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Datasheet EE354

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



EE354

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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 humidity 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.



EE354 - ISO



EE354 - NPT

Features

Enclosure

- IP65/NEMA 4X protection rating
- Stainless steel 1.4404

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

Process connection

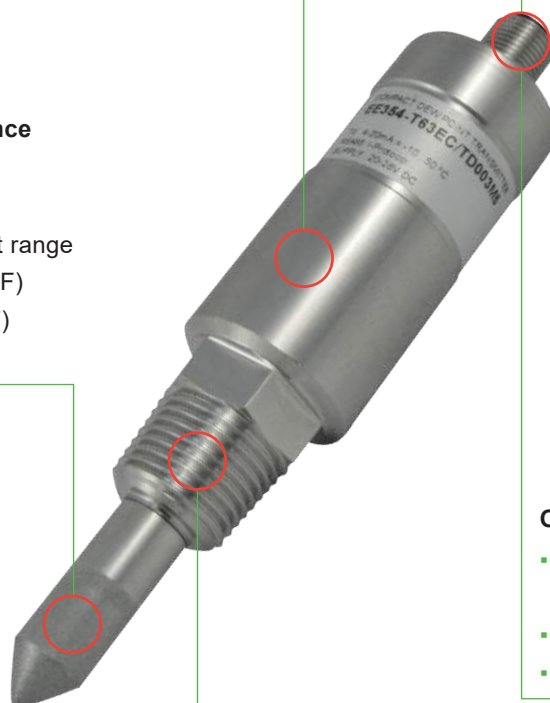
- Stainless steel
- G 1/2" ISO or 1/2" NPT
- Pressure rating 80 bar (1 160 psi)

Configurable and adjustable

- Service interface
- Free EE-PCS Product Configuration Software

Outputs

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



Inspection certificate

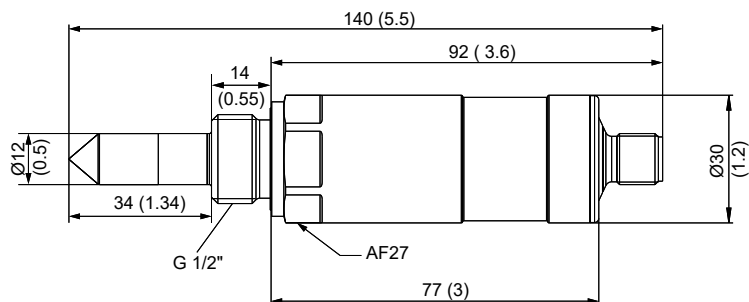
According to DIN EN 10204-3.1

Dimensions

Values in mm (inch)

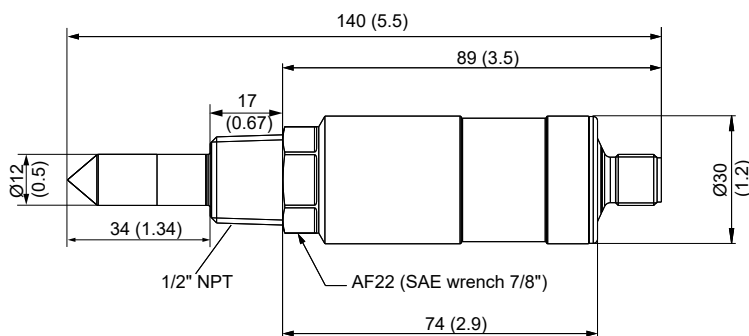
ISO

G1/2"



NPT

1/2"



Technical Data

Measurands

Dew Point Temperature (Td)

Measuring range	-20...50 °C Td (-4...122 °F Td)
Accuracy ¹⁾	
Response time t_{90} , typ. @ 20 °C (68 °F)	<30 s

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).

Technical Data

Measurands

Volume Concentration (Wv)

Measuring range @ 1013 mbar (14.7 psi)	1 250...125 000 ppm
Accuracy @ 20 °C (68 °F) and 1013 mbar (14.7 psi)	±(50 ppm + 10 % of measured value)

Outputs

Analogue

Scalable output¹⁾ Td, Tf or Wv	4 - 20 mA 3-wire	$R_L < 500 \Omega$	$R_L = \text{load resistance}$
Max. configurable scaling	-40...80 °C Td (-40...176 °F Td)	0...125 000 ppm	
Resolution	2 µA		




1) The EE354 simultaneously features an analogue current output and the RS485 interface.

Digital

Digital interface	RS485 (EE354 = 1 unit load)
Protocol Factory settings¹⁾ Supported Baud rates Measured data types	Modbus RTU 9 600 Baud, parity even, 1 stop bit, Modbus address 243 9 600, 19 200 and 38 400 FLOAT32 and INT16

1) Find more details about communication setting in the User Manual and the Modbus Application Note at www.epluse.com/ee354.

General

Power supply class III  USA & Canada: Class 2 supply necessary	10 ¹⁾ - 28 V DC
Current consumption , typ. @ 24 V DC	<20 mA + load current
Electrical connection	M12x1, 5 poles, stainless steel 1.4404
Filter Material	Stainless steel sintered
Pressure working range	0...80 bar (0...1 160 psi)
Humidity working range	0...100 %RH
Temperature working range	-40...+60 °C (-40...+140 °F)
Storage conditions	-40...+60 °C (-40...+140 °F) 0...95 %RH, non-condensing
Enclosure Material Protection rating	Stainless steel 1.4404 (AISI 316L) IP65/NEMA 4X
Electromagnetic compatibility	EN 61326-1 EN 61326-2-3 Industrial environment FCC Part15 Class B ICES-003 Class B
Conformity	 
Configuration and adjustment	EE-PCS Product Configuration Software (free download: www.epluse.com/configurator) and configuration adapter

1) 10 V + 0.02·R_L

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.

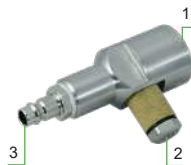


HA050103 ISO / HA050105 NPT

Number	HA050103 ISO	HA050105 NPT
1	G 1/2"	1/2"
2	G 1/4"	1/4"
3	G 1/4"	1/4"

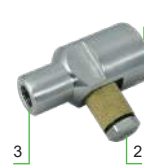
Sampling Cell with Quick Connector and Bleed Screw

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 DN 7.2 connection, which allows for the sampling cell to be mounted and removed without process interruption.



HA050102 ISO

Number	HA050102 ISO
1	G 1/2"
2	Bleed screw
3	Quick connection



HA050107 NPT

Number	HA050107 NPT
1	1/2"
2	Bleed screw
3	1/4"

Ordering Guide

Feature	Description	Code	
Hardw. Conf.		EE354-	
	Process connection	G 1/2" ISO thread 1/2" NPT thread	PA1 PA2
	Accessories	No accessories	AC0
		M12x1 cable mount connector, socket (plug)	AC2
Software Setup - Outputs	Output 1 measurand	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
	Output 1 scaling low	-20	No code
		Value	SALValue
	Output 1 scaling high	50	No code
		Value	SAHValue
	Units (Modbus RTU)	Metric (SI)	No code
Non metric (US/GB)		U2	

Order Example

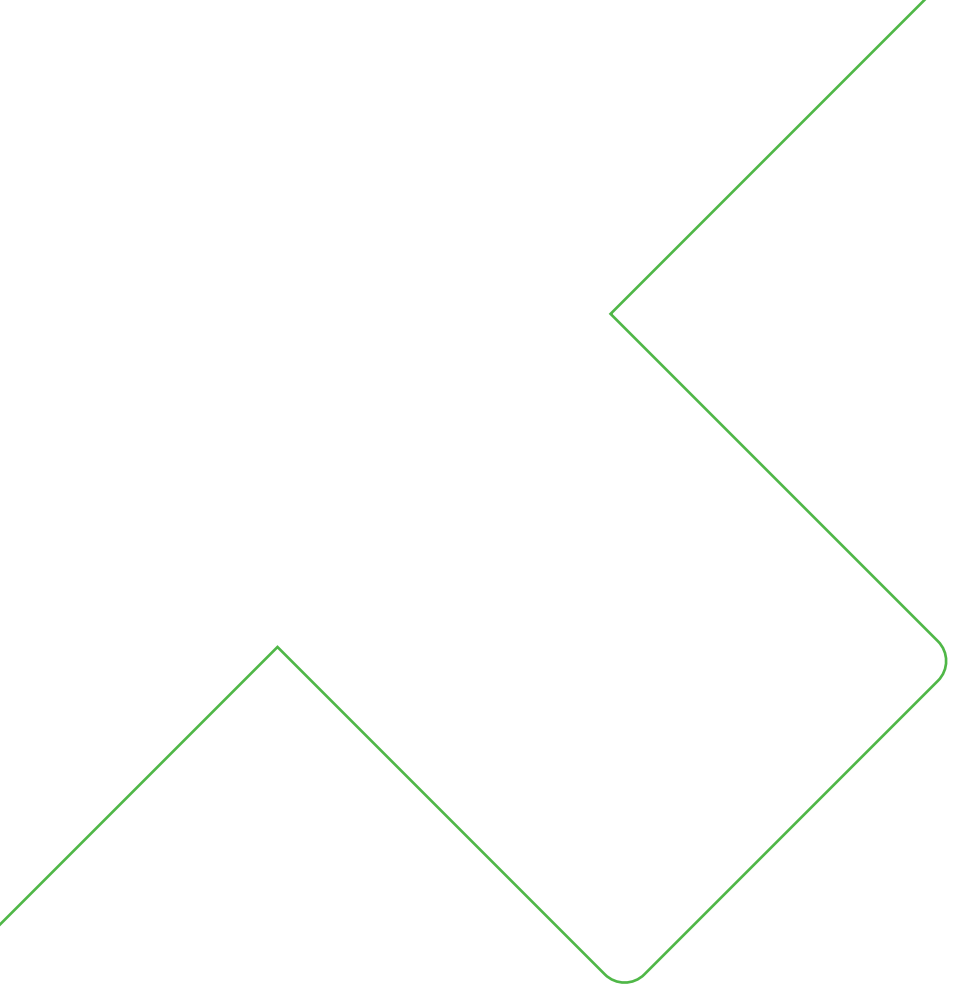
EE354-PA1AC0SAH20

Feature	Code	Description
Process connection	PA1	G 1/2" ISO thread
Accessories	AC0	No accessories
Output 1 measurand	No code	Dew point temperature Td [°C]
Output 1 scaling low	No code	-20
Output 1 scaling high	SAH20	20
Units (Modbus RTU)	No code	Metric (SI)

Accessories

For further information see datasheet [Accessories](#).

Description	Code
Connection Cable M12x1 Socket 5 Poles / Free Cable 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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Version v1.7 | 07-2023
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