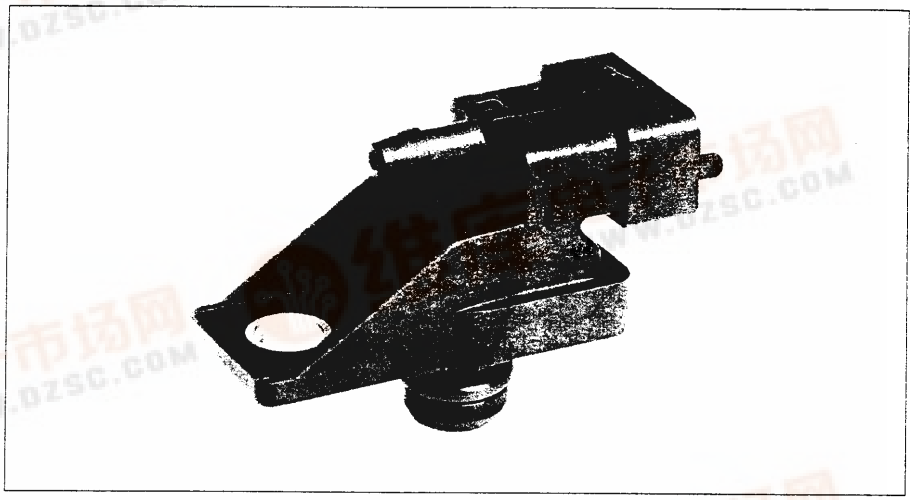
Differential-pressure sensors

712-0047

Measurement of gas pressures up to ±2.5 kPa

p / U

- Resistant to the monitored medium
- Piezoresistive sensor element
- Integrated protection against humidity



Application

In automotive applications, this type of pressure sensor is use for measuring fuel-tank pressure. In the process, a differential pressure is established referred to the ambient pressure.

Design and function

A micromechanical pressure element with diaphragm and connector fitting is the most important component in this differential-pressure sensor.
The diaphragm is resistant to the effects of the monitored medium. The measurement is carried out by routing the monitored medium through the pressure connector and applying the prevailing pressure to the piezoresistive sensor element. This sensor element is integrated on a silicon chip together with electronic circuitry for signal amplification and temperature compensation. The silicon chip is surrounded by a TO-type housing which forms the inner sensor cell. The surrounding pressure is applied to the active surface through an opening in the cap and a reference fitting. The active surface is protected against moisture by Silicagel. The pressure sensor generates an analog signal which is ratiometric referred to the supply voltage.

Installation instructions

The sensor is designed for horizontal mounting on a horizontal surface.
In case of non-horizontal mounting, each case must be considered individually. Generally speaking, installation is to be such that liquids cannot accumulate in the sensor or in the pressure hose. Water in the sensor leads to malfunctions when it freezes.

Technical data / Range

Part number				0 261 230 015	
			min.	typical	max.
Pressure-measuring range	p_e	kPa	–2.5	–	+2.5
Operating temperature	ϑ_B	°C	–40	–	+80
Supply voltage	U_V	V	4.75	5.0	5.25
Input current at U_V = 5 V	I_V	mA	–	9.0	12.5
Load current at output	I_L	mA	–0.1	–	+0.1
Load resistance to ground or U_V	R_L	kΩ	50	–	–
Response time	$t_{10/90}$	ms	–	0.2	–
Voltage limitation at U_V = 5 V					
Lower limit	$U_{A\,min}$	V	0.25	0.3	0.35
Upper limit	$I_{A\,max}$	V	4.75	4.8	4.85
Recommendation for signal evaluation					
Load resistance to U_H = 5.5...16 V	$R_{L,H}$	kΩ	–	680	–
Limit data					
Supply voltage (1 min)	U_{Vmax}	V	–	–	16
Pressure measurement	$p_{e,\,max}$	kPa	–30	–	+30
Storage temperature	ϑ_L	°C	–40	–	+80

Accessories

Plug housing	
3-pole	**1 928 403 110**

AMP connection components

Cable cross-section	Contact pins AMP No.	Individual gasket AMP No.
0.5...1 mm²	**2-929 940-1**	**828 904-1**
1.5...2.5 mm²	**2-929 938-1**	**828 905-1**

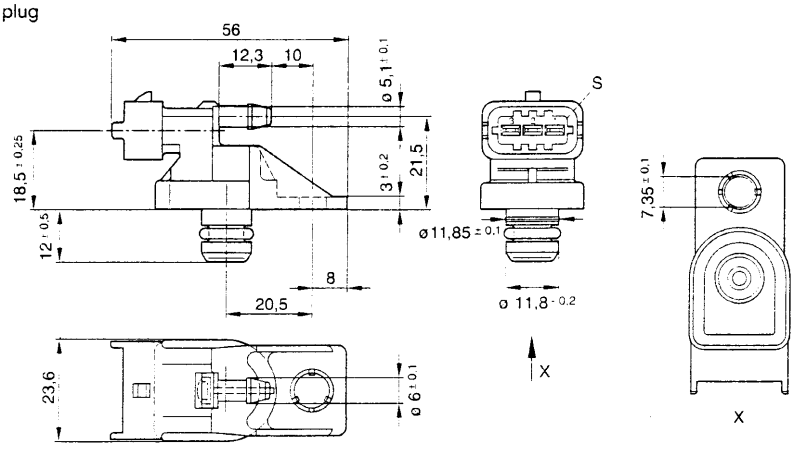
To be obtained from
AMP Deutschland GmbH,
Amperestr. 7–11, D-63225 Langen,
Tel. 0 61 03/7 09-0, Fax 0 61 03/7 09-2 23.

Note

Each 3-pole plug requires 1 plug housing, 3 contact pins, and 3 individual gaskets.
For automotive applications, original AMP crimping tools must be used.

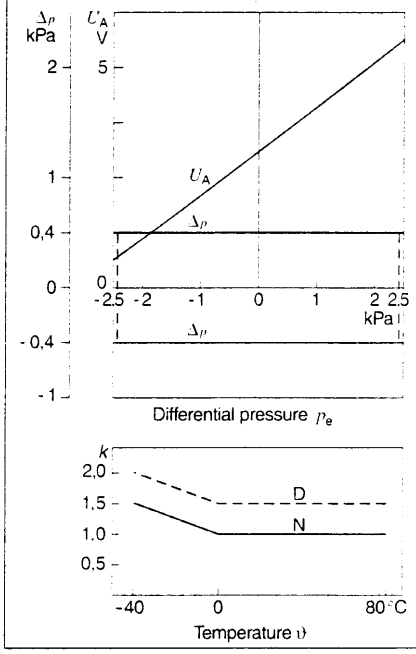
查询"0261230015"供应商

Dimension drawings
S 3-pole plug



Characteristic curves (U_V = 5 V).

$$U_A = U_V \cdot \left(\frac{0.16}{\text{kPa}} \cdot p_e + 0.5\right)$$



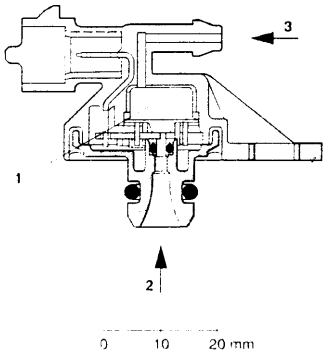
Explanation of symbols

p_e	Differential pressure
U_A	Output voltage (signal voltage)
U_V	Supply voltage
k	Tolerance multiplier
D	Following endurance test
N	As-new state
Δp	Tolerance

Connector-pin assignment

Pin 1	+5 V (U_V)
Pin 2	Ground
Pin 3	Output signal

Sectional drawing of pressure sensor (overall system)
1 Sensor cell, 2 Applied pressure, 3 Reference pressure



Sectional drawing of sensor cell
1 Silicagel, 2 Applied pressure, 3 Reference pressure, 4 Sensor chip, 5 Glass base