+Datasheet EE650

Air Velocity Sensor for HVAC Applications

EE650

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The EE650 air velocity sensor is designed 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...2 000 / 3 000 / 4 000 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 version 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 PCS10 Product Configuration Software and an optional stick.

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
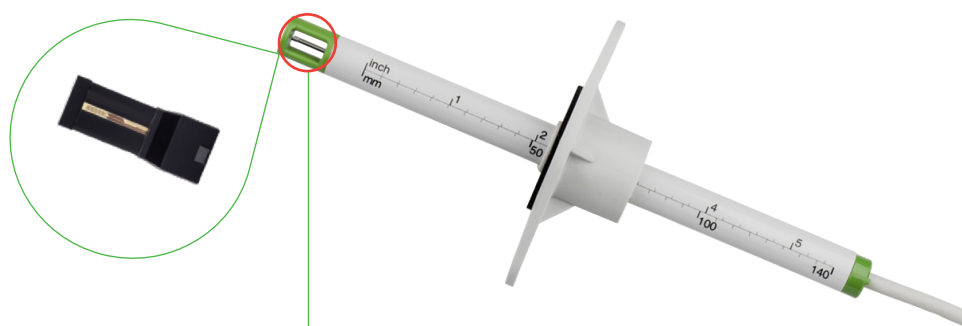 construction site pollution

Enclosure

▪ IP65 / NEMA 4X

Configuration and adjustment

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

Electronics on the underside of the PCB

▪ Protection against mechanical damage
  during installation

E+E air velocity sensing element

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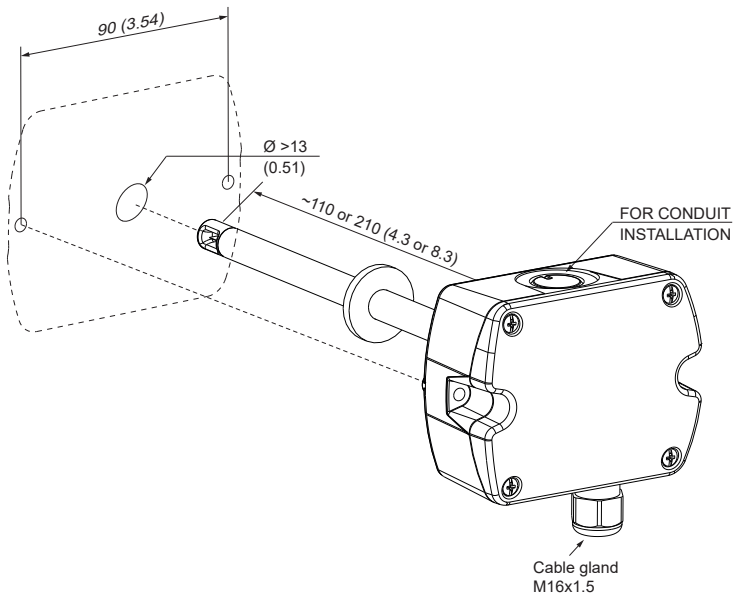▪ Measurement down to 0.2 m/s (40 ft/min)

Test report
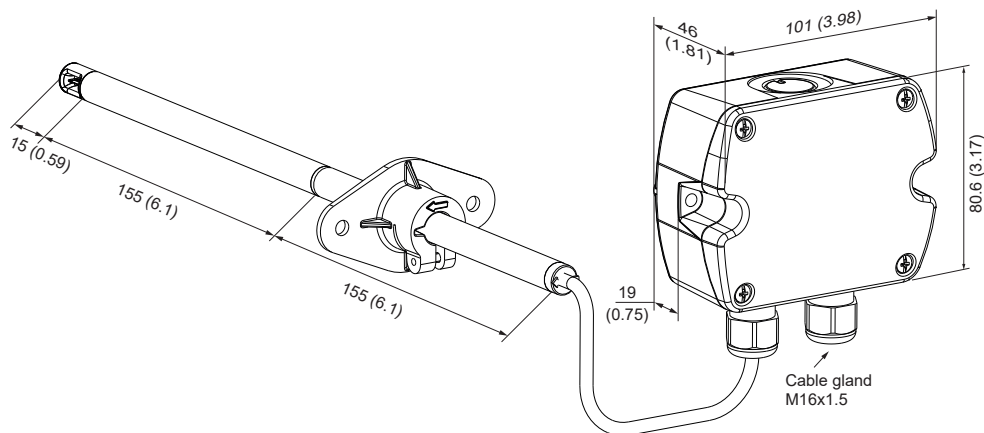according to DIN EN 10204-2.2

Dimensions

Values in mm (inch)

Duct mount

90 (3.54)

Ø >13
(0.51)

~110 or 210 (4.3 or 8.3)

FOR CONDUIT
INSTALLATION

Cable gland
M16x1.5

Remote probe

46
(1.81)

101 (3.98)

15 (0.59)

155 (6.1)

155 (6.1)

80.6 (3.17)

19
(0.75)

Cable gland
M16x1.5

Mounting flange

60 (2.36)

Ø >16
(0.63)

6 (0.24)
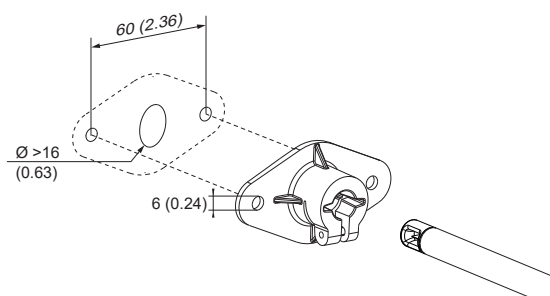
Technical Data

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)	
Accuracy[1] 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
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)	$0 < I_L < 1$ mA $R_L ≤ 500$ Ω	I_L = load current R_L = load resistance

Digital

Digital interface	RS485 (EE650 = 1 unit load)
Protocol **Factory settings** **Supported Baud rates** **Measured data types**	Modbus RTU 9 600 Baud, parity even, 1 stop bit, Modbus address 65 9 600, 19 200 and 38 400 FLOAT32 and INT16

General

Power supply class III ⬦ USA & Canada: Class 2 supply necessary	24 V AC/DC ±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** **Electronics** **Storage**	-25...+50 °C (-13...+122 °F) -10...+50 °C (+14...+122 °F) -30...+60 °C (-22...+140 °F)	
Enclosure material	Polycarbonate (PC), UL94V-0 approved	
Protection rating **Enclosure** **Remote probe**	IP65 / NEMA 4X IP20	
Electromagnetic compatibility	EN 61326-1 EN 61326-2-3 Industrial environment FCC Part15 Class A ICES-003 Class A	
Conformity	CE UK CA	

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**	**A6**
		RS485	**J3**	**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**
Digital Interface	**Protocol**	Modbus RTU[1]		**P1**
	Baud rate	9 600		**BD5**
		19 200		**BD6**
		38 400		**BD7**

1) Factory setting: parity even, 1 stop bit, Modbus Map see User Manual 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**	9 600
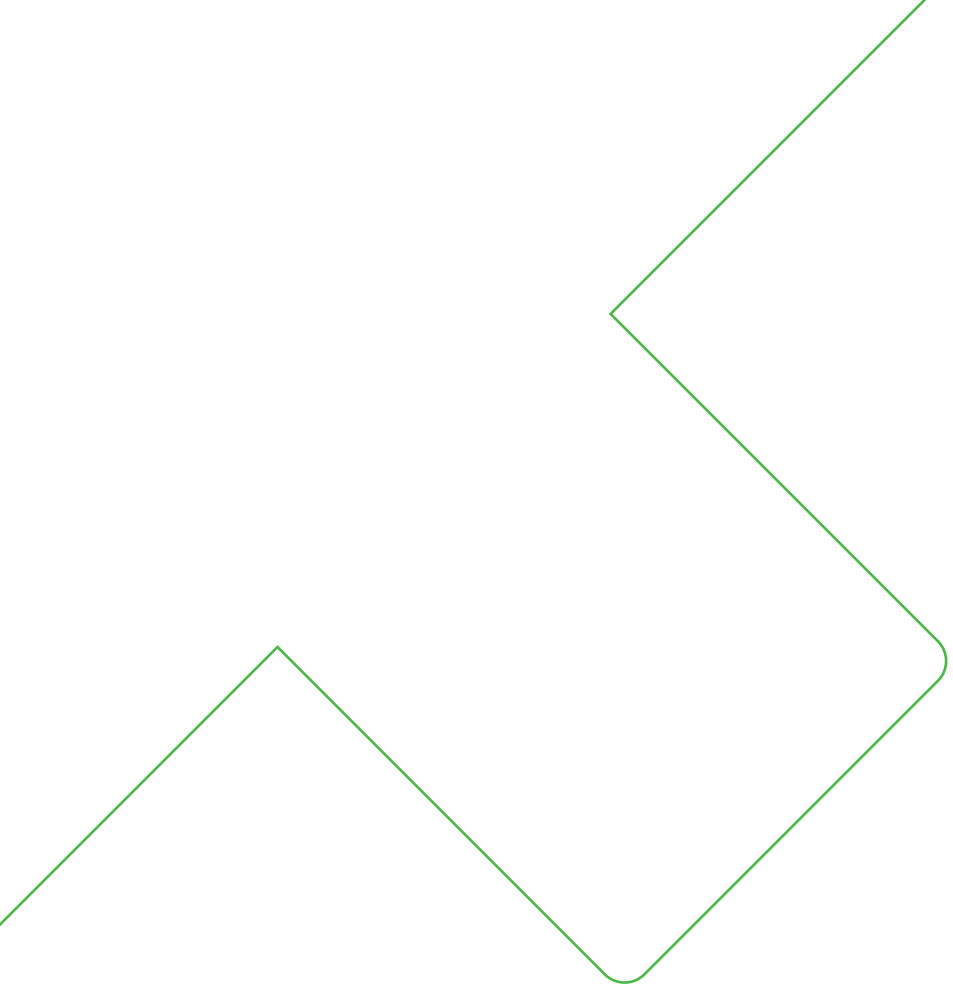
EE650-T3A6L300K2

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 refer to the Accessories datasheet.

Accessories	Code
USB-C configuration stick	**HA011070**
PCS10 Product Configuration Software (free download: www.epluse.com/configurator)	**PCS10**
Power supply adapter	**V03**

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