EE354

Dew Point Sensor down to -20 °C Td (-4 °F Td)

The compact EE354 sensor measures dew point temperature (Td) down to -20 °C (-4 °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 well proven E+E humdity sensing element enables excellent long term stability and resistance against pollutants, factors that minimize the EE354 maintenance needs and allow trouble-free operation.

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 EE354 implementation in existing monitoring and control systems.

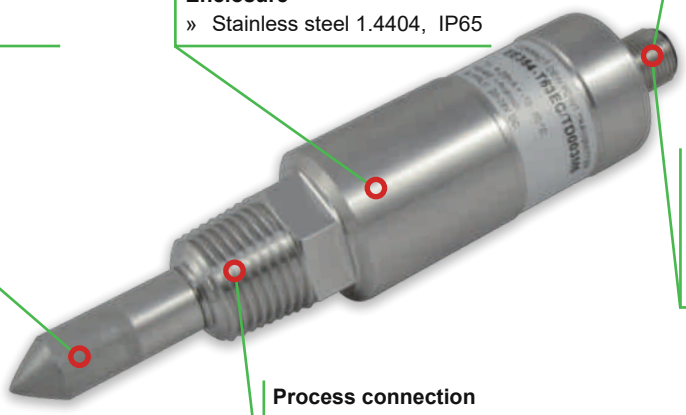
User Configurable and Adjustable
The free EE-PCS Product Configuration Software together with an optional adapter cable facilitates the configuration and adjustment of the EE354.

Features

Measurement performance
- » Dew point, frost point, volume concentration
- » Dew point measurement range -20...+50 °C (-4...+122 °F)
- » Accuracy ±1 °C (±1.8 °F)
- » Condensation resistant

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

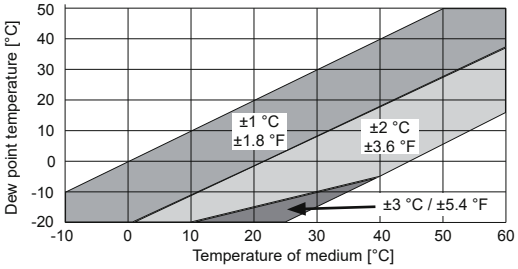
Process connection
- » Stainless steel
- » G 1/2" ISO or 1/2" NPT
- » Pressure rating 80 bar (1 160 psi)

Inspection certificate according DIN EN 10204-3.1

Technical Data

Measurands

Dew point (Td)

Measurement range	-20...50 °C Td (-4...122 °F Td)
Accuracy[1]	

Response time t_{90} at 20 °C (68 °F)	< 30 s
Volume fraction of water vapour (Wv)	
Measurement range	1 250...125 000 ppm
Accuracy at 20 °C (68 °F) and 1013 mbar (14.7 psi)	±(50 ppm + 10 % from measured value)

Outputs[2]

Analogue output (scalable)	4 - 20 mA (3-wire technology) R_L < 500 Ω
Resolution	2 µA
Maximum adjustable scaling range	-40...80 °C Td (-40...176 °F Td)
Digital interface	RS485 (EE354 = 1 unit load)
Protocol	Modbus RTU
Default settings	Baudrate 9600[3], parity even, stop bits 1, slave ID 243

General

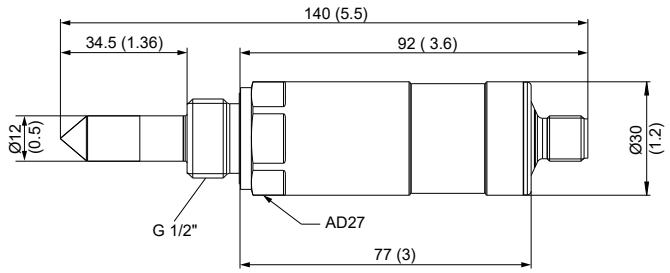
Supply voltage (Class III)	10[4] - 28 V DC
Current consumption at 24 V DC	<20 mA + load current
Pressure range	0...80 bar (0...1 160 psi)
Enclosure / protection class	Stainless steel 1.4404 (AISI 316L) / IP65 / NEMA 4.x
Electrical connection	M12x1, 5 poles, stainless steel 1.4404
Filter	Stainless steel sintered
Operating conditions	-40...60 °C (-40...140 °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 EE354 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/ee354
4) 10 V + 0.02*R_L

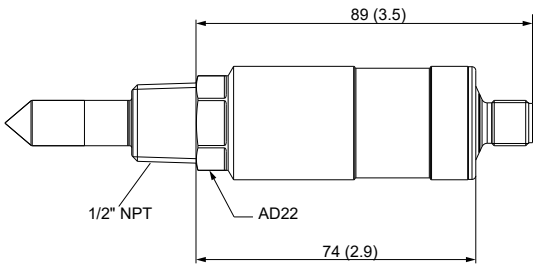
Dimensions

Values in mm (inch)

ISO



NPT



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"

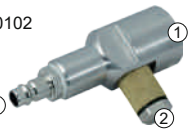
HA050103 ISO
HA050105 NPT

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 ½" ISO version features a quick connector suitable for standard DN 7.2 connection, which allows for the sampling cell to be mounted and removed without process interruption.

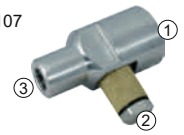
1 = G 1/2" ISO
2 = Bleed screw
3 = Quick connector

HA050102



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

HA050107



Ordering Information

						EE354-
Hardware	**Process connection**	G 1/2" ISO thread				PA1
		1/2" NPT thread				PA2
	Accessories	No accessories				AC0
		Socket assembled straight				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
	Scaling (analogue output)	Low	-20			no code
			Value			SAL*value*
		High	50			no code
			Value			SAH*value*
	Units (Modbus RTU)	Metric (SI)				no code
		Non metric US/GB				U2

Order example

EE354-PA1AC0SAH20

Process connection:	G 1/2" ISO thread
Output:	Dew point temperature Td [°C]
Scale on analouge output:	4 - 20 mA = -20...20 °C Td
Units:	Metric [°C]

Accessories

Connection cable, 5 pole, M12x1 socket/free ends		
	1.5 m (4.9 ft)	HA010819
	5 m (16.4 ft)	HA010820
	10 m (32.8 ft)	HA010821
Modbus configuration adapter		HA011013

Sampling cell G 1/2" with quick connector	HA050102
Sampling cell NPT with bleed screw	HA050107
Basic sampling cell G 1/2"	HA050103
Basic sampling cell NPT	HA050105

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