



DATA SHEET



# PITOT TUBE

## S Type



**Measuring range**  
from 3 to 85 m/s

**Temperature range**  
from 0 to +1000°C

**Ideals for several applications**  
like climatic engineering, ventilation,  
dust-removal and pneumatic transport

**Dynamic pressure measurement**  
of a moving fluid in a duct

Sauermann offers a large range of **Pitot tubes** of great quality and accuracy realised according to the ISO 10 780 norm.

The Sauermann **Pitot tubes**, connected to a differential column of liquid manometer, with needle or electronic, enable to measure the dynamic pressure of a fluid in movement in a pipe and determine its speed in m/s and its flow in m<sup>3</sup>/h.

The **Pitot tubes** are used in climatic engineering, ventilation, dust-removal and pneumatic transport. They are particularly adapted for measurement in warm air, charged with particles and for high velocity.

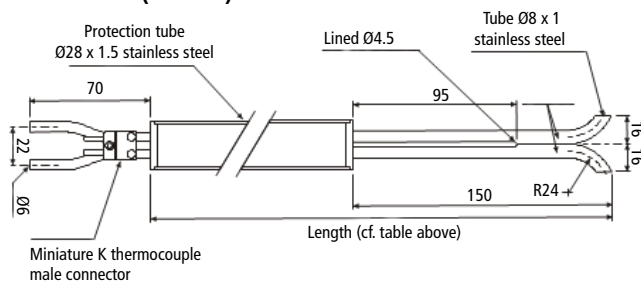
### Technical features

Model	S type Pitot tube
Coefficient	0.84 ±0.01
Material	Stainless steel 316 L
Measuring range	3 to 85 m/s
Operating temperature	From 0 to 1000°C
Static pressure	Atmospheric
Global accuracy of the measurement system	1% of measurement + accuracy of the pressure sensor
Norms	ISO 10 780

### Presentation of the range

Reference	Length	Reference	Length
TPS-08-500-T	500 mm	TPS-08-2000-T	2000 mm
TPS-08-1000-T	1000 mm	TPS-08-2500-T	2500 mm
TPS-08-1500-T	1500 mm	TPS-08-3000-T	3000 mm

### Dimensions (in mm)



All dimensions and ratings of this document are specified in mm.

## Operating principle

The Pitot tube is introduced perpendicularly in the pipe by pre-determined points.

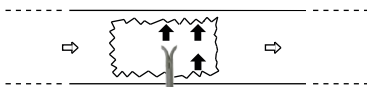
The holes must be perfectly aligned with the air or gas flow direction.

The **Pitot tube S** is more sensitive to alignment errors than the **Pitot tube L**.

Knowing that the Pitot tube is symmetrical, it is not necessary to identify the two legs, however the connecting to the measurement device must be carried out like following:

- The leg in front of the air flow is connected to the + sign of the micromanometer.
- The leg at the opposite of the air flow is connected to the – sign of the micromanometer.

## Application



⇨ Total pressure (Tp)  
 ⇩ Static pressure (Sp)  
 Dynamic pressure = Tp - Sp

Example above:  
 The electronic micromanometer  
 ref: MP210 indicates the  
 differential pressure



- GTC Record
- GTC Analyze

Low differential pressure transmitter sensor  
 CP210 and SQR/3



- Alarm
- Visualize
- Operate
- GTC Record
- GTC Analyze
- Live monitoring

Low differential pressure transmitter sensor with digital display  
 Si-C320 or CA 310 with  
 SPI 2 – 100, 500, 1000, 10000 and SQR/3



- Alarm
- Visualize
- Record
- Analyze
- Live monitoring

Multifunction intelligent portable  
 AMI 310

## Measurement

- **Punctual velocity measurement**

From the dynamic pressure expressed in Pa, at an atmospheric pressure of 1013.25 mbar and a temperature of 20 °C, we determine the velocity in m/s, using the following simplified formula:

$$V = C_M \times 1.289 \times \sqrt{\Delta P} = 1.291 \times \sqrt{\Delta P}$$

Complete formula:

$$V = C_M \sqrt{\frac{2 \Delta P}{\rho}} \quad \rho = \frac{P_o}{287.1 \times (\Theta + 273.15)}$$

- **Air flow measurement**

### Air flow calculation

Flow = Velocity<sub>A</sub> x surface x 3600

Surface: surface of the circular sheath or rectangular in m<sup>2</sup>

Note: in the electronic devices, the surface is automatically adjustable.

[sauermann.com](http://sauermann.com)

## Accessories

Name	Reference
Extension cable for K thermocouple class 1	-
Mounting flange in cast iron	-
Black silicone tube (4 x 7 mm)	SN-47-1
Transparent silicone (4 x 7 mm)	SB-47-1
Crystal tube (5 x 8 mm)	C-58-1
Plastic transport case type VTP for pitot tube and/or probe with a maximum size of 110 cm x 20 cm x 4 cm.	VTP / 23370
Junctions in Y for a tube Ø5 x 8 mm (bag of 10)	J.Y.C
Junctions in T for a tube Ø5 x 8 mm (bag of 10)	J.T.C



For every other cases, Sauermann offers special realisations. Consult us, we intervene on plans study, machining.



With:

Θ: temperature (°C)

P<sub>o</sub>: given atmospheric pressure (Pa)

C<sub>M</sub>: coefficient of the flow device element

Pitot tube S : C<sub>M</sub> = 0.84

With:

Flow: in m<sup>3</sup>/h

Surface: in m<sup>2</sup>

S<sub>A</sub>: in m/s

