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# Datasheet EE650

**Air Velocity Sensor for HVAC Applications**



# EE650

## Air Velocity Sensor for HVAC Applications

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

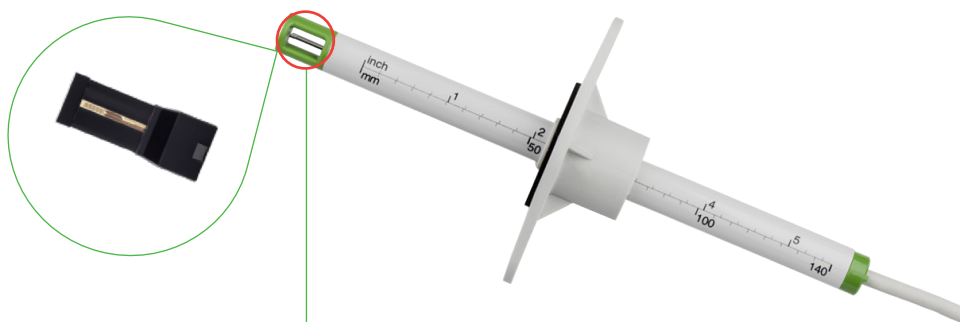
- IP65 / NEMA 4

## 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)

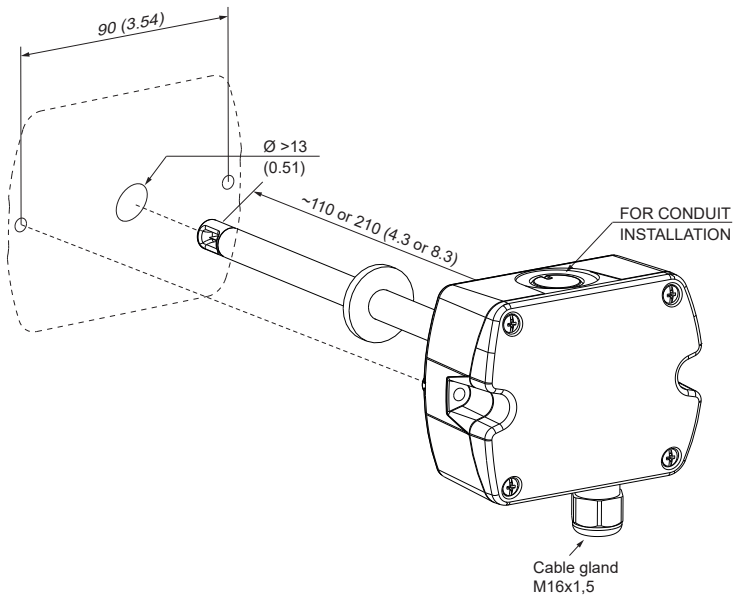
## Test report

according to DIN EN 10204-2.2

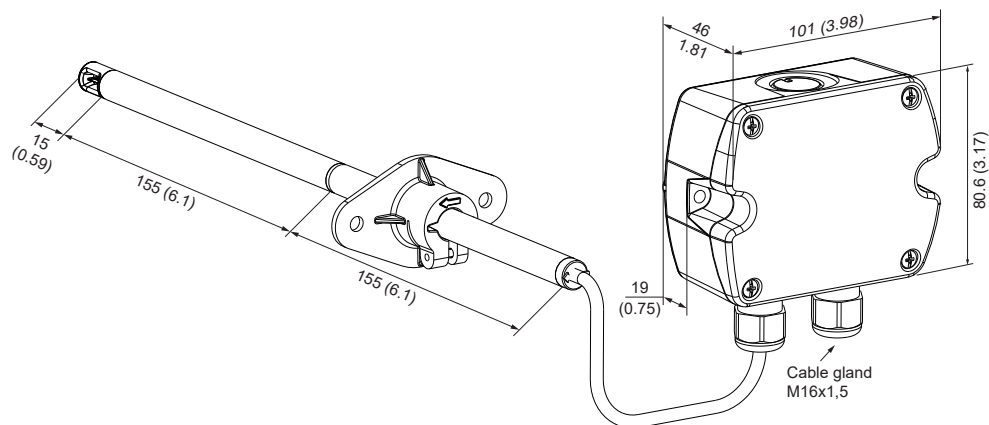
# Dimensions

Values in mm (inch)

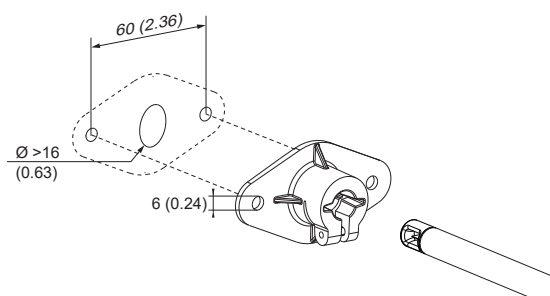
## Duct mount



## Remote probe



## Mounting flange



# Technical Data

## Measurands

### Air Velocity (v)

<b>Measuring range</b>	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)	
<b>Accuracy<sup>1)</sup></b> from 0.2 m/s, @ 20 °C (68 °F), 45 %RH and 1 013 hPa (14.7 psi)	± (0.2 m/s (40 ft/min) + 3 % of m. v.)	mv = measured value
<b>Response time t<sub>90</sub></b> , 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




<b>Air velocity v</b> measuring range selectable via jumpers, only for analogue output	0 - 10 V 4 - 20 mA (3-wire, factory setting)	0 < I <sub>L</sub> < 1 mA R <sub>L</sub> ≤ 500 Ω	I <sub>L</sub> = load current R <sub>L</sub> = load resistance
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### Digital

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

# Technical Data

General

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

# 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
Dig. Interface		2 m (6.6 ft)	K2
		5 m (16.4 ft)	K5
		10 m (32.8 ft)	K10
	Protocol	Modbus RTU <sup>1)</sup>	P1
		BACnet MS/TP <sup>2)</sup>	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  
2) BACnet MS/TP Product Implementation Conformance Statement (PICS) available at

# 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)