

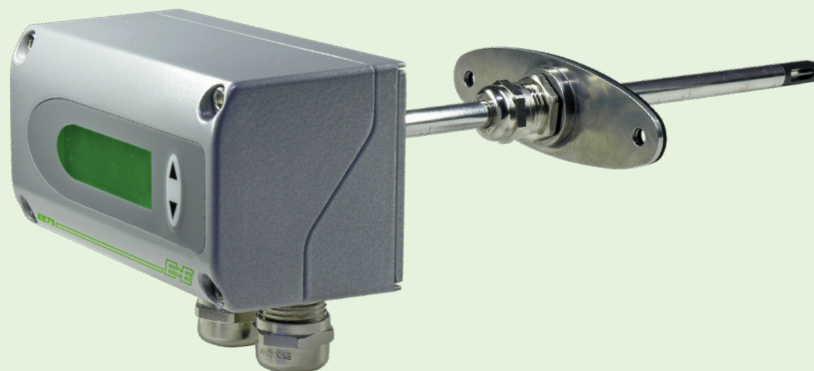


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in sensor  
technology.



# Datasheet EE75

**Highly Accurate Air / Gas Velocity  
Sensor for Industrial Applications**



# EE75

## Highly Accurate Air/Gas Velocity Sensor for Industrial Applications

The EE75 air velocity (v) and temperature (T) sensor is optimized for best measurement results in challenging air flow applications in most various industries.

### Outstanding Measurement Performance

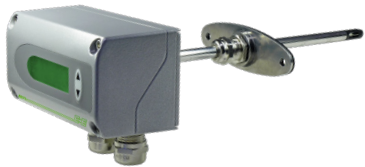
With its multipoint v factory adjustment the EE75 meets the highest accuracy requirements. The E+E thin-film sensing element employed operates on the hot-film anemometer principle, which stands for excellent accuracy from 0.06 m/s (12 ft/min) up to 40 m/s (8000 ft/min) and low angular dependency. The integrated temperature compensation combined with the robust mechanical design, makes the EE75 suitable for process temperatures from -40 °C (-40 °F) up to 120 °C (248 °F).

### Versatility

The EE75 is available for duct mount as well as with remote probe in various probe lengths. The remote probe types feature different cable lengths and pressure tight versions up to 10 bar (145 psi). The IP65/NEMA 4 rated metal enclosure facilitates easy installation and maintenance. The v and T measured data is available on two current or voltage analogue outputs. In addition to v and T values EE75 calculates the volume flow V' in m<sup>3</sup>/min or ft<sup>3</sup>/min.

### Configurable and Adjustable

The setup and adjustment of the EE75 can be easily performed using the configuration software and USB interface cable included in the scope of supply.



EE75 for duct mount



EE75 with remote probe



EE75 with remote probe, pressure-tight up to 10 bar (145 psi)

# Features

## EE75 Sensor

- Highly accurate over the entire working range
- Combined v and T measurement
- Integrated T compensation
- Optional display with backlight and menu buttons
- Easy mounting and maintenance
- Voltage or current output, selectable
- Low-flow suppression
- Calculation of volume flow V'

## EE75 Sensing Head and Probe

- Measuring range from -40 °C (-40 °F) up to 120 °C (248 °F) and 10 bar (145 psi)
- Accurate measurement of air flows from 0.06 m/s up to 40 m/s (12...8000 ft/min)
- Low angular dependency
- Long-term stable



## Application Specific Design

- Duct mount and remote probe types with different probe lengths
- Pressure tight remote probes up to 10 bar (145 psi)
- Various cable lengths for remote probe types
- Process connection with stainless steel flange or G 1/2" ISO / 1/2" NPT thread

## Adjustment and Configuration

- v and T adjustment
- Scalable measuring range
- Selectable output signal
- Response time
- Calculation of volume flow

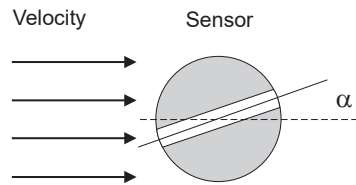
## Inspection Certificate

according to DIN EN 10204-3.1 with three v points

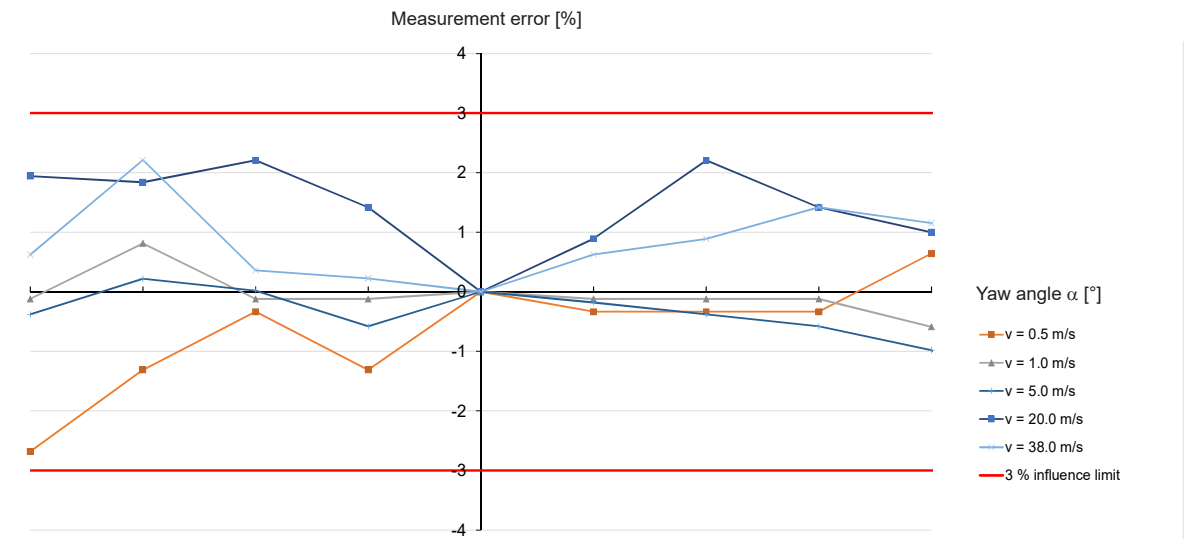
# Features

## Angular Dependency

The innovative design of the probe head minimises the effect of the angle of inflow (yaw angle) on the measuring result. The deviation of the measuring value remains <3 % up to a yaw angle  $\alpha$  of  $\pm 20^\circ$  between the direction of inflow and the sensor element's longitudinal axis.



EE75 sensing head in the flow

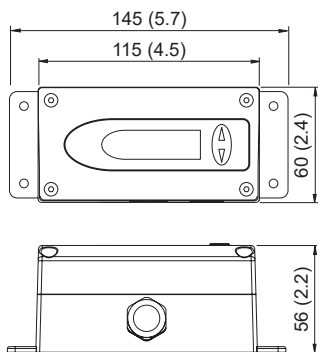


Measurement error over yaw angle for different velocities

# Dimensions

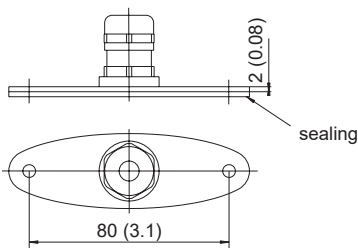
Values in mm (inch)

## Enclosure



## Mounting flange

for Types T2 and T3 (included in the scope of supply)

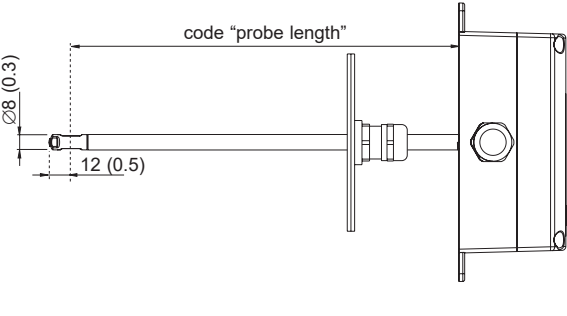


# Dimensions

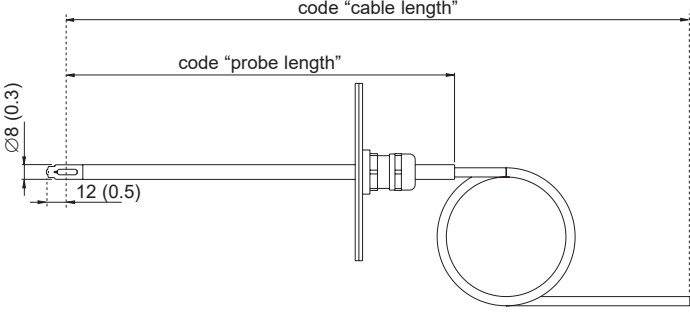
Values in mm (inch)

Type

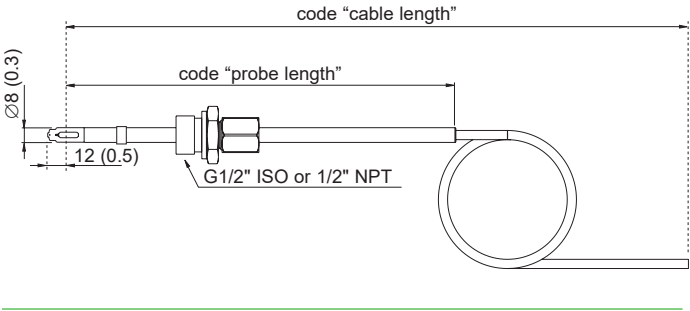
T2 Duct Mount



T3 Remote Probe



T26 Remote Probe, pressure-tight up to 10 bar (145 psi)



# Technical Data

## Measurands

### Air Velocity (v)

|                                                                                                                                                                                                                                  |                                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Measuring range                                                                                                                                                                                                                  | 0...2 m/s (0...400 ft/min)<br>0...10 m/s (0...2 000 ft/min)<br>0...40 m/s (0...8 000 ft/min)                              |
| Accuracy<br>in air at 25 °C (77 °F) and 1 013 hPa (14.7 psi),<br>including non-linearity, hysteresis and repeatability<br>0.06...2 m/s (12...400 ft/min)<br>0.15...10 m/s (30...2000 ft/min)<br>0.20...40 m/s (40...8000 ft/min) | ±0.03 m/s (6 ft/min)<br>±(0.10 m/s (20 ft/min) + 1 % of mv)<br>±(0.20 m/s (40 ft/min) + 1 % of mv)<br>mv = measured value |
| Uncertainty of factory calibration                                                                                                                                                                                               | ±1 % of mv, min. 0.015 m/s (3 ft/min)<br>mv = measured value                                                              |
| Dependency<br>of inflow angle (α)<br>of inflow direction                                                                                                                                                                         | <3 % for α <20°<br><3 %                                                                                                   |
| Response time t <sub>90</sub> , typ.                                                                                                                                                                                             | <1.5...40 s (Factory setting: 1.5 s, configurable via <a href="#">EE75 Configuration Software</a> )                       |

# Technical Data

## Measurands

### Temperature (T)

|                                                                                  |                                                                        |
|----------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Measuring range                                                                  | -40...+120 °C                                                          |
| Accuracy<br>in air at 25 °C (77 °F) at air flows $\geq 0.45$ m/s<br>(886 ft/min) | $\pm 0.5$ °C ( $\pm 0.9$ °F)                                           |
| Temperature dependency of electronics, typ.                                      | $\pm 0.005$ % of mv/K deviating from 25 °C (77 °F) mv = measured value |
| Temperature dependency of probe, typ.                                            | $\pm 0.1$ % of mv/K deviating from 25 °C (77 °F) mv = measured value   |
| Response time $t_{90}$ , typ.                                                    | $\leq 10$ s                                                            |

## Outputs

### Analogue

|                                                            |                                            |                                               |                                                 |
|------------------------------------------------------------|--------------------------------------------|-----------------------------------------------|-------------------------------------------------|
| Two freely selectable and scalable outputs<br>for v, T, V' | 0 - 10 V<br>0 - 20 mA / 4 - 20 mA (3-wire) | -1 mA $< I_L < 1$ mA<br>$R_L \leq 350 \Omega$ | $I_L$ = load current<br>$R_L$ = load resistance |
|------------------------------------------------------------|--------------------------------------------|-----------------------------------------------|-------------------------------------------------|

## General

|                                                                                                                                                            |                                                                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Power supply</b> class III <br>USA & Canada: Class 2 supply necessary | 24 V DC ±20 %                                                                                                                                                           |
| <b>Current consumption</b> , typ.<br><b>With Display</b>                                                                                                   | <100 mA<br><160 mA                                                                                                                                                      |
| <b>Electrical connection</b>                                                                                                                               | Screw terminals max. 2.5 mm <sup>2</sup> (AWG 16)                                                                                                                       |
| <b>Protection rating</b>                                                                                                                                   | IP65 / NEMA 4                                                                                                                                                           |
| <b>Temperature working range</b><br><br><div>Probe cable<br/>Enclosure<br/>Enclosure with display</div>                                                    | -40...+105 °C (-40...+221 °F)<br>-40...+60 °C (-40...+140 °F)<br>-30...+60 °C (-22...+140°F)                                                                            |
| <b>Pressure working range</b><br><br><div>T2, T3:<br/>T26:</div>                                                                                           | 700...1300 hPa (10.2...18.9 psi)<br>Pressure tight 0.05...10 bar (0.73...145 psi)                                                                                       |
| <b>Humidity working range</b>                                                                                                                              | 0...95 %RH, non-condensing                                                                                                                                              |
| <b>Storage conditions</b>                                                                                                                                  | -20...+70 °C<br>0...95 %rF, non-condensing                                                                                                                              |
| <b>Material</b><br><br><div>Enclosure<br/>Probe<br/>Probe head</div>                                                                                       | Die-cast aluminium (AlSi9Cu3)<br>Stainless steel 1.4404<br>Polybutylenterephthalat (PBT)                                                                                |
| <b>Electromagnetic compatibility</b>                                                                                                                       | EN 61326-1      EN 61326-2-3      Industrial Environment<br>FCC Part15 Class B      ICES-003 Class B                                                                    |
| <b>Configuration und adjustment</b>                                                                                                                        | <a href="#">EE75 Configuration Software</a> and USB interface cable included in the scope of supply                                                                     |
| <b>Conformity</b>                                                                                                                                          |   |

# Ordering Guide

| Feature                          |                                              |                                                | Description |          | Code    |      |  |
|----------------------------------|----------------------------------------------|------------------------------------------------|-------------|----------|---------|------|--|
| Hardware-Konfiguration           |                                              |                                                | EE75-       |          |         |      |  |
|                                  | Type                                         | Duct mount                                     |             | T2       |         |      |  |
|                                  |                                              | Remote probe                                   |             |          | T3      |      |  |
|                                  |                                              | Remote probe, pressure tight, 10 bar (145 psi) |             |          |         | T26  |  |
|                                  | Output <sup>1)</sup>                         | 0 - 10 V                                       |             | A3       |         |      |  |
|                                  |                                              | 4 - 20 mA                                      |             | A6       |         |      |  |
|                                  | Measuring range                              | 0...2 m/s (0...400 ft/min)                     |             |          | HV23    |      |  |
|                                  |                                              | 0...10 m/s (0...2 000 ft/min)                  |             | HV26     | HV26    |      |  |
|                                  |                                              | 0...40 m/s (0...8 000 ft/min)                  |             | HV30     | HV30    | HV30 |  |
|                                  | Probe length                                 | 100 mm (3.94")                                 |             |          | L100    |      |  |
|                                  |                                              | 200 mm (7.87")                                 |             | L200     | L200    | L200 |  |
|                                  |                                              | 400 mm (15.75")                                |             | L400     | L400    | L400 |  |
|                                  |                                              | 600 mm (23.62")                                |             |          | L600    | L600 |  |
|                                  | Probe cable length                           | 2 m (6.6 ft)                                   |             |          | K2      | K2   |  |
|                                  |                                              | 5 m (16.4 ft)                                  |             |          | K5      |      |  |
|                                  |                                              | 10 m (32.8 ft)                                 |             |          | K10     | K10  |  |
| Display                          | Without display                              |                                                | No code     |          |         |      |  |
|                                  | Display with backlight                       |                                                | D2          |          |         |      |  |
| Process connection               | G 1/2" ISO - cut-in fitting, Ø8 mm (0.31")   |                                                |             |          | PA29    |      |  |
|                                  | 1/2" NPT - cut-in fitting, Ø8 mm (0.31")     |                                                |             |          | PA30    |      |  |
| Electrical connection            | Cable glands                                 |                                                | No code     | No code  | No code |      |  |
|                                  | Plug for power supply and outputs            |                                                | E4          | E4       |         |      |  |
|                                  | 2 x plugs for power supply + outputs and USB |                                                | E6          | E6       |         |      |  |
| Software-Setup                   | Output 1 measurand <sup>2)</sup>             | Temperature T                                  | [°C]        | No code  |         |      |  |
|                                  |                                              | Temperature T                                  | [°F]        | MA2      |         |      |  |
|                                  |                                              | Air velocity v                                 | [m/s]       | MA20     |         |      |  |
|                                  |                                              | Air velocity v                                 | [ft/min]    | MA21     |         |      |  |
|                                  |                                              | Volume flow V'                                 | [m³/min]    | MA89     |         |      |  |
|                                  |                                              | Volume flow V'                                 | [ft³/min]   | MA90     |         |      |  |
|                                  | Output 1 scaling low                         | 0                                              |             | No code  |         |      |  |
|                                  |                                              | Value                                          |             | SALValue |         |      |  |
|                                  | Output 1 scaling high                        | 50                                             |             | No code  |         |      |  |
|                                  |                                              | Value                                          |             | SAHValue |         |      |  |
|                                  | Output 2 measurand                           | Air velocity v                                 | [m/s]       | No code  |         |      |  |
|                                  |                                              | Air velocity v                                 | [ft/min]    | MB21     |         |      |  |
|                                  |                                              | Temperature T                                  | [°C]        | MB1      |         |      |  |
|                                  |                                              | Temperature T                                  | [°F]        | MB2      |         |      |  |
|                                  |                                              | Volume flow V'                                 | [m³/min]    | MB89     |         |      |  |
|                                  |                                              | Volume flow V'                                 | [ft³/min]   | MB90     |         |      |  |
| Output 2 scaling low             | 0                                            |                                                | No code     |          |         |      |  |
|                                  | Value                                        |                                                | SBLValue    |          |         |      |  |
| Output 2 scaling high            | Value                                        |                                                | SBHValue    |          |         |      |  |
| Medium                           | Air                                          |                                                | No code     |          |         |      |  |
|                                  | Nitrogen                                     |                                                | FU2         |          |         |      |  |
|                                  | CO <sub>2</sub>                              |                                                | FU3         |          |         |      |  |
|                                  | Argon                                        |                                                | FU7         |          |         |      |  |
| Duct cross section <sup>3)</sup> | Value in mm <sup>2</sup> /inch <sup>2</sup>  |                                                | DCValue     |          |         |      |  |

1) Applies to both outputs.

2) Measurands for output 1 and output 2 need to be either metric or non-metric.

3) Only in combination with Volume flow measurement Mx89: value in mm<sup>2</sup> / Mx90: value in inch<sup>2</sup>.

# Ordering Example

## EE75-T26A6HV30L400K10D2PA29SAL-20SAH120SBH20

| Feature               | Code    | Description                                |
|-----------------------|---------|--------------------------------------------|
| Type                  | T26     | Remote Probe, pressure tight, 10 bar       |
| Output                | A6      | 4 - 20 mA                                  |
| Measuring Range       | HV30    | 0...40 m/s (0...8 000 ft/min)              |
| Probe length          | L400    | 400 mm (15.75")                            |
| Probe cable length    | K10     | 10 m (32.8 ft)                             |
| Display               | D2      | Display with backlight                     |
| Process connection    | PA29    | G 1/2" ISO - cut-in fitting, Ø8 mm (0.31") |
| Electrical connection | No code | Cable glands                               |
| Output 1 measurand    | No code | Temperature T [°C]                         |
| Output 1 scaling low  | SAL-20  | -20 °C                                     |
| Output 1 scaling high | SAH120  | 120 °C                                     |
| Output 2 measurand    | No code | Air velocity v [m/s]                       |
| Output 2 scaling low  | No code | 0 m/s                                      |
| Output 2 scaling high | SBH20   | 20 m/s                                     |
| Medium                | No code | Air                                        |

## EE75-T2A6HV26L600E4MA21SAH2000MB90SBH2000FU2DC200

| Feature               | Code    | Description                           |
|-----------------------|---------|---------------------------------------|
| Type                  | T2      | Duct mount                            |
| Output                | A6      | 4 - 20 mA                             |
| Measuring Range       | HV26    | 0...10 m/s (0...2 000 ft/min)         |
| Probe length          | L600    | 600 mm (23.62")                       |
| Probe cable length    | No code | Not applicable                        |
| Display               | D2      | Display with backlight                |
| Electrical connection | E4      | 1 x plug for power supply and outputs |
| Output 1 measurand    | MA21    | Air velocity v [ft/min]               |
| Output 1 scaling low  | No code | 0 ft/min                              |
| Output 1 scaling high | SAH2000 | 2000 ft/min                           |
| Output 2 measurand    | MB90    | Volume flow V' [ft³/min]              |
| Output 2 scaling low  | No code | 0 ft³/min                             |
| Output 2 scaling high | SBH2000 | 2000 ft³/min                          |
| Medium                | FU2     | Nitrogen                              |
| Duct cross section    | DC200   | 200 inch²                             |