

# TPV-1 Temperature, Pressure & Velocity Integrated Monitor Stack Flow

## Overview

TPV-1 temperature pressure & velocity integrated monitor is a new generation online monitoring instrument, which can monitor temperature, pressure and velocity of flue gas inside pipeline for a long term under poor environmental condition. Those are important parameters when calculating pollutant emission in Continuous Emission Monitoring System (CEMS) of stationary pollution source.

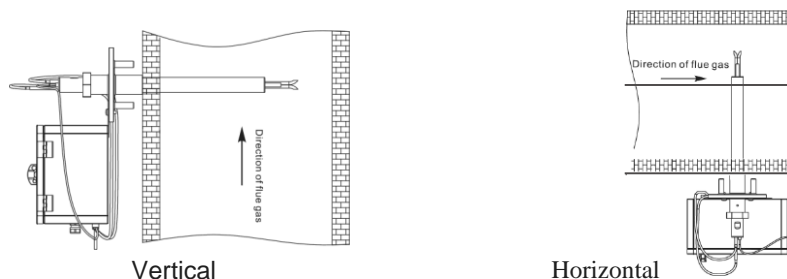
TPV-1 is equipped with high-precision micro differential pressure /static pressure sensor with purging unit. Compared with conventional integrated monitor, it is able to measure not only the value of purging pressure, but determine whether there is pressure or not. In addition, the lower limit of velocity can reach as low as 1m/s. It also owns functions of auto-timing or manual pressure & velocity calibration. LCD screen displays all measuring data and signals, convenient for reading and debugging. It is convenient for transportation, installation and maintenance for its small size.



## Principle

The TPV-1 temperature pressure & velocity integrated monitor is based on pitot differential pressure velocity measurement principle. During measurement, insert the probe of pitot tube into pipeline and make the direction of probe dynamic hole face the flow direction directly and static hole back to the flow direction. Transfer dynamic pressure and static pressure to pressure transmitter respectively and then calculate velocity value according to formula.

When measuring differential pressure, differential pressure transmitter is required to measure both dynamic pressure and static pressure. Thus, special attention shall be paid to the direction of pitot tube during installation, making sure both pressure-acquiring ports are consistent with the flow direction of flue gas (dynamic pressure measurement port is required to align with coming direction of flue gas while static pressure measurement port aligns with the departure direction of flue gas). There are two installation methods, vertical type and horizontal type, as shown in the following figure.



## Technical Parameter

Velocity Range	0 - 40m/s; 0 - 15.5m/s (optional)	Pressure Limit of Differential Pressure Transmitter	1.0MPa
Measuring Accuracy	+ 5%FS	Range of Pressure Transmitter	—5KPa - 5KPa, —10KPa - 10KPa (customizable)
Measuring Principle	Pitot method	Pitot Length	400mm, 800, 1200mm, 1700mm (customizable)
Output Signal	3x 4-20mA, 1x232/485	Range of Temperature Transmitter	0fi - 300°C (customizable)
Pitot Material	316, 316L, SS	Temperature Range of Flue Gas	—40°C - 800°C (depend on pitot material)
Purging Pressure	0.3MPa - 0.8MPa	Working Temperature Range	—40°C - 70°C
Storage Temperature	0 - 50°C	Storage Humidity	0 - 85%RH

## Feature

- Ultralow range pressure sensor to realize 1m/s flow velocity measurement
- Operation unit with LCD display: provide friendly human—machine interaction interface
- Able to set regular purging time, velocity field parameter, pitot coefficient etc.
- Overvoltage protection to effectively prevent pressure sensor from damage and reduce operation cost
- Automatic zero calibration; strengthen output signal
- Anti-blocking and anti-corrosion design
- High accuracy, small impact and simple pipeline design
- Able to measure pressure of purging gas and determine if there is gas pressure

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