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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, on the RS485 interface with Modbus RTU or BACnet 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 adapter 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

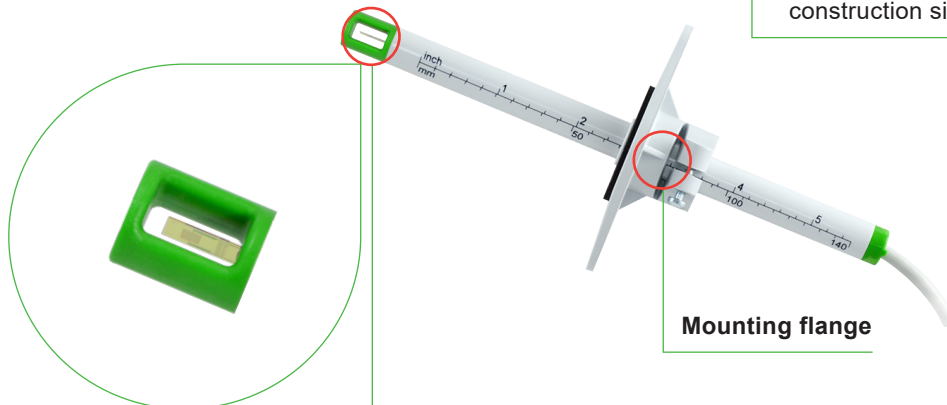
- Measuring range
- Response time
- RS485 Setup
- Termination resistor

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

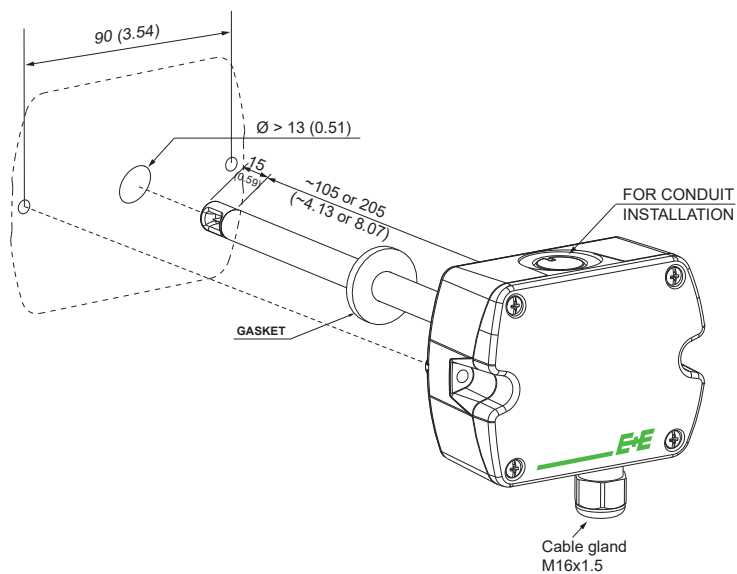
According to DIN EN 10204-2.2

Dimensions

Values in mm (inch)

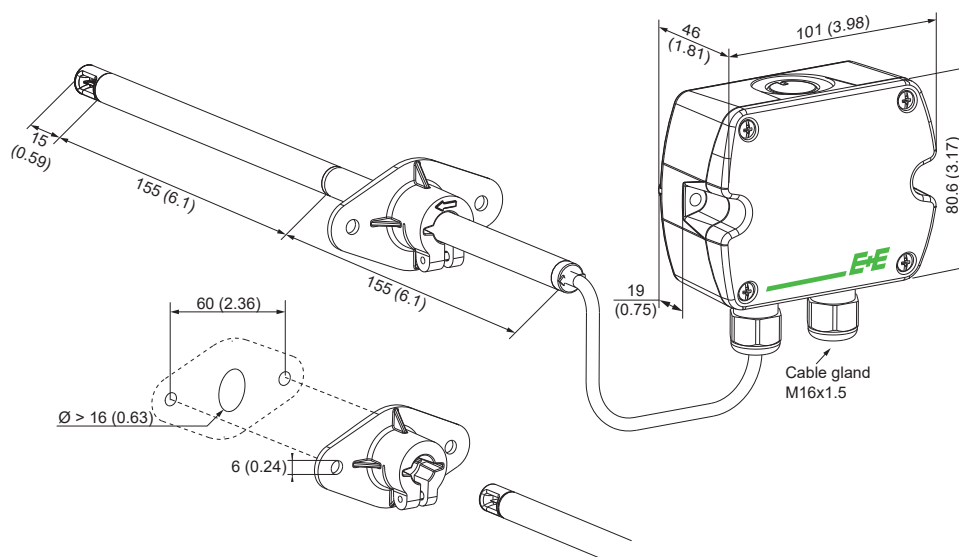
Type

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) 0.15...1 m/s (30...200 ft/min) 0.15...1.5 m/s (30...300 ft/min) 0.15...2 m/s (30...400 ft/min)	mv = measured value
	$\pm(0.04 \text{ m/s} + 2 \% \text{ of mv}) / \pm(7.9 \text{ ft/min} + 2 \% \text{ of mv})$ $\pm(0.05 \text{ m/s} + 2 \% \text{ of mv}) / \pm(9.8 \text{ ft/min} + 2 \% \text{ of mv})$ $\pm(0.06 \text{ m/s} + 2 \% \text{ of mv}) / \pm(11.8 \text{ ft/min} + 2 \% \text{ of mv})$
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)	$-1 < I_L < 1 \text{ mA}$ $R_L < 450 \Omega$	$I_L = \text{load current}$ $R_L = \text{load resistance}$
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 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 9600 Baud, no parity, 1 stop bit, BACnet address 65 9600, 19200, 38400, 57600 and 76800

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}
	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 adapter.			

Ordering Guide

Feature	Description	Code		
		EE660-		
Hardware Configuration	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	
Display	Without display	No code		
	Display with backlight (only for analogue output A7)	D2		
Display unit	m/s	No code		
	ft/min	DA21		
Setup RS485	Protocol	Modbus RTU ¹⁾	P1	
		Bacnet MS/TP ²⁾	P3	
Baud rate		9600	BD5	
		19200	BD6	
		38400	BD7	
		57600 (for BACnet MS/TP only)	BD8	
		76800 (for BACnet MS/TP only)	BD9	

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

2) Further information in the Product Implementation Conformance Statement (PICS) available 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 Configuration Adapter	HA011066
PCS10 Product Configuration Software (free download: www.epluse.com/pcs10)	PCS10
Power supply adapter	V03



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