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Datasheet EE660

Low Air Velocity Sensor



EE660

Low Air Velocity Sensor

The EE660 is optimized for highly accurate measurement of very low air velocity in laminar flow control and special ventilation applications, for instance in clean rooms.

Excellent Measurement Performance

The E+E thin film sensing element employed in EE660 operates on the hot film anemometer principle, which stands for excellent accuracy down to 0.15 m/s (30 ft/min), high insensitivity to pollution and low angular dependency.

Analogue and Digital Outputs

The air velocity measured data is available as current and voltage outputs or on the RS485 interface with Modbus RTU protocol, as well as on the optional display.

Easy Configuration and Adjustment

The EE660 is user configurable with jumpers on the electronics board or via software. An optional configuration stick and the free PCS10 Product Configuration Software facilitate the adjustment of EE660 and the display setup.



EE660 - T2 duct mount



EE660 - T3 with display and remote probe

Features

Display

- Large, easily readable
- With backlight
- 180° orientation

Bayonet screws

- Open/closed with a ¼ rotation

Knockout for ½" conduit fitting

Smooth cover surface

- No accumulation of dust in protruding edges

Adjustment configuration

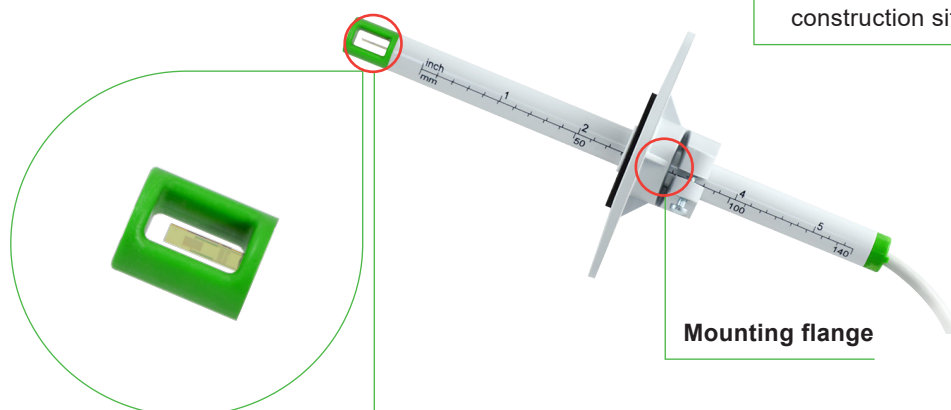
- Measuring range
- Response time
- RS485 Setup
- Termination resistor

Electronics on the back of the board

- Optimum protection against mechanical damage during installation

External mounting holes

- Easy and fast mounting with closed cover
- Electronics protected against construction site pollution



Mounting flange

E+E flow sensor element

- Excellent accuracy
- Long-term stability
- Low sensitivity to pollution
- Low angular dependency

Test report

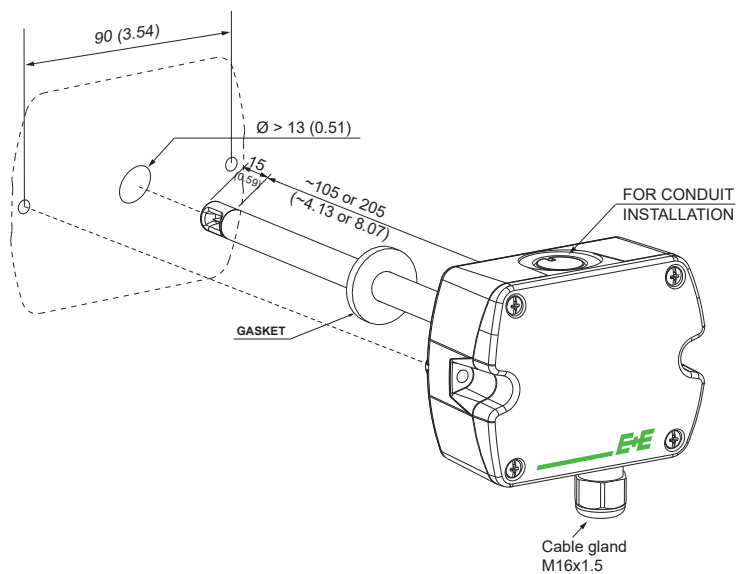
According to DIN EN 10204-2.2

Dimensions

Values in mm (inch)

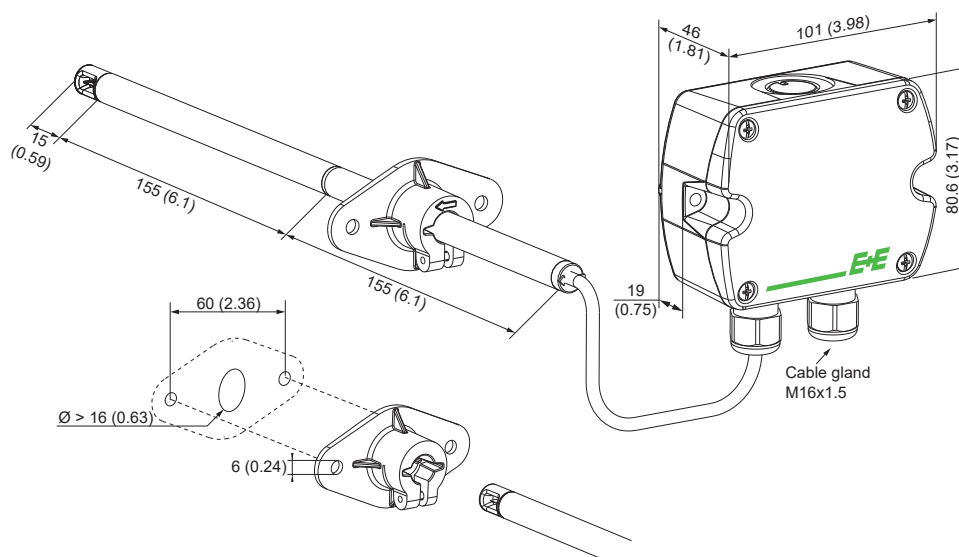
Type

T2: Duct mount



Type

T3: Remote probe



Technical Data

Measurands

Air Velocity (v)

Measuring range Selectable by jumper, only for analogue output	0...1 m/s (0...200 ft/min) 0...1.5 m/s (0...300 ft/min) 0...2 m/s (0...400 ft/min)
Accuracy¹⁾ in air @ 20 °C (68 °F), 45 %RH and 1013 hPa (14.7 psi)	mv = measured value 0.15...1 m/s (30...200 ft/min) $\pm(0.04 \text{ m/s} + 2 \% \text{ of mv}) / \pm(7.9 \text{ ft/min} + 2 \% \text{ of mv})$ 0.15...1.5 m/s (30...300 ft/min) $\pm(0.05 \text{ m/s} + 2 \% \text{ of mv}) / \pm(9.8 \text{ ft/min} + 2 \% \text{ of mv})$ 0.15...2 m/s (30...400 ft/min) $\pm(0.06 \text{ m/s} + 2 \% \text{ of mv}) / \pm(11.8 \text{ ft/min} + 2 \% \text{ of mv})$
Response time t_{90} , typ. @ constant temperature	4 s or 1 s (Selectable by jumper (analogue) and slide switch (digital))

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)	0 - 10 V 4 - 20 mA (linear, 3-wire)	-1 < I _L < 1 mA R _L < 450 Ω	I _L = load current R _L = load resistance
Scaling area	0...1 m/s / 0...1.5 m/s / 0...2 m/s (selectable by jumper, only for analogue output)		

Digital

Digital interface	RS485 (EE660 = 1 unit load)
Protocol	Modbus RTU
Factory settings	9600 Baud, parity even, 1 stop bit, Modbus address 65
Supported Baud rates	9600, 19200 and 38400
Measured data types	FLOAT32 and INT16

Technical Data

General

Power supply class III  USA & Canada: Class 2 supply necessary		24 V AC/DC ±20 %			
Current consumption, max.		AC supply - no display	DC supply - no display	AC supply - with display	DC supply - with display
	Analogue output	74 mA _{rms}	41 mA	180 mA _{rms}	85 mA
	Digital output	120 mA _{rms}	50 mA		
Dependency	of inflow angle (α) of inflow direction	<3% for α <10° <3%			
Electrical connection		Screw terminals max. 1.5 mm ² (AWG 16)			
Cable gland		M16x1.5			
Humidity working range		5...95 %RH, non-condensing			
Temperature range		Probe -25 °C...+50 °C (-13 °F...+122 °F) Electronics -10 °C...+50 °C (-14 °F...+122 °F) Storage -30 °C...+60 °C (-22 °F...+140 °F)			
Enclosure		Material PC (Polycarbonate) Protection rating IP65/NEMA 4X Compliance UL94 V-0 approved / with display: UL94 HB approved			
Protection rating	Remote probe	IP20			
Electromagnetic compatibility		EN 61326-1 EN 61326-2-3 Industrial environment FCC Part15 Class A ICES-003 Class A			
Conformity		 			
Configuration and adjustment		PCS10 Product Configuration Software (free download) and configuration stick.			

Ordering Guide

Feature	Description	Code	
Hardware Configuration		EE660-	
	Type	Duct mount	T2
		Remote probe	T3
	Output	0 - 10 V and 4 - 20 mA	A7
		RS485	J3
	Probe length	100 mm (3.94")	L100
		200 mm (7.87")	L200
		300 mm (11.81")	L300
	Probe cable length	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	Display	Without display	No code
		Display with backlight (only for analogue output A7)	D2
	Display unit	m/s	No code
		ft/min	DA21
	Protocol	Modbus RTU ¹⁾	P1
	Baud rate	9600	BD5
		19200	BD6
		38400	BD7

1) Further information in the Modbus Map, see User Guide at www.epluse.com/ee660.

Order Examples

EE660-T3J3L300K1P1BD5

Feature	Code	Description
Type	T3	Remote probe
Output	J3	RS485
Probe length	L300	300 mm (11.81")
Probe cable length	K1	1 m (3.3 ft)
Display	No code	Without display
Protocol	P1	Modbus RTU
Baud rate	BD5	9600

EE660-T2A7L200

Feature	Code	Description
Type	T2	Duct mount
Output	A7	0 - 10 V and 4 - 20 mA
Probe length	L200	200 mm (7.87")

Accessories

For further information please refer to the [Accessories](#) datasheet.

Description	Code
USB-C configuration stick	HA011070
PCS10 Product Configuration Software (free download: www.epluse.com/pcs10)	PCS10
Power supply adapter	V03