Model DPS100

Materontek
Sensing and Internet of Things

Monocrystalline Silicon Differential Pressure Sensor
Excellent overpressure
High precision

The DPS100 series differential pressure sensor uses a single crystal silicon sensor chip made with advanced German MEMS technology, achieving internationally leading high accuracy, ultra-high overpressure performance, and excellent stability. The built-in intelligent signal processing module realizes the perfect combination of static pressure and temperature compensation, and can provide extremely high measurement accuracy and long-term stability under a wide range of static pressure and temperature changes.

The DPS100 differential pressure sensor is a sensor in which the measured pressure directly acts on the diaphragm of the positive and negative pressure chambers of the sensor, causing the diaphragm to produce a micro-displacement proportional to the pressure, and transmits the pressure difference to both ends of the single crystal silicon chip, using an integrated electronic circuit to detect this change and convert and output a standard measurement signal corresponding to the pressure difference.

Features

- Measuring range: 10 mbar...100 bar
- Static pressure measurement optional
- Bridge output signal (mV/V)
- High measurement accuracy
- High long-term stability
- High overload resistance, up to 160 bar (one-sided) and 250 bar (two-sided)
- Diaphragms of different materials and different types of filling fluids.

Application

- Suitable to measure liguid, gas or flow
- Process control systems
- Chemical industry
- Energy industry
- Machine building

Measuring range

Code	Range	Single side overload	Static pressure
S1	10 mbar / 1 kPa	1 bar	160 bar
S2	60 mbar / 6 kPa	160 bar	250 bar
S3	400 mbar / 40 kPa	160 bar	250 bar
S4	1 bar / 100 kPa	160 bar	250 bar
S5	4 bar / 400 kPa	160 bar	250 bar
S6	10 bar / 1 MPa	160 bar	250 bar
S7	40 bar / 4 MPa	160 bar	250 bar
S8	100 bar / 10 MPa	160 bar	250 bar

Accuacy

Code	Range	Non-linear	Temp. coefficient
S1	10 mbar / 1 kPa	≤0.5%FS	≤0.5%FS/10K
S2	60 mbar / 6 kPa	≤0.5%FS	≤0.5%FS/10K
S3	400 mbar / 40 kPa	≤0.2%FS	≤0.1%FS/10K
S4	1 bar / 100 kPa	≤0.16%FS	≤0.1%FS/10K
S5	4 bar / 400 kPa	≤0.16%FS	≤0.1%FS/10K
S6	10 bar / 1 MPa	≤0.16%FS	≤0.1%FS/10K
S7	40 bar / 4 MPa	≤0.28%FS	≤0.1%FS/10K
S8	100 bar / 10 MPa	≤0.28%FS	≤0.1%FS/10K

Output signal

Range	Output signal
≤ 6 kPa	5...10 mV/V
≥ 40 kPa	10...20mV/V

Temperature diode output

Temperature	Typical (mV)
-40 °C	1187
-10 °C	1015
20 °C	843
50 °C	671
85 °C	470

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Technical data

Performance

Operating temperature	-40 to 85 °C
Storage temperature	-40 to 100 °C
Static pressure effect	Range = 1 mbar: ≤0.5 %FS(Typical) Range = 60 mbar: ≤0.25 %FS(Typical) Range = 400 mbar...10 bar: ≤0.075%FS(Typical) Range = 40 bar: ≤0.15 %FS(Typical) Range = 100 bar: ≤0.3 %FS(Typical)
Repeatability	≤0.05%FS(Typical)
Hysteresis	≤0.05%FS(Typical)
Long term stability	±0.075 %FS/ 12 month

Electrical @25°C

Output signal	Range = 1 mbar...60 mbar: 5...10 mV/V (Typical) Range = 400 mbar...100 bar: 10...20 mV/V (Typical)
Power supply	3... 5VDC
Bridge resistance	6 kΩ±0.5 kΩ
Response time(10...90%)	10ms
Insulation resistance	>100MΩ@250VDC
Temperature sensor	Temperature diode, mV output

Physical Specifications

Housing	SUS316L
Diaphragm	SUS316L Hastelloy C-276 Tantalum SUS316L Gold plating
Oil filling	Silicone oil Inert oil
Sensor sealing	FKM (Permissible temperature range: -40 to 85°C) PTFE (Permissible temperature range: -20 to 70°C)
Weight	~800g

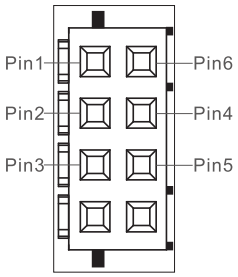
5-wire system - silicone rubber wire with PH-8Y connector

Pin/wire	Electrical definition	Note
1/Red wire	T+	Temperature sensor signal +
2/Black wire	S+	Pressure sensor signal +
3/Blue wire	S-	Pressure sensor signal -
4/White wire	V-	Power supply-
5/Yellow wire	V+	Power supply+

6-wire system - silicone rubber wire with PH-8Y connector

Pin/wire	Electrical definition	Note
1/Red wire	T+	Temperature sensor signal +
2/Black wire	S+	Pressure sensor signal +
3/Blue wire	S-	Pressure sensor signal -
4/White wire	V-	Power supply-
5/Yellow wire	V+	Power supply+
6/Green wire	T-	Temperature sensor signal -

PH-8Y connector



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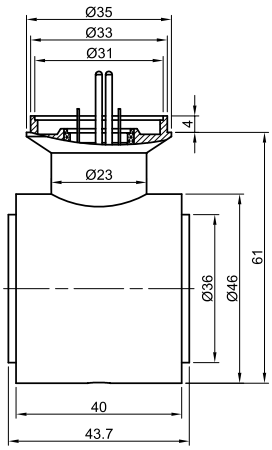
Dimensions (All dimensions in mm)

Code N00



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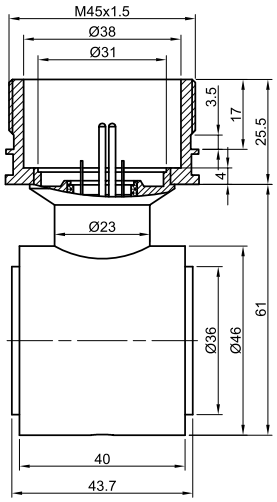

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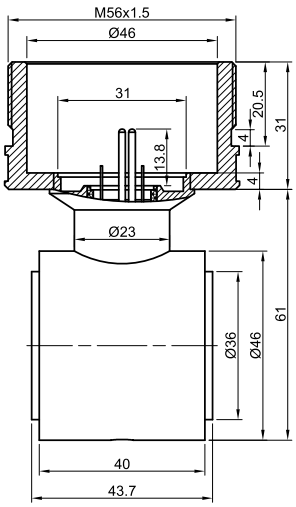

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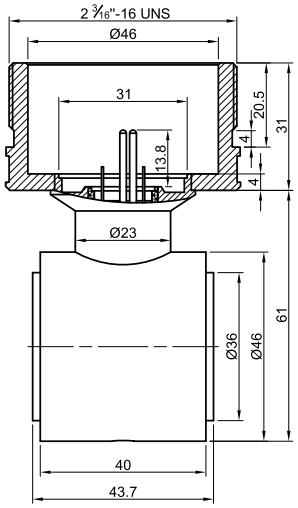
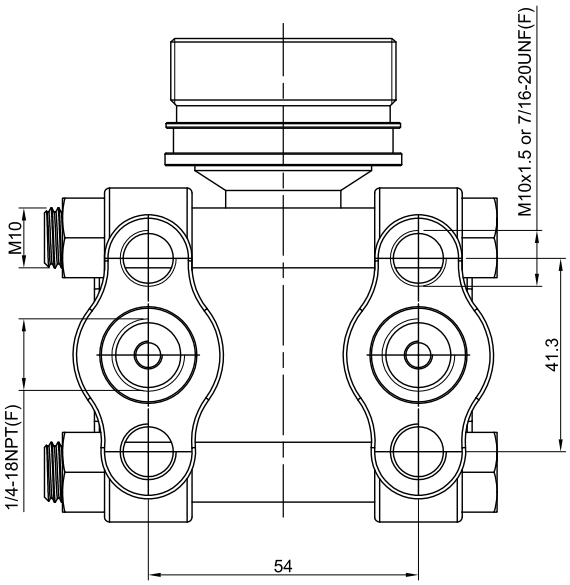
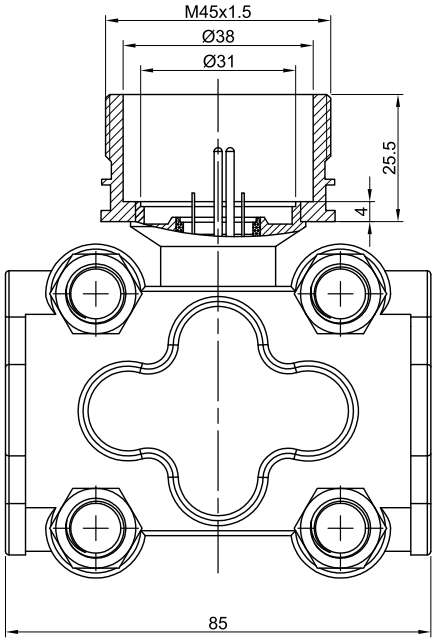


Code H1/H2: Sensor with Flange





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Ordering code

Model	
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Code	Pressure range
S1	10 mbar
S2	60 mbar
S3	400 mbar
S4	1 bar
S5	4 bar
S6	10 bar
S7	40 bar
S8	100 bar
99	Customized range
Code	Pressure Type
D	Differential
Code	Output signal
A	mV (Differential pressure + temperature diode)
B	mV (Differential pressure + Static Pressure + temperature diode)
C	I2C Digital Signal (Differential pressure + temperature)
Code	Membrane Meterials
22	SUS 316L
23	Hastelloy-C
24	Tantalum
25	SUS 316L gold plating
Code	Electronic housing connection
N00	None, for welding
M45	M45 x 1.5(Male)
G55	2 3/16-16UNS(Male)
M56	M56 x 1.5(Male)
M27	M27 x 2(Male)
99	Customized
Code	Fill fluid
S	Silicone oil
D	Inert oil
Code	Sensor sealing meterials
F	FKM(Permissible temperature range: -40 to 85°C)
P	PTFE (Permissible temperature range: -20 to 70°C)
Code	Electrical connection
E5	5-wire system - silicone rubber wire with PH-8Y connector
E6	6-wire system - silicone rubber wire with PH-8Y connector
Code	Option 1: Flange
H1	SUS 316 flange/SUS 316 exhaust valve/mounting thread M10x1.5(F)
H2	SUS 316 flange/SUS 316 exhaust valve/mounting thread 7/16-20UNF(F)
Code	Option 2: LCD circuit board
01	Without
02	With 3051-61H-HART LCD circuit board, complete temperature compensation and pressure calibration

Code	Label
S	Standard
N	Neutral packing
C	Custom label

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