

Differential pressure gauge with micro switches With integrated working pressure indication (DELTA-comb) Model DPGS40TA, with component testing

WIKA data sheet PV 27.22



for further approvals
see page 5

DELTA-comb

Applications

Monitoring and control of filters, compressors and pumps in:

- Heat transfer oil plants
- Marine boilers, pressure vessels, bilge-water collection
- Drinking and cooling-water treatment plants
- Pressure-boosting stations, heating technology, fire-extinguishing systems

Special features

- Differential pressure gauge with integrated working pressure indication and micro switch
- Robust aluminium case with shatterproof window
- TÜV certified functional safety through SIL certificate
- Flow monitor with safety function in accordance with VdTÜV code of practice "Flow 100"
- Germanischer Lloyd approval



Differential pressure gauge with two switch contacts and lead sealing of the adjustments, model DPGS40TA

Description

The differential pressure gauges of the DELTA-line product family are primarily used for the monitoring and control of low differential pressures where there are high requirements in terms of one-sided overpressure and static pressure. Typical markets for these products are the shipbuilding industry, process heating technology, the heating, ventilation and air-conditioning industries, the water/wastewater industry, and machine building and plant construction. For these, the main function of the measuring instruments is the monitoring of filters, compressors and pumps. These instruments are primarily used as flow monitors in heat transfer oil plants.

Wherever a differential pressure must be displayed locally and, at the same time, electrical circuits need to be switched safely dependent on a defined differential pressure, the DELTA-comb finds its use. As the pressure passes above or below a defined set point, the switching operation is

triggered. The switch point is accessible from the front and can be set in the range of 10 ... 100 % of the full scale value via an assistant scale. Due to the mechanical indication, the differential pressure can be read securely, even if the voltage supply is lost.

The robust aluminium case and shatterproof window enable a long service life of the product, even under harsh ambient conditions. As a result of the low measuring range of 0 ... 250 mbar, the instrument can also be used for applications with low differential pressures.

A special feature of the DELTA-comb with component testing lies in the large variety of approvals and certifications. These assure the suitability for use in each application.

Design and operating principle

Pressures p_1 and p_2 act on the media chambers \oplus and \ominus , which are separated by an elastic diaphragm (1).

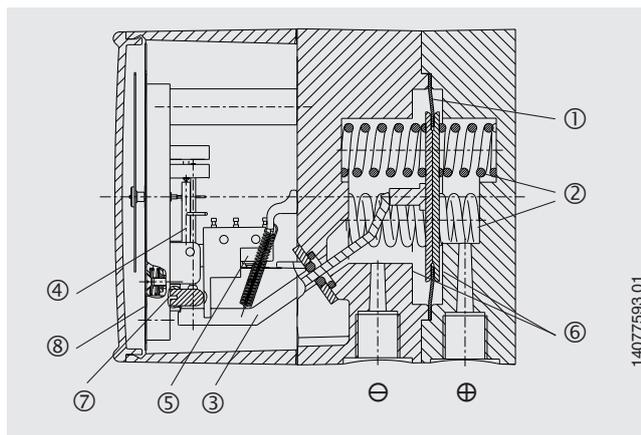
The differential pressure ($\Delta p = p_1 - p_2$) leads to an axial deflection of the diaphragm against the measuring range springs (2).

The deflection, which is proportional to the differential pressure, is transmitted to the movement (4) in the indicating case and to the leaf springs of the micro switches (5) via a pressure-tight and low friction rocker arm (3).

Overpressure safety is provided by metal bolsters (6) resting against the elastic diaphragm.

The adjustment of the switch point is made by the adjustment screws accessible from the front (7). The assistant scales (8) simplify the setting of the switch point.

Illustration of the principle



Mounting according to affixed symbols,
 \oplus high pressure, \ominus low pressure

Mounting:

- Rigid measuring line
- Wall mounting with available mounting links

Standard version

Specifications	
Nominal size	Differential pressure indication: \varnothing 100 mm Working pressure indication: \varnothing 22 mm
Accuracy	Differential pressure indication: ≤ 2.5 % of span (option ≤ 1.6 %) Working pressure indication: ≤ 4 % of span
Scale ranges (EN 837)	<ul style="list-style-type: none"> ■ Differential pressure: 0 ... 0.25 to 0 ... 10 bar ■ Differential pressure SIL version: 0 ... 0.25 to 0 ... 6 bar ■ Differential pressure VdTÜV version: 0 ... 0.25 to 0 ... 2.5 bar Working pressure: 0 ... 25 bar
Max. working pressure (stat.)	25 bar
Overpressure safety	Either side max. 25 bar
Permissible temperature	Ambient: -10 ... +70 °C, medium: -10 ... +90 °C Storage: -40 ... +70 °C
Ingress protection	IP65 per IEC/EN 60529
Media chamber (wetted)	Aluminium, EN AC-Al Si9Cu3(Fe), black lacquered (option: Stainless steel 1.4571)
Process connections (wetted)	2 x G 1/4 female, lower mount (LM), in-line, centre distance 26 mm
Pressure elements (wetted)	Differential pressure: Compression springs from stainless steel 1.4310 and separating diaphragm from FPM/FKM (option: NBR, not available for VdTÜV version) Working pressure: Bourdon tube from Cu-alloy
Transmission parts (wetted)	Stainless steel 1.4301, 1.4305, 1.4310, FPM/FKM (option: NBR)
Sealings (wetted)	FPM/FKM (option: NBR)
Movement	Copper alloy
Dial	Differential and working pressure indication: White dial, black lettering
Pointer	Differential and working pressure indication: Blue pointer
Zero adjustment for differential pressure indication	Via screw in the dial
Case	Aluminium, EN AC-Al Si9Cu3(Fe), black lacquered
Window	Plastic, with plug screw for zero and switch point adjustment (Option: Lead sealing of the settings)
Weight	approx. 1.4 kg

Options

- Intrinsically safe designs (Ex i)
- Without working pressure indication
- Scale range for working pressure 0 ... 10 or 0 ... 16 bar (max. working pressure and overpressure safety up to 10 or 16 bar)
- Accuracy class 1.6 for differential pressure indication with fixed factory-set switch points for scale ranges from 0 ... 1 bar to 0 ... 10 bar (specify switching direction)
- 4-way valve manifold from Cu-alloy or stainless steel, (1 x pressure compensating valve, 2 x shut-off valve, 1 x valve for purging and ventilating)
- Sealings (model 910.17, see data sheet AC 09.08)
- Other process connections for female and male threads
- Compression fittings with ferrule or clamp ring for pipe diameters 6, 8 and 10 mm
- Panel mounting flange (available in 2 versions: Stainless steel or stainless steel, black lacquered)
- Electrical connection via cable terminal box or angular connector

Electrical contact	
Type of contact	Micro switch
Contact function Single change-over Double change-over	Contact type 850.3 Contact type 850.3.3
Load data U max., I max., P max.	AC 250 V, 5 A ¹⁾ , 250 VA DC 30 V, 0.4 A, 10 W
Switch point setting	from the outside at assistant scale by means of adjustment screw(s)
Setting range	from 10 % to 100 % of the full scale value
Switch point reproducibility	≤ 1.6 %
Switch hysteresis	max. 5 % of the full scale value (option: max. 2.5 %)
Electrical connection	cable gland M20 x 1.5 with 1 m free cable

1) I max. = 1.4 A for designs in accordance with VdTÜV code of practice "Flow 100"

Maximum values for the supply circuit (only for Ex version)

Parameters	Instrument group II	
	Potentially explosive gas atmosphere	Potentially explosive gas atmosphere
Terminal marking	„1“ / „4“ / „2“ for switch A „3“ / „6“ / „5“ for switch B (option)	
Voltage U_i	DC 30 V	
Current I_i	100 mA	
Power P_i	1 W	≤ 750 mW for Ta ≤ +40 °C ≤ 650 mW for Ta ≤ +60 °C
Effective internal capacitance C_i	Negligible	
Effective internal inductance L_i	Negligible	

Instruments with two micro switches

If more than one circuit is connected, all conditions for the separation of two intrinsically safe circuits must be observed.

Approvals

Logo	Description	Country
	EU declaration of conformity <ul style="list-style-type: none"> ■ Pressure equipment directive ■ Low voltage directive ■ RoHS directive ■ ATEX directive (option) 	European Union
	IECEx (option) Hazardous areas	International
	EAC (option) <ul style="list-style-type: none"> ■ EMC directive ■ Pressure equipment directive ■ Low voltage directive ■ Hazardous areas 	Eurasian Economic Community
	GOST (option) Metrology/measurement technology	Russia
	KazInMetr Metrology, measurement technology	Kazakhstan
	Uzstandard Metrology, measurement technology	Uzbekistan
	GL Ships, shipbuilding (e.g. offshore)	International
-	CRN Safety (e.g. electr. safety, overpressure, ...)	Canada

Manufacturer's information and certifications (option)

Logo	Description
	SIL Functional safety
	Flow monitor with safety function in accordance with VdTÜV code of practice "Flow 100" (BP STRO 100-RL)

Certificates (option)

- 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, indication accuracy)
- 3.1 inspection certificate per EN 10204 (e.g. indication accuracy)

Approvals and certificates, see website

Ordering information

Model / Scale range / Process connection / Material of separating diaphragm and sealings / Micro switch / Options

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