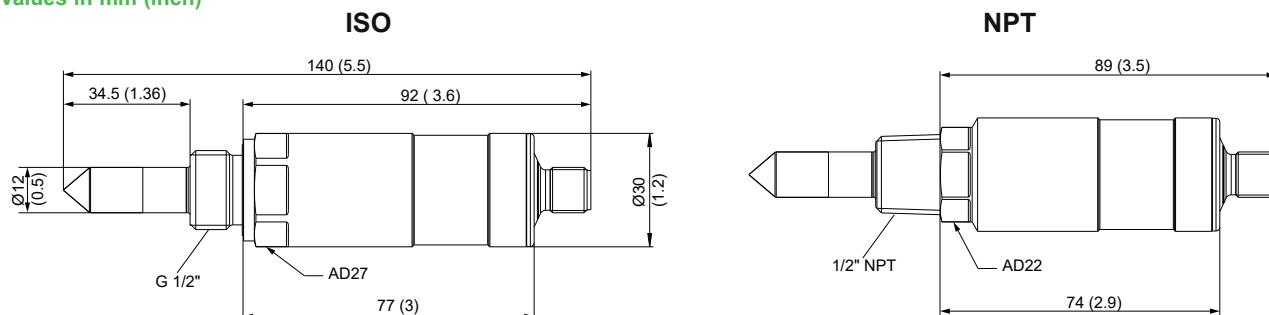
The accuracy statement includes the uncertainty of the factory calibration with an enhancement factor k=2 (2-times standard deviation). The accuracy was calculated in accordance with EA-4/02 and with regard to GUM (Guide to the Expression of Uncertainty in Measurement).

2) The EE355 simultaneously features an analogue current output and the RS485 interface.

3) Supported baud rates: 9 600, 19 200 and 38 400; find more details about communication setting in the User Manual and the Modbus Application Note at www.epluse.com/ee355

Dimensions

Values 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 for easy 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 adjusted via the needle valve.

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

HA050106



Ordering Information

			EE355-
Hardware	Process connection	G 1/2" ISO thread 1/2" NPT thread	PA1 PA2
	Accessories	No accessories Socket assembled straight	AC0 AC2
Software Setup - Outputs	Measurand (analogue output)	Dew point temperature Td [°C]	no code
		Dew point temperature Td [°F]	MA53
		Frost point temperature Tf [°C] for Td > 0 °C output is Td	MA65
		Frost point temperature Tf [°F] for Td > 32 °F output is Td	MA66
		Volume fraction of water vapour Wv [ppm]	MA75
Scale (analogue output)	Low	-60 Value	no code SALvalue
	High	60 Value	no code SAHvalue
Units (Modbus RTU)	Metric (SI)		no code
	Non metric US/GB		U2

Order example

EE355-PA1AC0SAH20

Pressure-tight screw connection: G 1/2" ISO thread
 Output: Dew point temperature Td [°C]
 Scale on analogue output: 4 - 20 mA = -60...20 °C Td
 Measured value unit: Metric [°C]

Accessories

Connection cable, 5 pole, M12x1 socket/free ends	1.5 m (4.9 ft)	HA010819	Sampling cell G 1/2" with quick connector	HA050102
	5 m (16.4 ft)	HA010820	Sampling cell NPT with bleed screw	HA050107
	10 m (32.8 ft)	HA010821	Sampling cell G 1/2" for atmospheric dew point	HA050106
		HA011013	Basic sampling cell G 1/2"	HA050103
Modbus configuration adapter		HA011013	Basic sampling cell NPT	HA050105