

Features

- High accuracy
- Calculation of volumetric flow rate
- Low dependence on angle of inflow
- Probe diameter 8mm
- Remote probe up to 10m
- Easy mounting and maintenance
- Correction for pressure and humidity
- Low flow cut-off
- Pressure tight up to 10bar
- SI and US units selectable

Technical data

Measuring values	
Working Range	0... 2m/s 0... 10m/s 0... 40m/s
Accuracy¹⁾ in air at 25°C²⁾ at 45% RH and 1013hPa	0.06... 2m/s ± 0.03m/s 0.15...10m/s ± (0.10m/s + 1 % of measuring value) 0.2... 40m/s ± (0.20m/s + 1 % of measuring value)
Uncertainty of factory calibration¹⁾	± (1% of measuring value, min. 0.015m/s)
Temp. dependence electronics	typ. -0.005 % of measuring value / °C
Temp. dependence probe	± (0.1% of measuring value/°C)
Dependence	of angle of inflow: < 3% for $\alpha < 20^\circ$ of direction of inflow: < 3%
Response time τ_{90}³⁾	< 1.5...40s (configurable)
Temperature	
Working range	probe: -40...120°C probe cable: -40...105°C electronic: -40...60°C electronic with display: -30...60°C
Accuracy at 20°C	±0.5°C
Temp. dependence electronics	typ. -0.01°C / °C
Response time τ_{90}³⁾	10s
Outputs	
Output signals and display ranges are freely scaleable (see ranges below)	
Voltage	0-10Vdc (e.g: 0-5V, 1-5V etc.) -1mA < IL < 1mA
Current (3-wire)	0-20mA (e.g: 4-20mA etc.) RL < 350 Ohm
V-scaling	0...2 / 10 / 40m/s

Applications

- Monitoring incoming and outgoing air (energy management) in HVAC applications
- Filter monitoring and laminar flow control in cleanrooms
- Exhaust systems, exhaust hoods and glove boxes in the pharmaceutical, bio and semiconductor industries
- Mass flow measurement during incineration processes
- Monitoring and measurement of compressed air systems
- Air conveying systems
- Wind tunnels and climate simulators

Ordering Codes

See pages 7 - 8



T-scaling	-40...120°C
Vol-scaling	0...10000m ³ /min
General	
Supply voltage	24Vac/dc ± 20%
Current consumption	max. 100mA; max. 160mA (with display)
Working range humidity	0...99% RH - no condensation
Connection	screw terminals max. 1.5mm ²
Electromagnetic compatibility	EN61326-1 EN61326-2-3 ICES-003 ClassB Industrial Environment FCC Part15 ClassB
Pressure range	Model E and P pressure tight up to 10bar
Material	housing / protection class: metal (AlSi3Cu) / IP65 Measuring probe: stainless steel Measuring head: PBT (polybutylenterephthalat)
System requirements for configuration software	Windows 2000 or Windows XP
Interface	USB 1.1

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).

²⁾ Accuracy refers to measurement in air

³⁾ Response time τ_{90} is measured from the beginning of a step change to the moment of reaching 90% of the step.

The air velocity transmitters were developed to obtain accurate measuring results over a wide range of velocities and temperatures.

A high-quality hot film sensor element based on cutting-edge thin film technology ensures maximum sensitivity, even at lowest mass flows.

At the same time, the innovative probe design produces reliable measuring results at high flow velocities of up to 40m/s.

The integrated temperature compensation minimises the temperature cross-sensitivity of the transmitter which, combined with the robust mechanical design, allows it to be used at process temperatures between -40 to +120°C.

In addition to air velocity and temperature values, the transmitter calculates the volumetric flow rate in m³/min. The cross section of the duct needs to be determined for this purpose and the volumetric flow rate can be displayed and directed to one of the analogue outputs.

The configuration software included in the scope of supply allows to choose the appropriate output parameter and freely scale the display range and signal level of the two analogue outputs.

In addition user-friendly calibration of the air velocity and temperature and the adjustment of key parameters (e.g. response time of the velocity measurement, low flow cut-off points, etc.) are supported as well.

An optional illuminated display with two control buttons integrated in the cover is available.

In addition, this enables changes of the configuration to be made directly on the unit.

The transmitter has a robust metal housing to protect against possible damage in rough industrial environments.

There are four different models, providing a comprehensive range of mounting options:

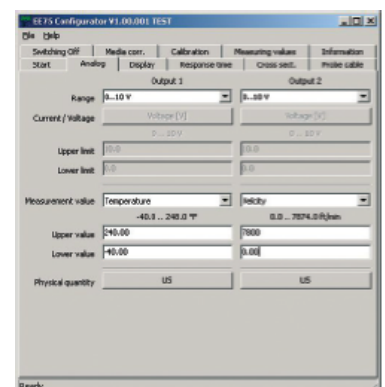
- Model A for wall mounting
- Model B for duct mounting
- Model C with remote probe
- Model E with remote probe, pressure-tight up to 10bar

The transmitter series can be used to measure the velocity of other gasses as well, although a correction has to be applied to the unit at the factory.

Configuration Software

An easy setup of the transmitter can be made via standard USB interface and the software included in the scope of supply.

The user can easily set the response time, correct for the gas (air) pressure, perform an one or two point adjustment and define the duct cross section for the volumetric flow rate.

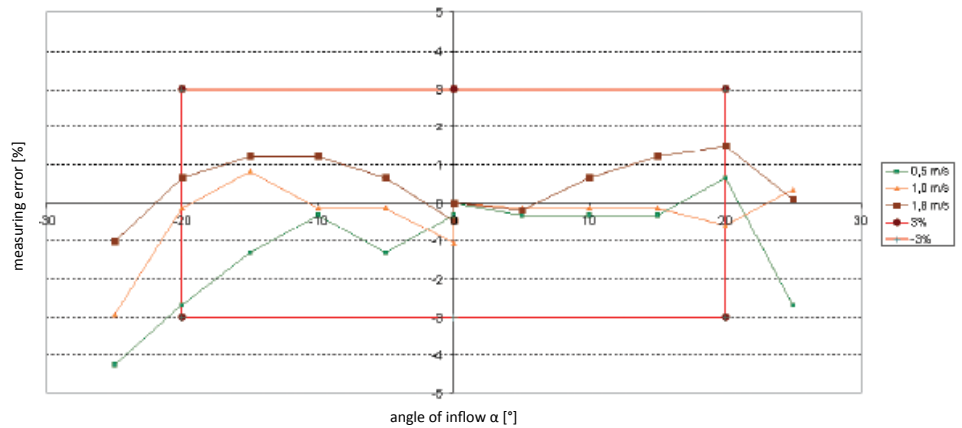
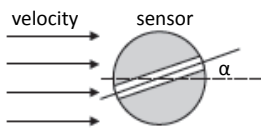




Angular Dependence

The innovative design of the probe head minimises the effect of the angle of inflow on the measuring result.

The deviation of the measuring value remains < 3% up to an angle of inflow (α) of $\pm 20^\circ$ between the direction of inflow and the sensor element's longitudinal axis.



Low flow cut-off

Small temperature differences in shut-off pipes and ducts can cause minimal flows.

Even these would be detected and measured by the transmitter. The resulting fluctuations in the output signal can be suppressed by the low flow cut-off. Cut-off point and switching hysteresis can be specified using the configuration software.

Calculation of volumetric flow

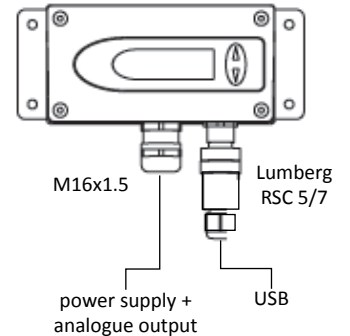
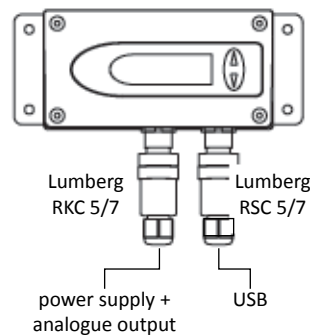
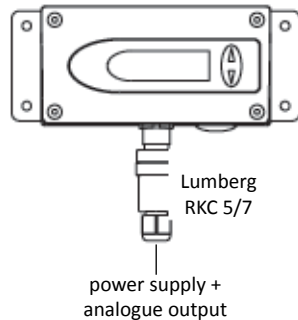
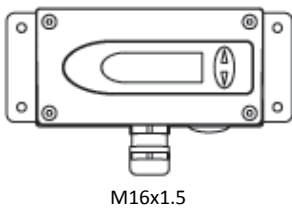
The transmitter measures air velocity in m/s.

The configuration software can be used to enter the cross-section.

This enables the transmitter to calculate the volumetric flow rate in m^3/min .

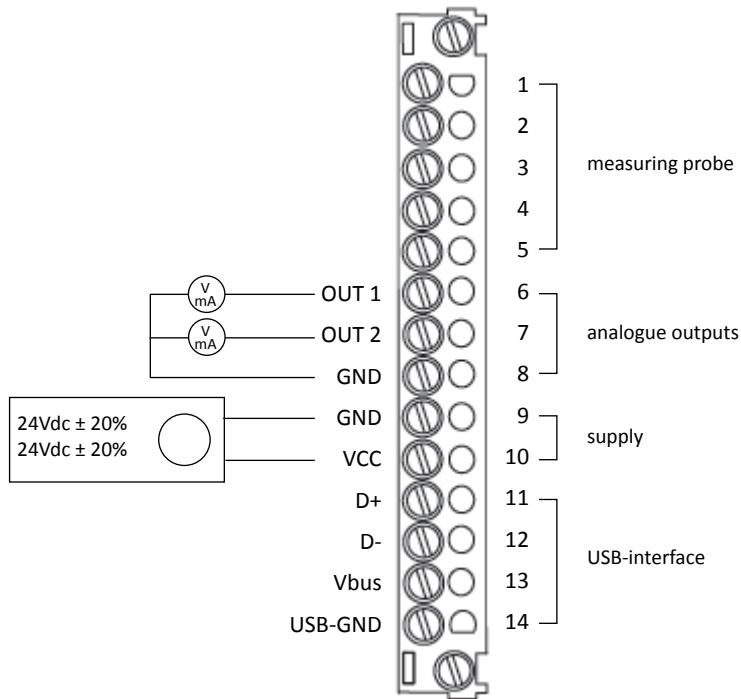
The data can be displayed and directed to one of the analogue outputs.

Connection versions

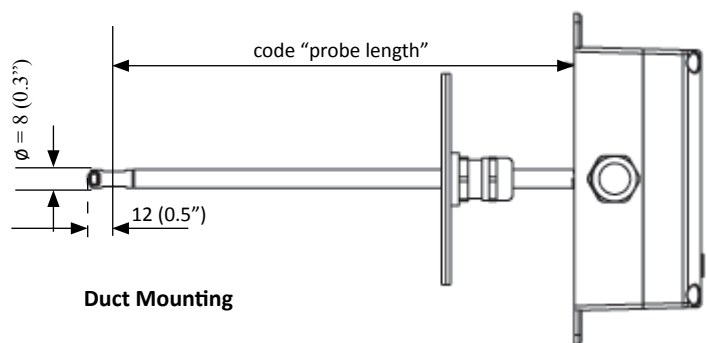
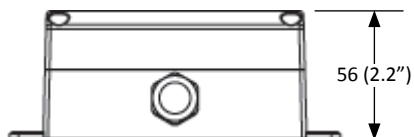
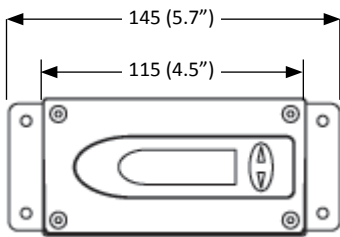


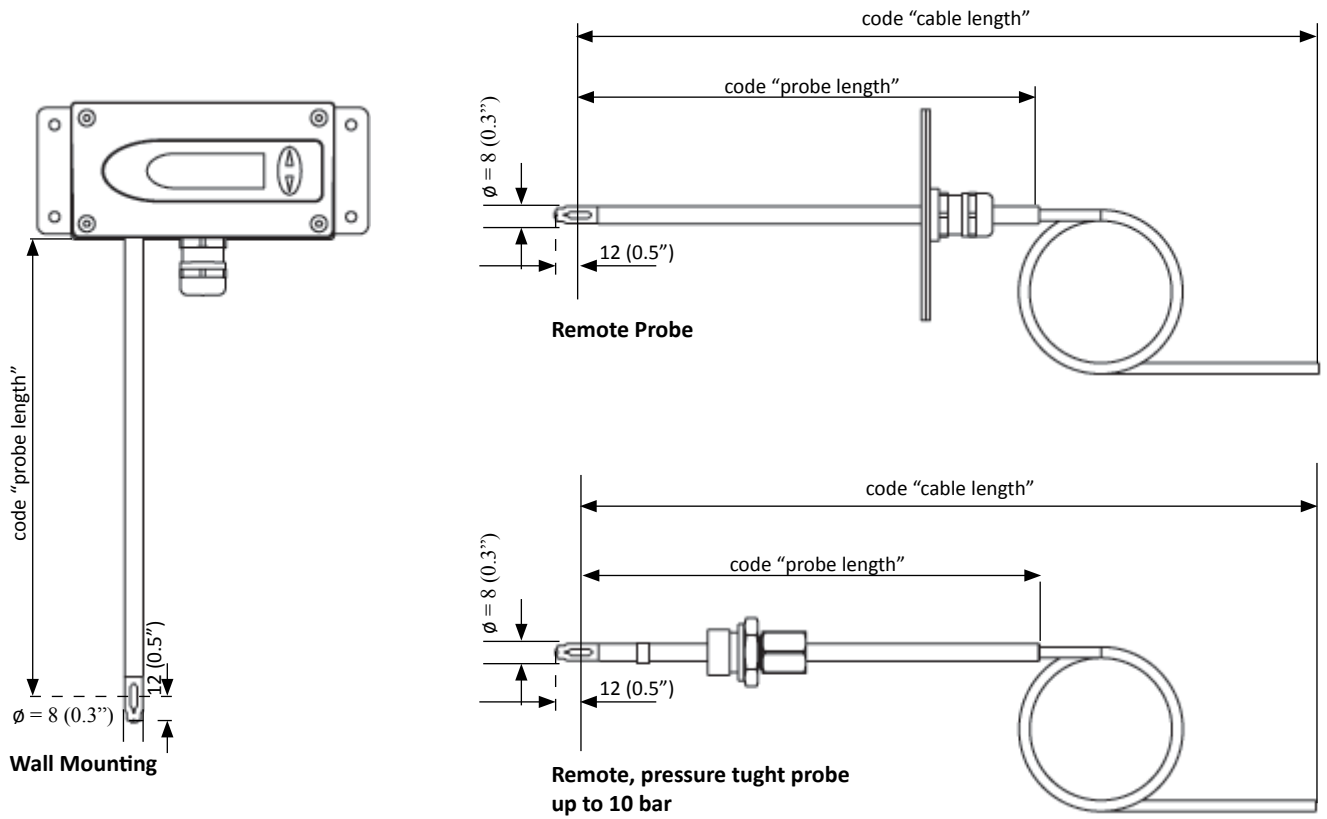


Connection versions

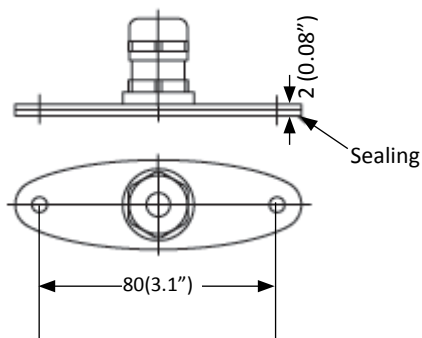


Dimensions





Mounting flange (included in the scope of supply)





Hardware configuration		Model A	Model B	Model C	Model E
Output	0...10V	3	3	3	3
	4...20mA	6	6	6	6
Working range	0...2m/s	1	1	1	1
	0...10m/s	2	2	2	2
	0...40m/s	3	3	3	3
Probe length	200mm	5	5	5	5
	400mm	6	6	6	6
	600mm	7	7	7	7
Cable length	2m			K200	K200
	5m			K500	K500
	10m			K1000	K1000
Display	without display	D06	D06	D06	D06
	with display				
Pressure tight feedthrough	1/2" ISO thread				HA03
	1/2" NPT thread				HA07
Plug	cable glands				
	1 plug for power supply and outputs	C12	C12	C12	C12
	2 plug for power supply / outputs and USB	C13	C13	C13	C13
	1 plug for USB	C14	C14	C14	C14

Software Configuration							
Physical parameters output	Temperature	T [°C]	(B)		Output 1	Select according to Ordering Guide (B,N,O)	
	Velocity	v [m/s]	(N)		Output 2		
	Volume ¹	v [m ³ /min]	(O)				
Measured value units	metric / SI				E01 E01 E01 E01		
	non metric / US						
Scaling of v-output in m/s	0...0.5	(V01)	0...30	(V10)	0...2000	(V18)	Select according to Ordering Guide (Vxx)
	0...1	(V02)	0...35	(V11)	0...3000	(V19)	
	0...1.5	(V03)	0...40	(V12)	0...4000	(V20)	
	0...2	(V04)	0...100	(V13)	0...5000	(V21)	
	0...5	(V05)	0...200	(V14)	0...6000	(V22)	
	0...10	(V06)	0...300	(V15)	0...7000	(V23)	
	0...15	(V07)	0...400	(V16)	0...7800	(V24)	
	0...20	(V08)	0...1000	(V17)	0...8000	(V25)	
	0...25	(V09)					
Scaling of T-output in °C	-40...60	(T02)	-30...120	(T09)	0...80	(T21)	Select according to Ordering Guide (Txx)
	-10...50	(T03)	-20...120	(T10)	-40...80	(T22)	
	0...50	(T04)	-10...70	(T11)	-20...80	(T24)	
	0...100	(T05)	-40...120	(T12)	-20...60	(T25)	
	0...60	(T07)	20...120	(T15)	-30...50	(T45)	
	-30...70	(T08)	-30...60	(T20)	-20...50	(T48)	
Measurement	Air					B	
	Nitrogen N					B	
	Carbon dioxide CO ₂					C	

¹ Please declare the duct cross-section [m²] with your order.



High-Precision Air / Gas Velocity Transmitter for Industrial Applications

Models
A, B, C, E

Mar. 15

Ordering Code Information

Model	Model Code	Output	Output Code	Working Range	Working Range Code	Probe/Cable Length	Probe/Cable Length Code
Wall	A	0 - 10Vdc	3	0 - 2m/s	1	200mm	200
Duct	B	4 - 20mA	6	0 - 10m/s	2	400mm	400
Remote Probe	C			0 - 40m/s	3	600mm	600
Remote Probe HP	E					2m	2
						5m	5
						10m	10
Example	C		3		3		2

Ordering Codes

MODEL A - WALL				MODEL B - DUCT			
Code	Output (mm)	Working Range	Probe Length (mm)	Code	Output (mm)	Working Range	Probe Length (mm)
A31 200	0 - 10Vdc	0 - 2m/s	200	B31 200	0 - 10Vdc	0 - 2m/s	200
A32 200	0 - 10Vdc	0 - 10m/s	200	B32 200	0 - 10Vdc	0 - 10m/s	200
A33 200	0 - 10Vdc	0 - 40m/s	200	B33 200	0 - 10Vdc	0 - 40m/s	200
A31 400	0 - 10Vdc	0 - 2m/s	400	B31 400	0 - 10Vdc	0 - 2m/s	400
A32 400	0 - 10Vdc	0 - 10m/s	400	B32 400	0 - 10Vdc	0 - 10m/s	400
A33 400	0 - 10Vdc	0 - 40m/s	400	B33 400	0 - 10Vdc	0 - 40m/s	400
A31 600	0 - 10Vdc	0 - 2m/s	600	B31 600	0 - 10Vdc	0 - 2m/s	600
A32 600	0 - 10Vdc	0 - 10m/s	600	B32 600	0 - 10Vdc	0 - 10m/s	600
A33 600	0 - 10Vdc	0 - 40m/s	600	B33 600	0 - 10Vdc	0 - 40m/s	600
A61 200	4 - 20mA	0 - 2m/s	200	B61 200	4 - 20mA	0 - 2m/s	200
A62 200	4 - 20mA	0 - 10m/s	200	B62 200	4 - 20mA	0 - 10m/s	200
A63 200	4 - 20mA	0 - 40m/s	200	B63 200	4 - 20mA	0 - 40m/s	200
A61 400	4 - 20mA	0 - 2m/s	400	B61 400	4 - 20mA	0 - 2m/s	400
A62 400	4 - 20mA	0 - 10m/s	400	B62 400	4 - 20mA	0 - 10m/s	400
A63 400	4 - 20mA	0 - 40m/s	400	B63 400	4 - 20mA	0 - 40m/s	400
A61 600	4 - 20mA	0 - 2m/s	600	B61 600	4 - 20mA	0 - 2m/s	600
A62 600	4 - 20mA	0 - 10m/s	600	B62 600	4 - 20mA	0 - 10m/s	600
A63 600	4 - 20mA	0 - 40m/s	600	B63 600	4 - 20mA	0 - 40m/s	600



Ordering Codes

MODEL C - REMOTE PROBE				MODEL E - REMOTE PROBE HIGH PRESSURE			
Code	Output (mm)	Working Range	Cable Length (m)	Code	Output (mm)	Working Range	Cable Length (m)
C31 2	0 - 10Vdc	0 - 2m/s	2	E31 2	0 - 10Vdc	0 - 2m/s	2
C32 2	0 - 10Vdc	0 - 10m/s	2	E32 2	0 - 10Vdc	0 - 10m/s	2
C33 2	0 - 10Vdc	0 - 40m/s	2	E33 2	0 - 10Vdc	0 - 40m/s	2
C31 5	0 - 10Vdc	0 - 2m/s	5	E31 5	0 - 10Vdc	0 - 2m/s	5
C32 5	0 - 10Vdc	0 - 10m/s	5	E32 5	0 - 10Vdc	0 - 10m/s	5
C33 5	0 - 10Vdc	0 - 40m/s	5	E33 5	0 - 10Vdc	0 - 40m/s	5
C31 10	0 - 10Vdc	0 - 2m/s	10	E31 10	0 - 10Vdc	0 - 2m/s	10
C32 10	0 - 10Vdc	0 - 10m/s	10	E32 10	0 - 10Vdc	0 - 10m/s	10
C33 10	0 - 10Vdc	0 - 40m/s	10	E33 10	0 - 10Vdc	0 - 40m/s	10
C61 2	4 - 20mA	0 - 2m/s	2	E61 2	4 - 20mA	0 - 2m/s	2
C62 2	4 - 20mA	0 - 10m/s	2	E62 2	4 - 20mA	0 - 10m/s	2
C63 2	4 - 20mA	0 - 40m/s	2	E63 2	4 - 20mA	0 - 40m/s	2
C61 5	4 - 20mA	0 - 2m/s	5	E61 5	4 - 20mA	0 - 2m/s	5
C62 5	4 - 20mA	0 - 10m/s	5	E62 5	4 - 20mA	0 - 10m/s	5
C63 5	4 - 20mA	0 - 40m/s	5	E63 5	4 - 20mA	0 - 40m/s	5
C61 10	4 - 20mA	0 - 2m/s	10	E61 10	4 - 20mA	0 - 2m/s	10
C62 10	4 - 20mA	0 - 10m/s	10	E62 10	4 - 20mA	0 - 10m/s	10
C63 10	4 - 20mA	0 - 40m/s	10	E63 10	4 - 20mA	0 - 40m/s	10

Options

- Cable glands
- 1 plug for power supply
- 2 plugs for power supply/outputs and USB
- 1 plug for USB
- Display