

HIGH-PRECISION AIR / GAS VELOCITY TRANSMITTER FOR INDUSTRIAL APPLICATIONS

Applications:

The AV 75 series 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(8000ft/min). The integrated temperature compensation minimises the temperature cross-sensitivity of the AV75 series which, combined with the robust mechanical design, allows it to be used at process temperatures between -40 to +160°C (-40 to 320°F).

In addition to air velocity and temperature values, the transmitter calculates the volumetric flow rate in m³/min or ft³/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 AV 75 series has a robust metal housing to protect against possible damage in rough industrial environments. There are five 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 (145psi)

The AV 75 series can be used to measure the velocity of other gases as well, although a correction has to be applied to the unit at the factory.

HIGH-PRECISION AIR / GAS VELOCITY TRANSMITTER FOR INDUSTRIAL APPLICATIONS

Features:

- High Accuracy
- Working Range 0...40 M/S (0...8000ft/Min) And -40...160°C (-40...320°F)
- Measurement Of Air Velocity And Temperature
- Calculation Of Volumetric Flow Rate
- Low Dependence On Angle Of Inflow
- Probe Diameter 8mm (0.3")
- Remote Probe Up To 10m (32.8ft)
- Easy Mounting And Maintenance
- Correction For Pressure, Humidity And Media
- Low Flow Cut-Off
- Pressure Tight Up To 10bar (145psi)
- Si And Us Units Selectable

Application:

- 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

Specifications:

Measuring values

Air velocity

Working rang	0..2m/s (0...400ft/min)			
	0..10m/s (0...2000ft/min)			
	0..40m/s (0...8000ft/min)			
Accuracy ¹⁾ in air at 25°C (77°F) ²⁾ at 45% RH and 1013hPa	0.06... 2m/s (12...400ft/min)	± 0.03m/s	/ 6ft/min	
	0.15...10m/s (30...2000ft/min)	± (0.10m/s	/ 20ft/min + 1 % of measuring value)	
	0.2... 40m/s (40...8000ft/min)	± (0.20m/s	/ 40ft/min + 1 % of measuring value)	
Uncertainty of factory calibration ¹⁾	± (1% of measuring value, min. 0.015m/s (3ft/min))			
Temperature dependence electronics	typ. -0.005 % of measuring value / °C			
Temperature dependence probe	± (0.1% of measuring value/°C)			
Dependence	of angle of inflow:	< 3% for α < 20°		
	of direction of inflow:	< 3%		
Response time T ₉₀ ³⁾	< 1.5...40s (configurable)			
Temperature				
Working range	probe:	-40...160°C (-40...320°F)		
	probe cable:	-40...105°C (-40...221°F)		
	electronic:	-40...60°C (-40...140°F)		
	electronic with display:	-30...60°C (-22...140°F)		
Accuracy at 20°C (68°F)	±0.5°C (±0.9°F)			
Temperature dependence electronics	typ. -0.01°C / °C			
Response time T ₉₀ ³⁾	10s			

HIGH-PRECISION AIR / GAS VELOCITY TRANSMITTER FOR INDUSTRIAL APPLICATIONS

Outputs

output signals and display ranges are freely scaleable (see ranges below)

voltage	0-10V (e.g:0-5V, 1-5V etc)	-1mA < I _L < mA
current	0-20mA (e.g: 4-20mA etc)	R _L < 350 Ohm
v-scaling	0...2/10/40m/s(0...400/2000/8000ft/min)	
T-scaling	-40...120 ⁰ C (-40...248 ⁰ F)	
Vol-scaling	0...1000m ³ /min (0...35314ft ³ /min)	

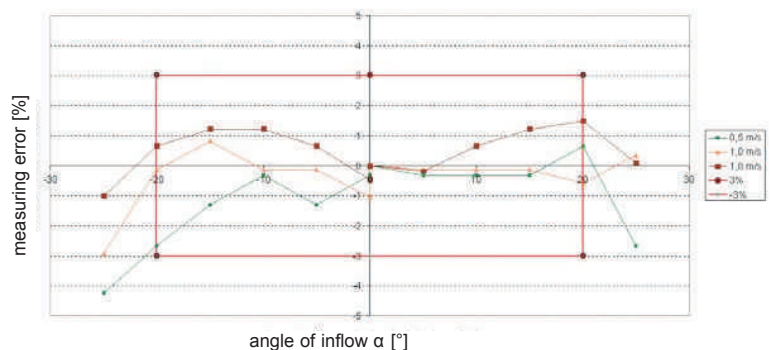
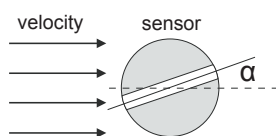
General

Supply voltage	24V DC/AC ± 2 0 %		
Current consumption	max, 100mA; max, 160mA (with display)		
Connection	screw terminals max. 1.5mm ² (AWG 16)		
Electromagnetic compatibility	EN61326-1 Industrial Environment	EN61326-2-3	ICES-003 ClassB FCC part15 ClassB
Pressure range	Model E and P pressure tight up to 10bar (145psi)		
Material	housing / protection class:	metal (AlSi3Cu) / IP65; Nema 4	
	measuring probe:	stainless steel	
	measuring head:	PBT (polybutylenterephthalat)	

- 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

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:

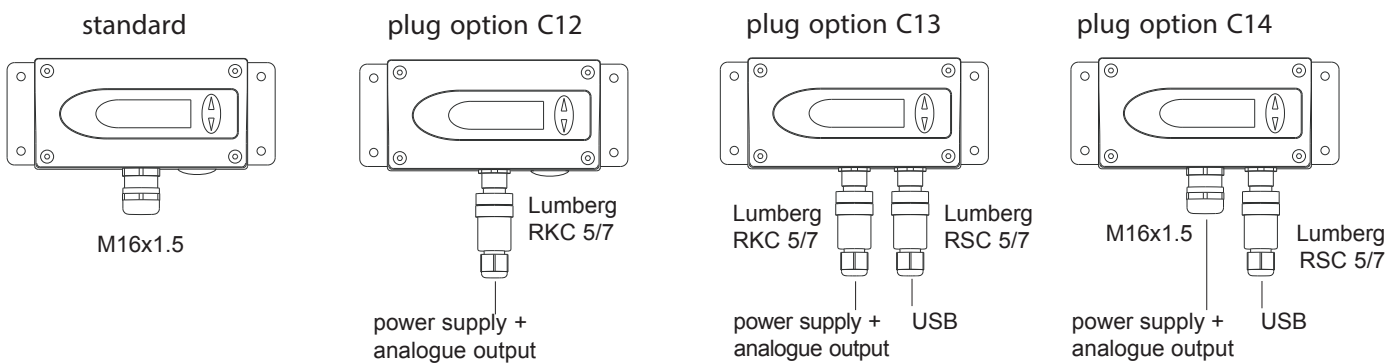
Small temperature differences in shut-off pipes and ducts can cause minimal flows. Even these would be detected and measured by the AV 75. The resulting fluctuations in the output signal can be suppressed by the low flow cut-off. Cut-off point and switching hysteresis can be specified using the configuration software.

HIGH-PRECISION AIR / GAS VELOCITY TRANSMITTER FOR INDUSTRIAL APPLICATIONS

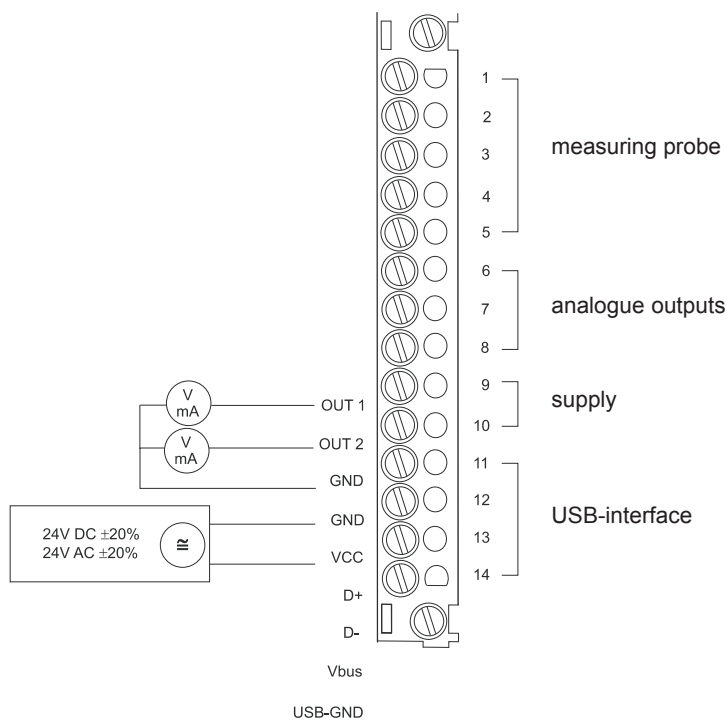
Calculation of volumetric flow:

The AV 75 measures air velocity in m/s or ft/min. The configuration software can be used to enter the crosssection. This enables the transmitter to calculate the volumetric flow rate in m³/min or ft³/min. The data can be displayed and directed to one of the analogue outputs.

Connection versions:

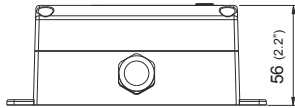
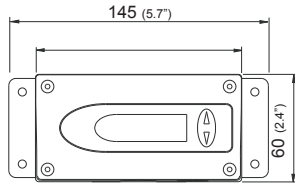


Connection Diagram:

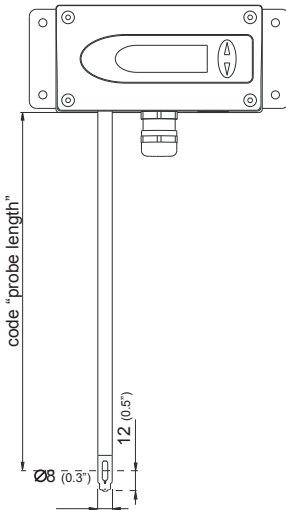


HIGH-PRECISION AIR / GAS VELOCITY TRANSMITTER FOR INDUSTRIAL APPLICATIONS

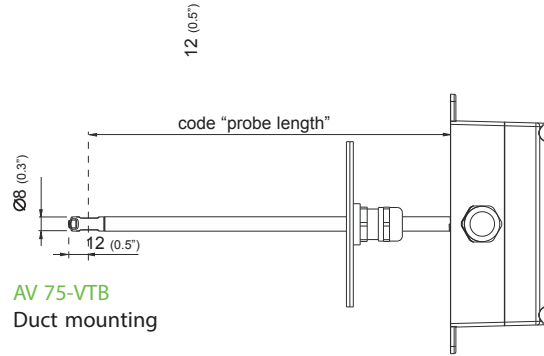
Connection versions:



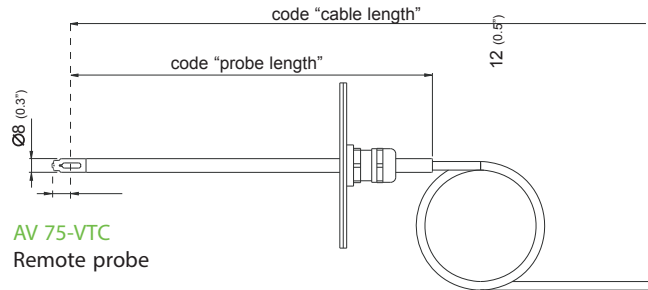
115 (4.5)



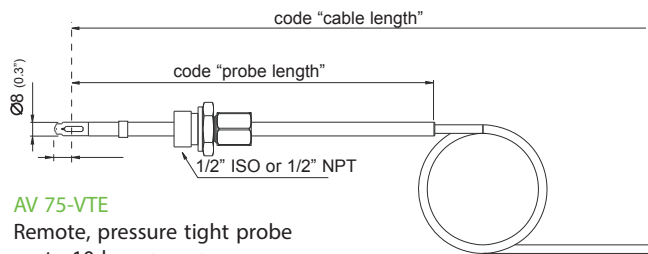
AV 75-VTA
Wall mounting



AV 75-VTB
Duct mounting

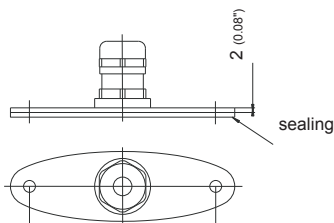


AV 75-VTC
Remote probe



AV 75-VTE
Remote, pressure tight probe
up to 10 bar (145psi)

Mounting flange (included in the scope of supply)



80 (3.1)

HIGH-PRECISION AIR / GAS VELOCITY TRANSMITTER FOR INDUSTRIAL APPLICATIONS

HOW TO ORDER

	BASIC MODEL:				AV75
	OUTPUT:				3
	0...10V	6	4...20mA		

	WORKING RANGE:				1
1	0...2m/s (0...400ft/min)	2	0...10m/s (0...2000ft/min)	3	0...40m/s (0...8000ft/min)

	PROBE LENGTH:				5
5	200mm (7.9")	6	400mm (15.8")	7	600mm (23.6")

	CABLE LENGTH				2m
	2m (6.6ft)		5m (16.4ft)		10m (32.8ft)

	DISPLAY:				D06
	no code		without display		D06 with display

Ordering Example : AV75 - 3 - 1 - 5 - 2m - D06