

# **+ 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

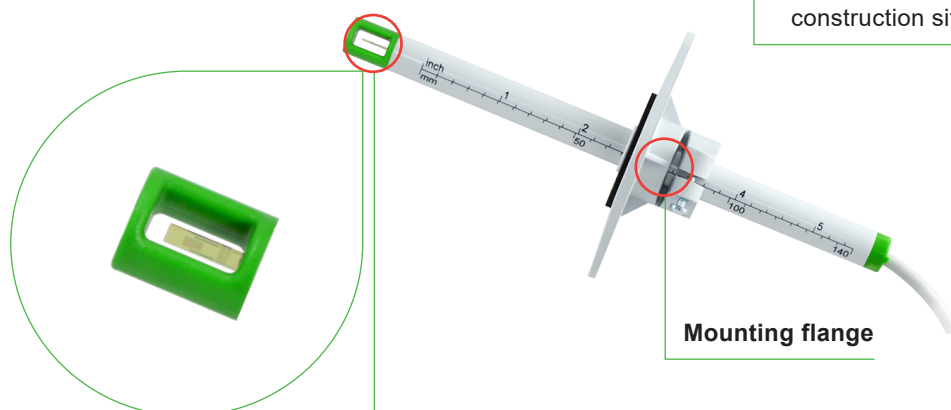
- Measuring range
- Response time
- RS485 Setup
- Termination resistor

## 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

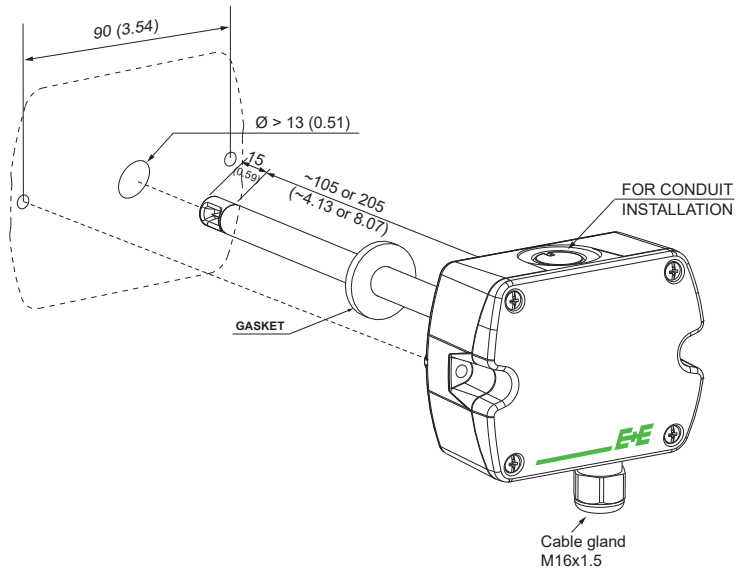
According to DIN EN 10204-2.2

# Dimensions

Values in mm (inch)

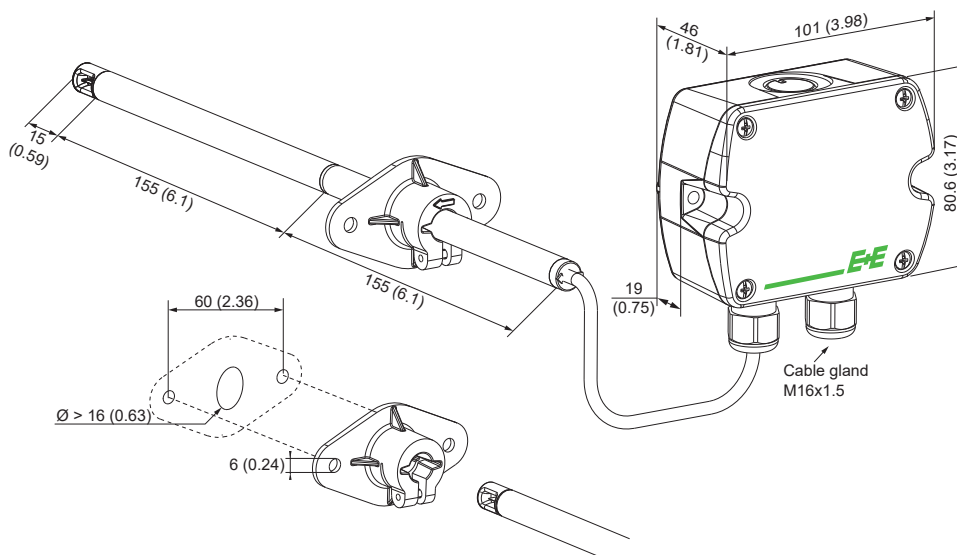
## Type

T2: Duct mount



## Type

T3: Remote probe



## Technical Data

## Measurands

### Air Velocity ( $v$ )

<b>Measuring range</b> 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)
<b>Accuracy<sup>1)</sup></b> 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) $\pm(0.06 \text{ m/s} + 2 \% \text{ of mv}) / \pm(11.8 \text{ ft/min} + 2 \% \text{ of mv})$
<b>Response time</b> $t_{90}$ , 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




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

## Digital

<b>Digital interface</b>	RS485 (EE660 = 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

# Technical Data

## General

<b>Power supply</b> class III  USA & Canada: Class 2 supply necessary		24 V AC/DC ±20 %			
<b>Current consumption</b> , max.		<b>AC supply - no display</b>	<b>DC supply - no display</b>	<b>AC supply - with display</b>	<b>DC supply - with display</b>
	<b>Analogue output</b>	74 mA <sub>rms</sub>	41 mA	180 mA <sub>rms</sub>	85 mA
	<b>Digital output</b>	120 mA <sub>rms</sub>	50 mA		
<b>Dependency</b>	<b>of inflow angle (α) of inflow direction</b>	<3% for α <10° <3%			
<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 range</b>		<b>Probe</b> -25 °C...+50 °C (-13 °F...+122 °F) <b>Electronics</b> -10 °C...+50 °C (-14 °F...+122 °F) <b>Storage</b> -30 °C...+60 °C (-22 °F...+140 °F)			
<b>Enclosure</b>		<b>Material</b> PC (Polycarbonate) <b>Protection rating</b> IP65/NEMA 4X <b>Compliance</b> UL94 V-0 approved / with display: UL94 HB approved			
<b>Protection rating</b>	<b>Remote probe</b>	IP20			
<b>Electromagnetic compatibility</b>		EN 61326-1      EN 61326-2-3      Industrial environment FCC Part15 Class A      ICES-003 Class A			
<b>Conformity</b>		 			
<b>Configuration and adjustment</b>		PCS10 Product Configuration Software ( <a href="#">free download</a> ) 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 <sup>1)</sup>	P1
	Baud rate	9600	BD5
		19200	BD6
		38400	BD7

1) Further information in the Modbus Map, see User Guide at [www.epluse.com/ee660](http://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: <a href="http://www.epluse.com/pcs10">www.epluse.com/pcs10</a> )	PCS10
Power supply adapter	V03

