

EE260

Heated Humidity and Temperature Probe for Meteorological Applications

The EE260 probe is optimized for accurate and reliable relative humidity (RH) and temperature (T) measurement in meteorology and demanding outdoor applications.

Innovative, Compact Design

The design of the EE260 integrates a heated humidity sensing head and an additional T sensing element into one single compact probe. The device is thus compatible with rotation symmetric radiation shields.

Measurement Performance

The dual heating system prevents condensation on the RH sensing element, on the probe head and on the filter cap, which leads to very short response time and fast recovery after condensation. Furthermore, it enables precise RH measurement even under continuously high humidity and condensing conditions.

Versatility

Besides the measurement of RH and T, the EE260 calculates other humidity related quantities like dew point temperature (Td), absolute humidity (dv) and mixing ratio (r).

Reliability, IP67 Protection Class

The proprietary E+E coating protects the RH sensing element and its leads against corrosive and electrically conductive pollution. The encapsulated electronics are optimally protected against environmental influences.

Analogue Outputs and Digital Interface

The EE260 features two freely configurable and scalable voltage outputs as well as an RS485 interface with Modbus RTU protocol. The measured data is available at the analogue and digital interfaces simultaneously.

User Configurable and Adjustable

An optional configuration adapter and the free PCS10 Product Configuration Software facilitate the configuration and adjustment of the EE260.

M12x1 connector, 8 poles, stainless steel



EE260 with radiation shield

Features

Measurands **Electronics** RH and T sensing element Relative humidity (RH) Fully encapsulated » Heated Temperature (T) Two voltage outputs Protected by » Dew point temperature (Td) RS485 interface with - E+E proprietary coating » Frost point temperature (Tf) Modbus RTU protocol - PTFE membrane filter » Wet bulb temperature (Tw) User configurable and adjustable on stainless steel body » Water vapour partial pressure (e) » Mixing ratio (r) Absolute humidity (dv) Specific enthalpy (h) Heated probe head Unique probe design with integrated T sensor **Enclosure** Inspection certificate according DIN EN 10204-3.1 Flexible thermoplastic elastomer UV resistant and T stable

166 www.epluse.com v1.5 / Modification rights reserved EE260

Protective Sensor Coating

The E+E proprietary sensor coating is a protective layer applied to the sensing elements, their leads and soldering points. The coating substantially extends sensor lifetime and ensures optimal measurement performance in corrosive environment (salts, off-shore applications). Additionally, it improves the sensors' long term stability in dusty, dirty or oily applications by preventing stray impedance caused by deposits on the active sensor surface or on the electrical connections.

Technical Data

Measurands

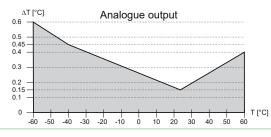
Relative humidity

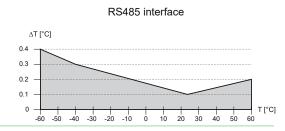
Measuring range		0100 %RH	
Sensing element		E+E HMC01, heated	
Response time t ₉₀ at 20 °C (6	8 °F)	< 15 s	
Accuracy ¹⁾ (incl. hysteresis, n	on-linearity and re	peatability)	
-1540 °C (5104 °F)	for RH ≤ 90 %	± (1.3 + 0.3 % *mv) %RH	mv = measured value
-1540 °C (5104 °F)	for RH > 90 %	± 2.0 %RH	
-2560 °C (-13140 °F)		± (1.4 + 1 % *mv) %RH	
-4025 °C (-4013 °F)		± (1.5 + 1.5 % *mv) %RH	
Temperature			
Measuring range		-60 60 °C (-76 140 °F)	

Measuring range	-6060 °C (-76140 °F)
Temperature sensor	Pt100 1/3 DIN B
Response time, typ. ²⁾	t ₆₃ ≤ 20 s

Accuracy

storage conditions





Outputs³⁾ Analogue

Outputs			
Analogue	0 - 1 V / 0 - 2.5 V / 0 - 5 V / 0 - 10 V		
Freely selectable and scalable	0 < I _L < 1 mA		
Digital interface	RS485 (EE260 = 1 unit load)		
Protocol	Modbus RTU		
Factory settings ⁴⁾	Baud rate 9600, parity even, 1 stop bit, Modbus address 235		
Supported baud rates	9600, 19200, 38400, 57600, 76800 and 115200		
Data types for measured values	FLOAT32 and INT16 registers		
General	·		
Supply voltage	7 - 30 V DC		
Power consumption, typ.	300 mW (25 mA @ 12 V DC, heating included)		
Electrical connection	M12x1, 8 poles, stainless steel 1.4404		
Filter	PTFE membrane, stainless steel body		
Protection rating	IP67		
Enclosure material	Thermoplastic elastomer, UV resistant and T stable		
Electromagnetic compatibility ⁵⁾	EN 61326-1 EN 61326-2-3 UK C C		
,	EN 61326-1 EN 61326-2-3 UK CF CC Part15 Class A ICES-003 Class A		
Operating and	-6060 °C (-76140 °F)		

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).

0...100 %RH (operation)

0...95 %RH non-condensing (storage)

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 ²⁾ At air speed > 15 m/s
 3) The EE260 simultaneously features two analogue voltage outputs and the RS485 interface.

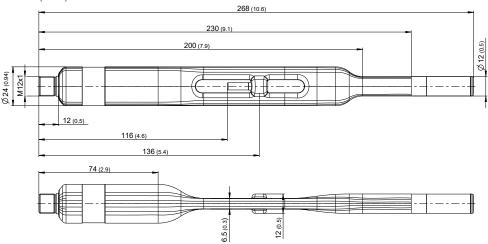
⁴⁾ Find more details about communication setting in the User Manual and the Modbus Application Note at www.epluse.com/ee260.

⁵⁾ Compliance with EN61000-4-3 and EN 61000-4-6: Electromagnetic interferencees may cause additional deviations <2 %RH.



Dimensions

Values in mm (inch)



Ordering Guide

			EE260-
	Model	RH + T	M1
	Output signal ¹⁾	0 - 1 V	GA1
		0 - 2.5 V	GA8
		0 - 5 V	GA2
		0 - 10 V	no code
	Output 1 measurand	Relative humidity [% RH]	no code
on	Output i illeasuraliu	Other measurand (xx see measurand code below)	MAxx
Configuration	Scaling 1 low	0	no code
ng	Scaling 1 low	Value	SALvalue
ij	Scaling 1 high	100	no code
ပိ	Scaling 1 mgn	Value	SAHvalue
	Output 2 measurand	Temperature [°C]	no code
		Other measurand (xx see measurand code below)	MBxx
	Scaling 2 low	-40	no code
		Value	SBL <i>valu</i> e
	Scaling 2 high	60	no code
		Value	SBHvalue

¹⁾ Applies to both outputs

Measurand code		MAxx / MBxx
Temperature	[°C]	1
Temperature	[°F]	2
Relative humidity	[%]	10
Matanagananatial	[mbar]	50
Water vapor partial pressure e	[°F]	51
Daw point tomporature Td	[°C]	52
Dew point temperature Td	[°F]	53
Mat built to man another Tee	[°C]	54
Wet bulb temperature Tw	[°F]	55

Measurand code		MAxx / MBxx
Absolute humidity dv	[g/m ³]	56
Absolute numbers dv	[g/ft ³]	57
Mixing ratio r	[g/kg]	60
Mixing ratio r	[g/lb]	61
Specific enthalpy h	[kJ/kg]	62
Specific entrialpy fr	[BTU/lb]	64
Frost point temperature Tf	[°C]	65
	[°F]	66

Ordering Examples

EE260-M1

Model: RH + T Output signal: 0 - 10 V

Output 1 measurand: relative humidity [%RH]

Output 1 scaling range: low

low 0 high 100

Output 2 measurand: temperature [°C]
Output 2 scaling range: low -40

high 60

EE260-M1GA8MB2SBL20SBH120

Model: RH + T Output signal: 0 - 2.5 V

Output 1 measurand: relative humidity [%RH]

Output 1 scaling range: low high

high 100
Output 2 measurand: temperature [°F]
Output 2 scaling range: low 20

high 120

0

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Accessories

(for further information, see data sheet "Accessories")

1) Both accessories are necessary for configuration

Radiation shield, artificially ventilated	HA010511
Modbus configuration adapter ¹⁾	HA011018
EE260 configuration cable ¹⁾	HA011020
E+E Product Configuration Software	PCS10
(Free download: <u>www.epluse.com/pcs10</u>)	
M12x1 connector, 8 pole socket	HA010704
Connection cable, 8 poles, M12x1 – free ends	
1.5 m (4.9 ft)	HA010322
3 m (9.8 ft)	HA010323
5 m (16.4 ft)	HA010324
10 m (32.8 ft)	HA010325
Wall mounting clip Ø25 mm	HA010227
Protection cap M12 female connector	HA010781
Protection cap M12 male connector	HA010782

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