

# Measuring probe For ventilation and air-conditioning Model A2G-FM

WIKA data sheet SP 69.10



## Applications

- Air flow measurement in circular ventilation pipes
- Air flow measurement in rectangular ventilation ducts

## Special features

- Multipoint-point measurement for averaging to ensure a high accuracy
- Suitable for low air velocities down to 1 m/s
- Very easy to install
- Available in two versions
  - For circular ventilation pipes (version R)
  - For rectangular ventilation ducts (version L)



Measuring probe, model A2G-FM

## Description

The model A2G-FM measuring probe measures air velocities and air flows in ventilation and air-conditioning systems. The intelligent design makes for a very easy installation in existing ventilation pipes and ducts.

The A2G-FM measuring probe has 4 ... 12 openings (holes) on each side. The differential pressure openings on the front and back side are separated from each other by design and form two pressure chambers. The length of the measuring probe determines the number of openings. According to the differential pressure method, a dynamic overpressure, the so-called pitot pressure, is created at the front of the measuring probe. Inside the measuring probe, the pressures applied to the differential pressure openings are averaged and fed through to the volumetric flow meter via separate hose connections.

The averaging function enables the probe to better correct interfered flow profiles, which occur many times in the air

duct network, and to measure the air flow more accurately compared to a single-point measurement. The unique shape of the probe enables measurement even at very low air velocities of down to 1.0 m/s.

In combination with the model A2G-25 air flow meter, this offers the user a very accurate and cost-effective air flow measuring equipment.

In conjunction with the model A2G-100 PID controller, a highly efficient and very easily adjusted air flow control for ventilation and air-conditioning systems can be provided.

The measuring probe is available in two different versions, depending on the requirements and the installation situation. The version R is used for circular ventilation pipes and the version L for rectangular ventilation ducts.

# Specifications

Measuring probe, model A2G-FM	
<b>Version</b>	
Version R	For circular ventilation pipes Available in the standard sizes of Ø 80 mm ... 1,500 mm [3 ... 59 in] The diameter of the ventilation pipe in mm corresponds to the length of the measuring probe.
Version L	For rectangular ventilation ducts 200 ... 1,500 mm [8 ... 59 in] (in 50 mm increments [2 in]) Other sizes of measuring probe on request. The depth of the ventilation duct corresponds to the length of the measuring probe.
<b>Accuracy</b>	±2 %
<b>Process connection</b>	Ø 4.8 mm [0.2 in] brass with barbs for pipes with inner diameter 4 mm [0.2 in] (→ see "Accessories") + High pressure - Low pressure
<b>Material</b>	
Sensor	T3015 aluminium
Mounting plate	Sheet steel
Sealing	Polyurethane foam
<b>Relative humidity</b>	0 ... 95 % r. h., non-condensing
<b>Permissible medium temperature</b>	5 ... 95 °C [41 ... 203 °F]
<b>Mounting</b>	Via two screw holes with Ø 5.0 mm [0.2 in] Sizes ≥ 350 mm [14 in] have a Ø 6.0 mm [0.2 in] bolt, washer and nut attached to the other end of the measuring probe to stabilise the measuring probe.
<b>Weight</b>	On request

## Pitot tube principle

The measuring probe works according to the pitot tube principle. The total pressure in front of ( $p_1$ ) and behind ( $p_2$ ) the probe consists of a static and a dynamic component. In front of the probe, the air flow creates a dynamic overpressure, the so-called pitot pressure. Behind the probe, a dynamic negative pressure is created. The pressure measured by a measuring cell is the difference between pitot pressure and dynamic negative pressure. In order to simplify the measurement and calculation for practical use, the model A2G-FM measuring probe works with an air flow constant  $K_{VOL}$ . The air flow is calculated using the following formula:

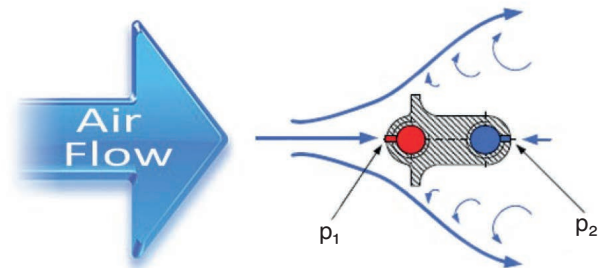
$$V = K_{VOL} \times \sqrt{P_{probe}}$$

Legend:

$V =$  Air flow in l/s

$K_{VOL} =$  Air flow constant value in l/s / Pa

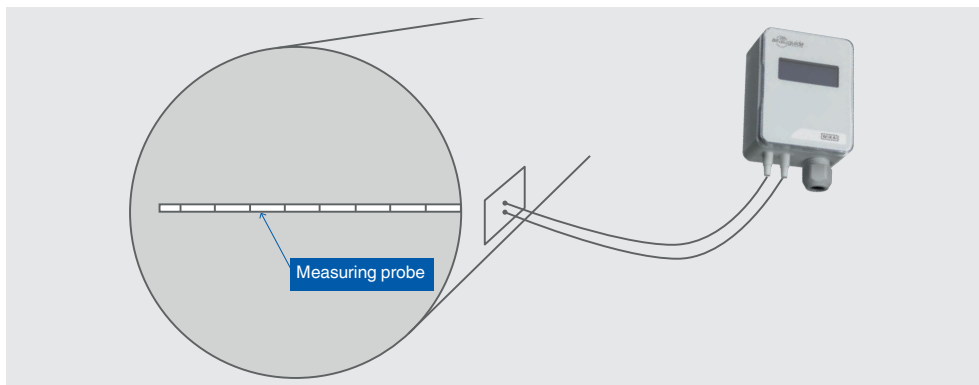
$P_{probe} =$  Pressure difference measured by the probe



## Version

### Version R (for circular ventilation pipes)

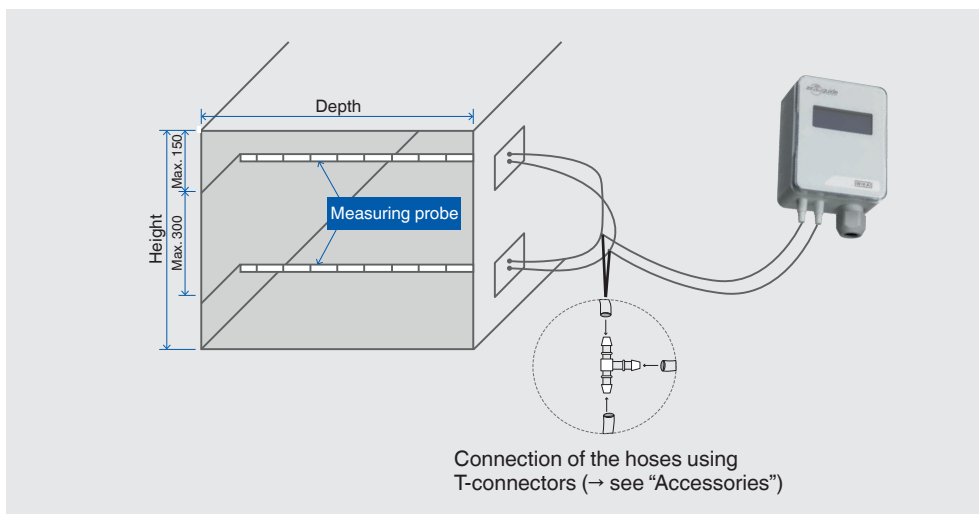
The diameter of the ventilation pipe in mm corresponds to the length of the measuring probe



The Kv value of the version R is dependent on the length of the measuring probe or the cross-section of the pipe.

### Version L (for rectangular ventilation ducts)

The depth of the ventilation duct corresponds to the length of the measuring probe

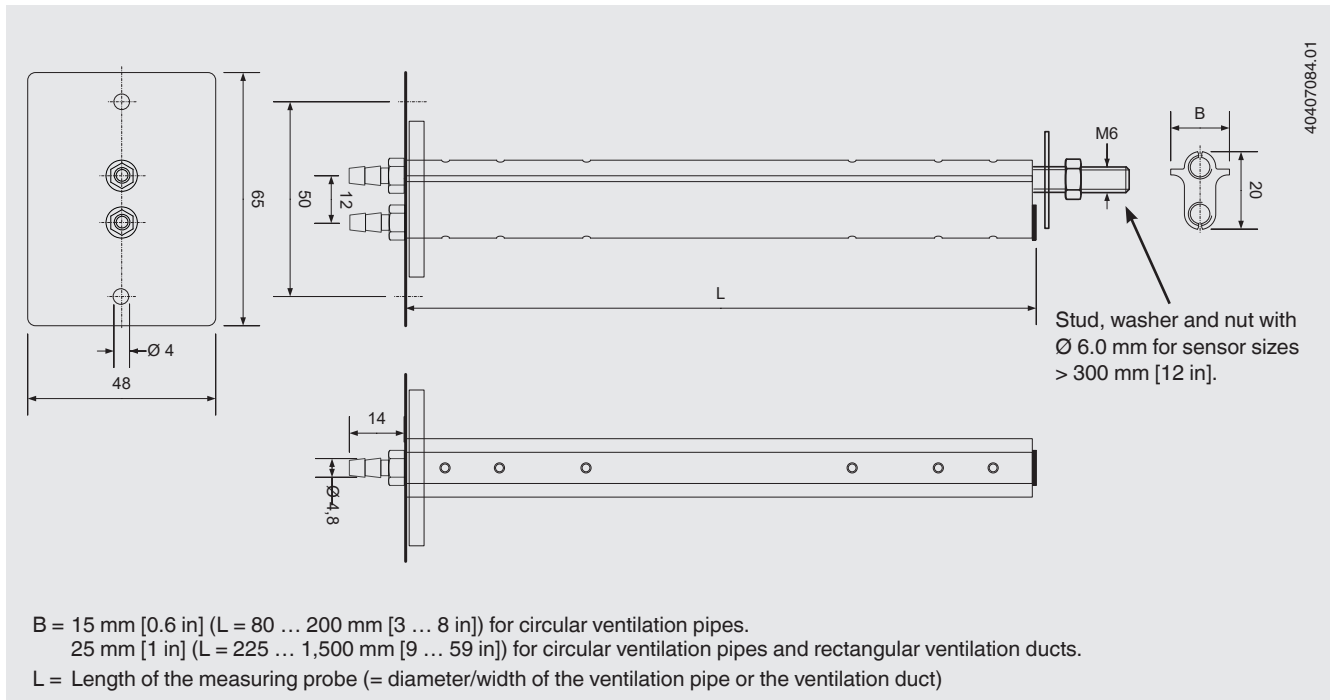


The Kv value of the version L depends on the dimensions of the duct (height and width) and the number of probes used.

The number of measuring probes and T-connectors depends on the height of the duct:

Duct height in mm [in]	Optimum number of measuring probes	Number of T-connectors
150 ... 300 [6 ... 12]	1	0
350 ... 600 [14 ... 24]	2	2
700 ... 900 [28 ... 35]	3	4
1,000 ... 1,200 [39 ... 47]	4	6
1,300 ... 1,500 [51 ... 59]	5	8

## Dimensions in mm



## Accessories

Description	Order number
 <b>T-connector</b>	40407383
 <b>Measuring hoses</b>	
PVC hose, inner diameter 4 mm, roll at 25 m	40217841
Silicone hose, inner diameter 4 mm, roll at 25 m	40208940

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