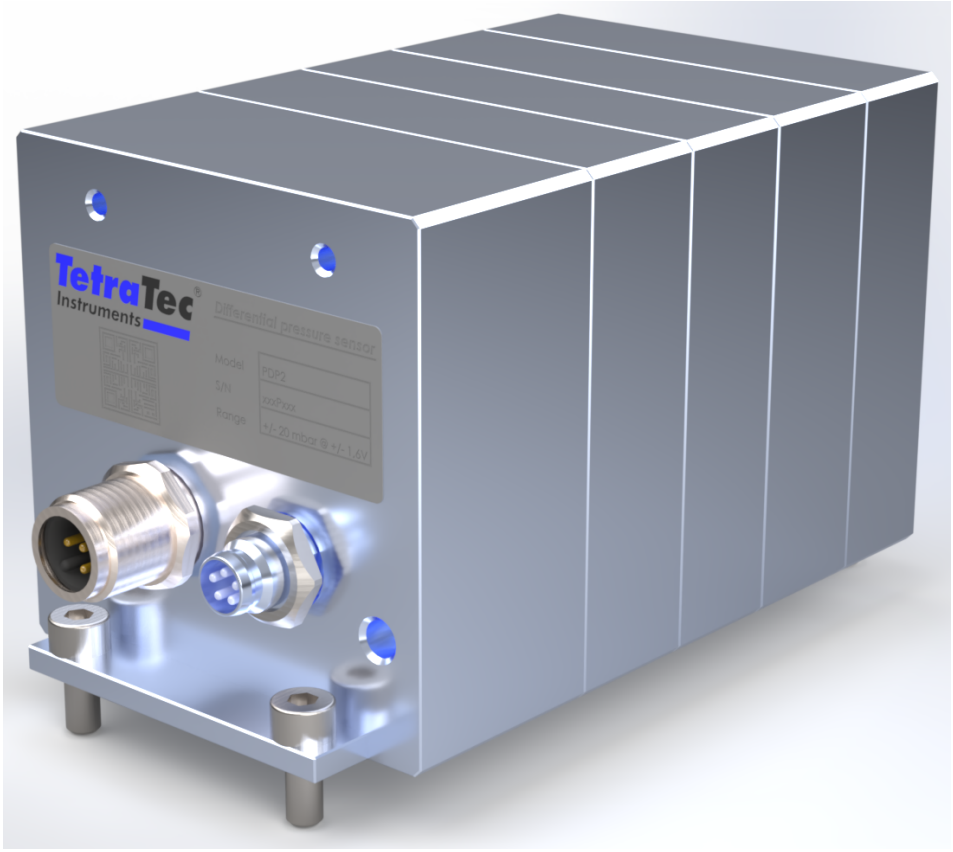
TetraTec® Instruments



COMBINED PRESSURE TRANSDUCER

PDP2.flange

Two sensors in one

TETRATEC INSTRUMENTS GMBH · STEINENBRONN · GERMANY

01 — THE INSTRUMENT

Two quantities, one measuring point.

Anyone determining flow through a differential pressure element such as a laminar flow element or an orifice plate needs both: the differential pressure across the element and the pressure of the gas. Two separate transducers mean two adaptations and two dead volumes. The PDP2.flange brings both behind one flange face.

0.025 %
LINEARITY DEVIATION
typical, of span, both cells

0.4 mL
MINIMUM INTERNAL VOLUME
per channel, DP + or DP −

10 bar
PRESSURE AGAINST ATMOSPHERE
differential cell, ranges from ±1 mbar

THE ESSENTIALS

Two quantities in one housing

Differential and static pressure behind the same flange face, read out over the same cable.

Flange-mounted instead of hose-connected

The transducer sits directly on the manifold plate via an O-ring 3.5 × 1.5 mm. Internal volumes are reduced to a minimum.

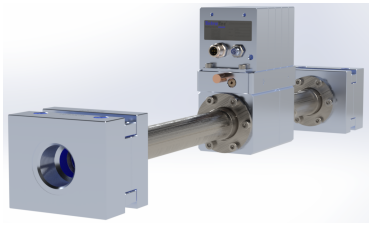
Capacitive, without a transfer medium

No sealing liquid between medium and sensor cell. Linearity deviation typically ±0.025 % of span, position dependency 0.05 % of span.

10 bar on the differential cell

Static pressure against atmosphere may reach 10 bar – even with a measuring range of ±1 mbar.

IN USE WITH A LAMINAR FLOW ELEMENT



WHAT IT IS NOT BUILT FOR

Every advantage comes at a price. Doing without a transfer medium allows a very fast and direct response to pressure changes, but it also means that the measured medium reaches the sensor cell. The sensor is therefore not suitable for condensing media, liquids or aggressive gases. The cells cannot be flushed. The direction of load also deserves attention. A pre-forming process makes the cell asymmetric. Heavy loads in the opposite direction can cause permanent offset shifts. Where the direction of load changes repeatedly, increased inaccuracy is to be expected. We will be glad to clarify with you during the design which sensor type suits your application.

Operating principle

The differential pressure cell works capacitively: a stainless steel diaphragm, clamped between two ceramic half-shells with fixed electrodes, separates the two pressure chambers, and its deflection changes the capacitances against the two electrodes. There is no sealing liquid between medium and diaphragm. Three properties follow from this that otherwise have to be traded against each other: the diaphragm follows the pressure immediately (T_{90} about 40 ms), the reading barely depends on the mounting position (0.05 % of span), and there is nothing that expands when the temperature changes.

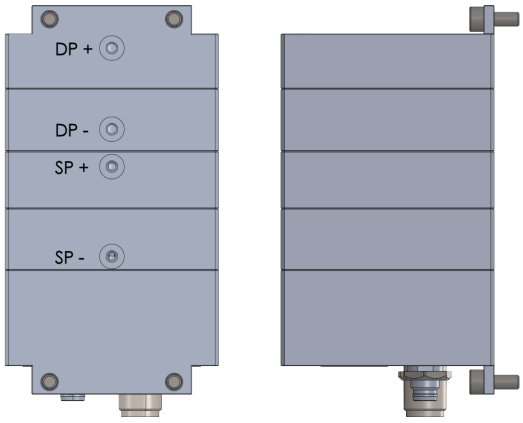
The static pressure cell works piezoresistively on stainless steel 316 L. Each cell carries its own temperature sensor; compensation applies from +15 to +50 °C. The transducer supplies the compensated values over MODBUS® RTU and additionally as an analogue signal of −2 to +2 V.

THE THREE VERSIONS

VERSION	DIFFERENTIAL PRESSURE	STATIC PRESSURE	WEIGHT
PDP2.Kombi	±1 to ±20 mbar	−1 to +7 bar	540 g
PDP2.DP	±1 to ±20 mbar	–	400 g
PDP2.SP	–	−1 to +7 bar	380 g

Which ranges can be selected individually and how they are ordered is given in the datasheet under “Ordering information”.

CONNECTION LAYOUT



Flange face with the four pressure connections.

TYPICAL APPLICATIONS

- Flow measurement with a laminar flow element
- Differential pressure across filters and flow restrictors
- Flow and leak test benches
- Measuring points with elevated static operating pressure
- Control of pneumatic circuits
- Integration into test systems over MODBUS RTU

> *Two pressures at one flange face: one adaptation, one dead volume.*

02 — SELECTION

The quantity first, then the range.

VERSIONS

- **PDP2.Combi** – differential and static pressure
- **PDP2.DP** – differential pressure only
- **PDP2.SP** – static pressure only
- Static pressure cell as gauge or absolute pressure
- Four differential and two static pressure ranges

ACCESSORIES

- Connection plates with G1/8" ports for every version
- Connection cable M12×1, straight or angled, 5 m
- Connection cable M8×1 shielded, straight or angled, 5 m
- Factory calibration certificate

KEY SPECIFICATIONS

Differential pressure	**±1 / 2 / 10 / 20 mbar**
Static pressure	**−1 to +7 bar**
Static pressure version	**gauge or absolute**
Linearity deviation	**typ. ±0.025 % of span**
Response time	**T_{90} approx. 40 ms**
Power supply	**24 VDC ±20 %**
Digital output signal	**MODBUS RTU (RS-485)**
Analogue output signal	**−2 to +2 V**
Operating temperature	**+15 to +50 °C**
Degree of protection	**IP 64**
Housing	**anodised aluminium, 540 g**

Complete data in the technical datasheet.

FROM ENQUIRY TO RECURRING CALIBRATION

1. **Record the measuring task**
   Measuring range, type of gas, test volume, cycle time and operating conditions – the design follows from these.
2. **Design and calibrate the instrument**
   Assembly, calibration in our own accredited laboratory, calibration certificate with stated uncertainty.
3. **Integrate and support**
   Integration into your production, training and the recurring calibration at the agreed interval.

We design the transducer for your measuring point.

REQUEST A DESIGN

TetraTec Instruments GmbH · Gewerbestraße 8, 71144 Steinenbronn, Germany
T +49 7157 5387-0 · info@tetratec.de · www.tetratec.de