

DKP1010 Differential Pressure Transducer

accurate · long-term stable · flexible



DKP1010

Transducer for differential pressure, humidity and temperature



Features

Robust transducer
Up to 4 measured variables in a single instrument: differential pressure, humidity, 2x temperature
Calculated values (velocity/vol. flow rate)
IP65 protection class
Pinpoint accuracy and high long-term stability
Optional LCD, blue, backlit
Analog outputs (1V/5V/10V/4 ..20mA)
10Hz update rate at analog output
Digital outputs (USB/RS485/RS232)
Alarm output

Up to 4 measured variables in one instrument

The DKP1010 Series is comprised of a set of accurate transducers for differential pressure which can optionally be upgraded with additional sensors.

Among these additional sensors are temperature sensors, combined humidity/temperature sensors, and pitot tubes for measuring air velocity and flow rate.

The DKP1010 can be used for differential pressure measurements such as in filter monitoring or in clean rooms, in test benches or for industrial plant monitoring.

Accurate data

A mass flow sensor with almost zero drift achieves the smallest measuring range of +/-20Pa which is best suited for clean rooms and hospitals.

Other ranges between 250Pa and 2 000hPa are covered by a piezo-resistive pressure sensor which delivers accurate readings for industrial and HVAC applications.

The transducer is available with a number of analog and digital outputs as well as additional options such as an alarm output or the LCD.

Typical applications

- Clean rooms
- Fume cupboards
- Filter monitoring
- Test benches



LCD, power supply, alarm output, analog outputs

The DKP1010 transducer is protected according to IP65 and can optionally be delivered with an LCD and an alarm output. The supply voltage is between 10-30VDC. Up to 4 analog output signals can be provided. In addition, the readings are fed through the instrument's interface.

The alarm output can be used for controlling external devices or triggering alarm signals.

Optional humidity and temperature sensor

An additional humidity/temperature probe can either be connected directly to the housing probe or using a remote probe.

The humidity/temperature sensor provides long-term stable data with a measurement accuracy of +/- 1.8%RH and +/-0.1°C. It is highly resistant to dust and most chemicals, thus it can be used in process control applications in the pharmaceutical, food and automotive industry as well as in research laboratories.

The sensor element is available as a digital pre-calibrated component helping you avoid waiting time during the calibration procedure.



Optional temperature sensor

The DKP1010 can be fitted with an extra input for thermocouples (Type K) if measurements are required at temperatures up to 1 200°C.

It features the measurement of air temperature and surface temperature alike. The measured values can be used for an accurate temperature-compensated calculation of air velocity and flow rate (current/standard).



Air velocity and flow rate

For measuring air velocity the DKP1010 provides a port for pitot-static tubes and transmits the measured data to the display and the analog output.

We offer a range of standard pitot tubes as well as special types, such as the thermal pitot tube, which comes with a built-in temperature sensor and can perform temperature-compensated measurements of air velocity at up to 800°C.



Alternating flow directions

The straight pitot tube AFL800187 (D=8mm, L=460mm) can be used for alternating flow directions if the pressure transducer can handle positive and negative differential pressure.

Duct shape and dimensions can be entered for flow rate measurements using a terminal software via the USB interface.

In the same way the measured variables (up to 4, depending on configuration) can be selected for the analog outputs.

Specifications

Medium: Dry air

Measuring ranges

Mass flow: A: -20...+20 Pa

Piezo: B: 0...250 Pa C: 0...1250 Pa
 D: 0...2500 Pa E: 0...5000 Pa
 F: 0...7500 Pa
 G: 0...70 hPa H: 0...350 hPa,
 I: 0...1 000 hPa K: 0...2 000 hPa

(Ranges B...K can be ordered for negative pressure as well, e. g. +/-250 Pa, +/-350hPa see order code section for custom ranges)

Response time

Measuring range A: 150 ms to 1 280 ms
 Measuring ranges B-K: ca. 1 ms

Zero point drift

Measuring range A: < +/-0.05 Pa/year @ 2 Pa
 Limit of detection: 0.002Pa
 Overpressure protection: 2 bar

Accuracy

Measuring range A: +/-0.2 % of measuring range
 Measuring ranges B...K: +/-0.2 % ... +/-0.5% of m.r.

Overpressure protection

Measuring range A: 2 000 hPa
 Measuring ranges B - F: 350 hPa
 Measuring ranges G, H: 5x measuring range
 Measuring ranges I, K: 2x measuring range

Optional temperature input Thermocouple Type K

Measuring range: +/-200°C (default)
 (configurable limits: -200°C...1 200°C)
 Accuracy: +/-0.3K
 (Plus the inaccuracy thermocouple probe +/-1.5K)

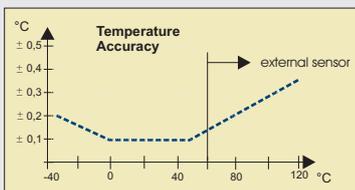
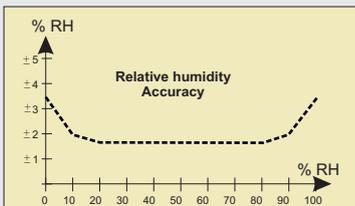
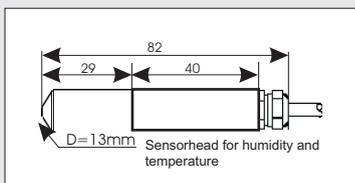
Optional digital display LCD 4 x 20 chars

Digital interface

USB port: Micro USB type B
 RS485,RS232: optional

Optional humidity/temperature probe

Dimensions: D=13mm, L=82mm
 Connection: directly to the transducer or via cable: 2m, 5m



Electrical data

1-4x analog output: 0..1V, 0...5V, 0...10V, 0(4)...20mA (three-wire)
 Alternatively : 1x 4...20mA (two-wire)
 Power supply: 12...30VDC
 Output impedance: max. 500 Ohm
 Load resistance: 0..1V at > 2kOhm
 0..5V/0..10V at >10kOhm
 Analog output update rate: 1x/second (optional: 10x/second)

Mechanical data

Housing material: AISi12 DIN 1725
 Protection class: IP65 (NEMA 4)
 Dimensions: 160 x 90 x 60 mm
 Cable gland: PG9
 Connections: 0,25...1,5mm² wires
 Connecting piece: D= 6mm

Order codes

DKP1010-MB-A-VS-LCD-T-FT-AL-R-RS-(xx/yy)

MB = Meas. range A- K see table on the left

A = Output 1 = 0- 20 mA
 2 = 4- 20 mA (three-wire)
 3 = 0- 1 V
 4 = 0- 5 V
 5 = 0- 10 V
 6 = 4 - 20 mA (two-wire)^{1,4}

VS = Power supply 24 = 24 VDC (12...30V)
 230 = 100...240VAC external PSU

LCD = Display 0 = without LCD
 1 = with LCD

T = Temperature probe² 0 = without temperature output
 1 = PT1000 temp. sensor
 3 = Thermocouple Type K

FT=humidity/temp. sensor³ 0 = without RH/T probe
 1 = RHT/probe on housing
 3 = -40...+120°C, 2m remote probe)
 5 = -40...+120°C, 5m remote probe)

AL = Alarm output 0 = without alarm
 1 = w. alarm (Relais 60V, 0,5A)

R = Calculated variables 0 = without calculated variables
 1 = Air velocity/flow rate

RS = additional interface⁴ STD = only USB⁴, without additional Interface

0= additional RS232 interface
 1= additional Rs485 interface

(xx/yy) = Sonder-DKP1010 with custom range (lower/upper limit of measuring range)

If you require a range with limits other than the given values, it can be re-programmed in our workshop or re-configured by the user via USB port. Please specify the desired measuring range when ordering!

¹ If two-wire current loop is selected (Output=6), options LCD and FT are not available

² 1x additional analog output

³ 2x additional analog outputs

⁴ The DKP101X transducers are equipped with a USB port. This is inapplicable for the two-wire current loop version.

Subject to technical change without notice DKP1010.06/16