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Datasheet EE650

Air Velocity Sensor for HVAC Applications



EE650

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The EE650 air velocity sensor is dedicated for accurate and reliable measurement in building automation and ventilation applications.

Innovative Design

The device employs an innovative air velocity sensing element, which operates on the thermal anemometer principle and is manufactured by E+E in state of the art thin-film technology. Due to its innovative design, the sensing element is very robust and highly insensitive to pollution, which leads to outstanding long-term performance.

User Configuration

For the EE650 with analogue output, the measuring range 0...10/15/20 m/s (0...2000/3000/4000 ft/min), the output signal 4 - 20 mA or 0 - 10 V as well as the response time 1 or 4 seconds are selectable by jumpers.

The response time, the termination resistor and the bus address of the Modbus RTU and BACnet MS/TP versions can also be easily set on the electronics board.

Installation and Adjustment

The enclosure design and the mounting flange included in the scope of supply allow for fast and easy installation.

EE650 adjustment, output scale setting and interface parameter selection can be easily performed using the free EE-PCS product configuration software and an optional adapter cable.



EE650 for duct mounting



EE650 with remote probe

Features

Bayonet Screws

- Open/closed with a ¼ rotation

Appropriate for US mounting requirements

- Knock-out for ½" conduit fitting

External mounting holes

- Mounting with a closed cover
- Electronics protected against construction site pollution

Enclosure

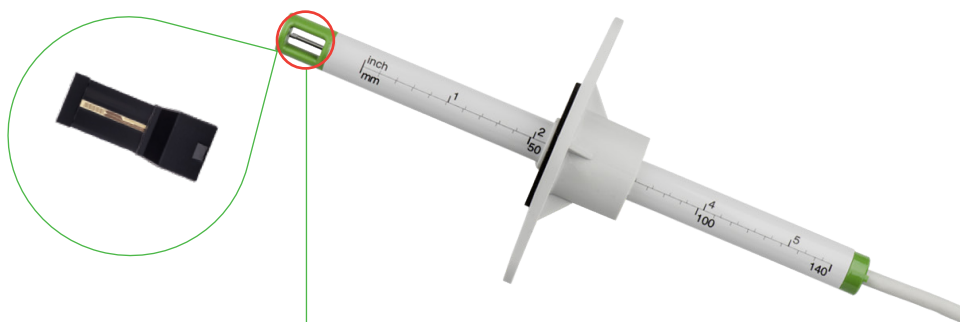
- IP65 / NEMA 4

Electronics on the underside of the PCB

- Protection against mechanical damage during installation

Configuration and Adjustment

- Measuring range
- Output signal
- Response time
- Bus address
- Termination resistor



E+E air velocity sensing element

- Exceptional mechanical stability thanks to transfer-moulding technology
- High insensitivity to pollution
- Long-term stable
- Measurement down to 0.2 m/s (40 ft/min)

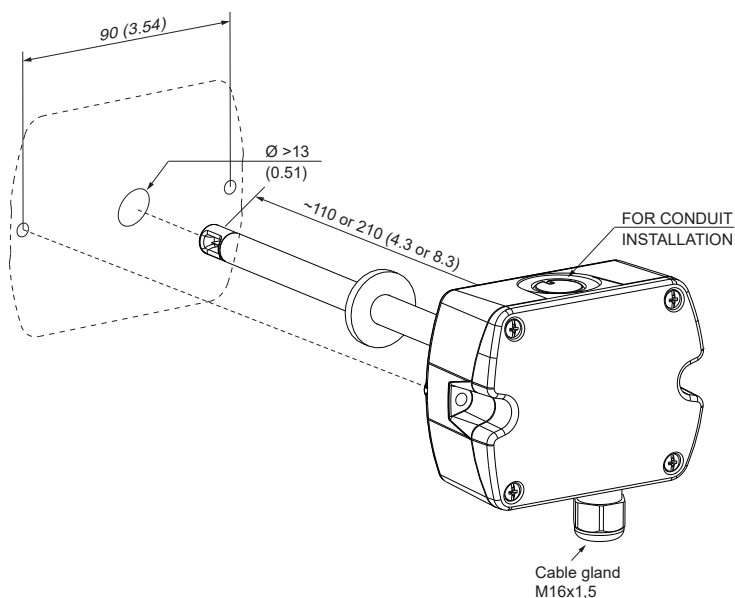
Test report

according to DIN EN 10204-2.2

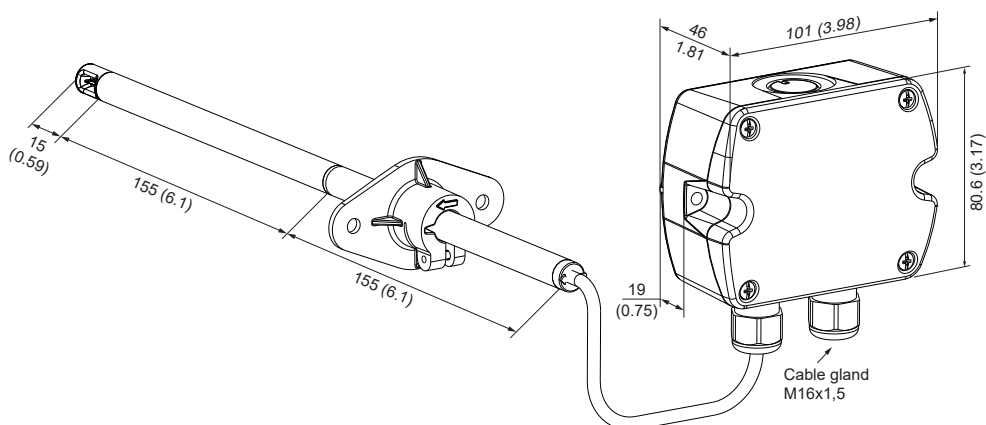
Dimensions

Values in mm (inch)

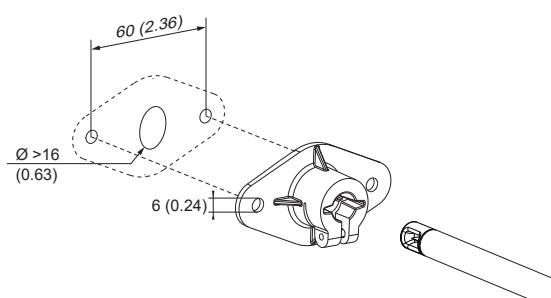
Duct mount



Remote probe



Mounting flange



Technical Data

Measurands

Air Velocity (v)

Measuring range	0...10 m/s (0...2000 ft/min) 0...15 m/s (0...3000 ft/min) 0...20 m/s (0...4000 ft/min) (factory setting)
Accuracy¹⁾ from 0.2 m/s, @ 20 °C (68 °F), 45 %RH and 1 013 hPa (14.7 psi)	$\pm (0.2 \text{ m/s (40 ft/min)} + 3 \% \text{ of m. v.})$ mv = measured value
Response time t_{90}, typ. @constant temperature, selectable via jumpers, only for analogue output	4 s (factory setting) down to 1 s

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

Analogue

Air velocity v measuring range selectable via jumpers, only for analogue output	0 - 10 V 4 - 20 mA (3-wire, factory setting)	$0 < I_L < 1 \text{ mA}$ $R_L \leq 500 \Omega$	I_L = load current R_L = load resistance
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Digital

Digital interface	RS485 (EE650 = 1 unit load)
Protocol Factory settings Supported Baud rates Measured data types	Modbus RTU 9600 Baud, parity even, 1 stop bit, Modbus address 65 9600, 19200 and 38400 FLOAT32 and INT16
Protocol Factory settings Supported Baud rates	BACnet MS/TP BACnet address 65 9600, 19200, 38400, 57600 and 76800

Technical Data

General

Power supply class III  USA & Canada: Class 2 supply necessary		24 V DC $\pm 20\%$	
Current consumption, max.		AC supply	DC supply
	Analogue output	170 mA	70 mA
	RS485	120 mA	50 mA
Electrical connection		Screw terminals max. 1.5 mm ² (AWG 16)	
Cable gland		M16x1.5	
Humidity working range		5...95 %RH, non-condensing	
Temperature working range		Probe -25...+50 °C (-13...+122 °F) Electronics -10...+50 °C (14...122 °F) Storage -30...+60 °C (-22...+140 °F)	
Enclosure material		Polycarbonate (PC), UL94V-0 approved	
Protection rating		Enclosure IP65/NEMA 4X Remote probe IP20	
Electromagnetic compatibility		EN 61326-1 FCC Part15 Class A	EN 61326-2-3 ICES-003 Class A Industrial environment
Conformity		 	

Ordering Guide

Feature	Description	Code	
Hardware Configuration		EE650-	
	Type	Duct mount	T2
		Remote probe	T3
	Output	4 - 20 mA (changeable to 0 - 10 V via jumper)	A6
		RS485	J3
	Probe length	100 mm (3.94")	L100
		200 mm (7.87")	L200
		300 mm (11.81") (2 x 150 mm) (2 x 5.91")	L300
	Probe cable length	Not applicable	No code
		1 m (3.3 ft)	K1
		2 m (6.6 ft)	K2
		5 m (16.4 ft)	K5
		10 m (32.8 ft)	K10
Dig. Interface	Protocol	Modbus RTU ¹⁾	P1
		BACnet MS/TP ²⁾	P3
	Baud rate	9600	BD5
		19200	BD6
		38400	BD7
		57600 (BACnet MS/TP only)	BD8
		76800 (BACnet MS/TP only)	BD9

1) Factory setting: parity even, 1 stop bit, Modbus Map see User Manual at www.epluse.com/ee650

2) BACnet MS/TP Product Implementation Conformance Statement (PICS) available at www.epluse.com/ee650

Order Examples

EE650-T2J3L200P1BD5

Feature	Code	Description
Type	T2	Duct mount
Output	J3	RS485
Probe length	L200	200 mm (7.87")
Protocol	P1	Modbus RTU
Baud rate	BD5	9600

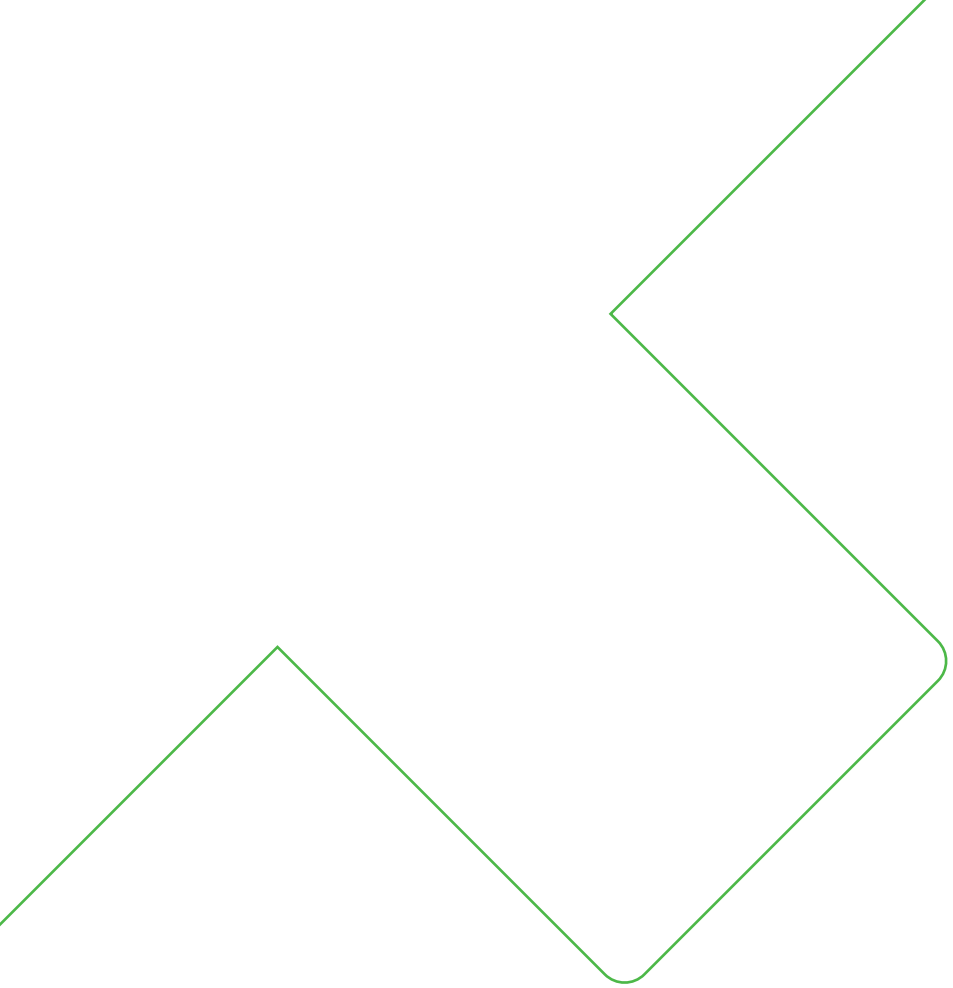
EE650-T3A6L300K2

Feature	Code	Description
Type	T3	Remote probe
Output	A6	4 - 20 mA
Probe length	L300	300 mm (11.81") (2 x 150 mm) (2 x 5.91")
Probe cable length	K2	2 m (6.6 ft)

Accessories

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

Accessories	Code
USB configuration adapter	HA011066
E+E Product Configuration Software (free download: www.epluse.com/configurator)	EE-PCS
Power supply adapter	V03



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