

Application

Instrument designed to measure and indicate the differential pressure or measured variables derived from it · Suitable for gases or liquids · Span from 0...40 to 0...3600 mbar · Static pressures up to 50 bar · Optionally with limit switch with max. two inductive alarm contacts



Optional measurements

- **Liquid level** in pressure tanks, especially for cryogenic, liquefied gases
- **Differential pressure** between flow and return flow pipe
- **Pressure drop** across valves and filters
- **Flow rate** according to the differential pressure method

Special features

- Suitable for liquids, gases and vapors
- Limit switch (optional) with max. two alarm contacts can be retrofitted
- Adjustment of measuring span 1:1.6
- Overloadable on one side up to the permissible static pressure
- Housing of indicating unit with burst protection
- Housing for degree of protection IP 54
- Nominal pressure PN 50
- Housing suitable for field and panel mounting
- Directly connectable valve block (optional) with test connection to check the pressure in the tank and connection for pressure switch

Versions

Media 05 consists of:
Indicator NG 100 with pointer mechanism · Differential pressure cell made of brass (CW617N) · PN 50 · Version free of oil and grease for oxygen · Measuring ranges from 40 to 3600 mbar · ECO measuring diaphragm · Zero adjustment on the front · Process medium connections G 3/8 A

Options available:

- Scales · Scale 0 to 100 % linear or square root graduation, scale according to DIN EN 837-3, detachable scales for different media, special scales
- Inductive limit switch with max. two alarm contacts A1/A2 (proximity switches) · Version for hazardous locations
- Valve block which can be directly flange mounted onto Media 05 devices
- Screw joints
- Pressure gauge

Special versions available on request

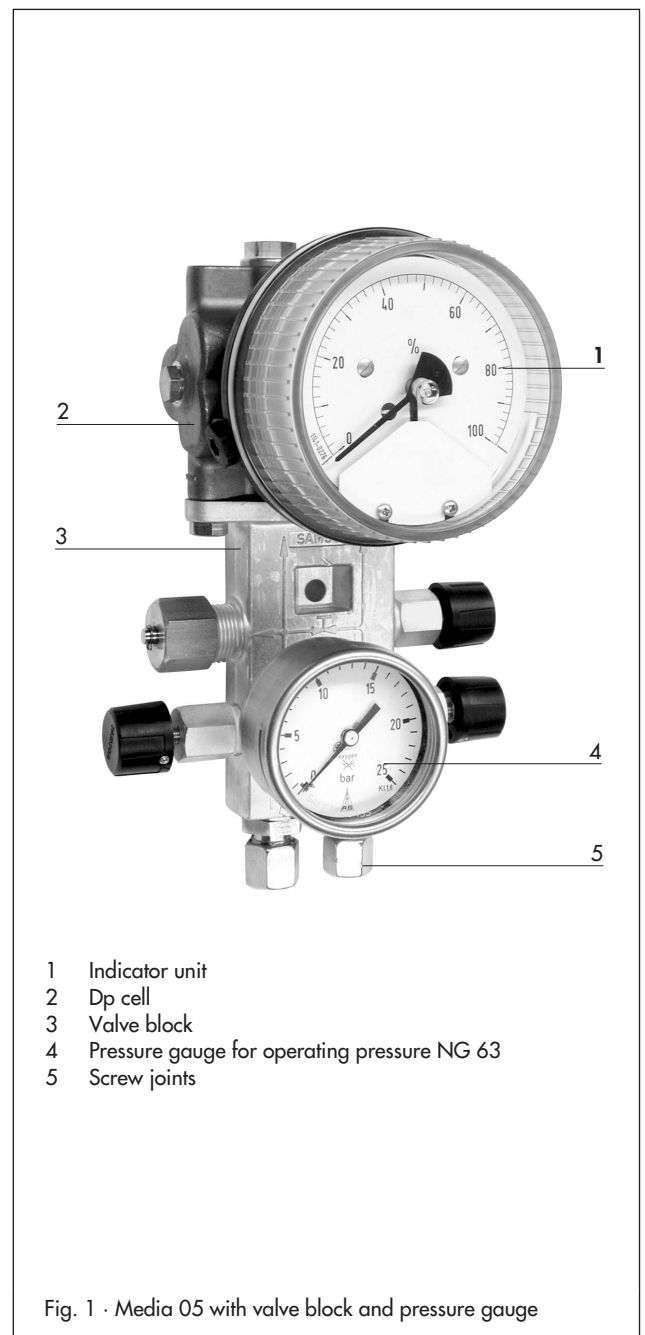


Fig. 1 · Media 05 with valve block and pressure gauge

Principle of operation (see Fig. 3)

The measuring device consists of a differential pressure cell (1.1) with a measuring diaphragm (1.5), range springs (1.4) designed to correspond to the measuring span and an indicating unit with pointer mechanism (2.2) and scale (2.3).

The differential pressure $\Delta p = p_1 - p_2$ (or the differential pressure of the orifice plate) causes the diaphragm shaft (1.7) to move. The rod is connected to the measuring diaphragm supported by the range springs. The change in travel which is proportional to the differential pressure is transmitted via a lever (1.8) and a flexible disk (1.9) out of the pressure chamber to the pointer mechanism (2.2). The differential pressure is shown linear and the flow rate is shown as a square root graduation.

The range springs (1.4) installed in the dp cell determine the upper and lower limit of each measuring span (measuring span limit) of the device (see Table 1). The span can be continuously adjusted within these limits in the ratio of 1:1.6 at the transmission element. This adjustment changes the transmission ratio between the lever (1.8) and the pointer mechanism (2.2).

Version with limit switch

Maximum two alarm contacts (A1, A2) can be installed. The gear segment (2.1) supports the metal tags (3.2) and activates the limit switch unit by moving the metal tags into the adjustable proximity switches (3.3).

When the metal tag enters the inductive field of the associated proximity switch, it assumes a high resistance (contact open). When the metal tag leaves the inductive field, it assumes a low resistance (contact closed). The switching function is triggered when the metal tag leaves or enters the proximity switches, depending on the setting of the contacts.

Limit switch with alarm contacts A1/A2

- Media 05, version with limit switch -

The inductive alarm contacts A1/A2 can be adjusted over the whole measuring range as required. They provide a signal when the differential pressure either increases or decreases and the metal tags enter or leave the inductive field of the switch.

The contacts can be pushed manually to the required switching position. Isolating switch amplifiers conforming to EN 60947-5-6 must be connected in the output circuit of the inductive alarm contacts in such a way that they meet the operational requirements of any connected control and signaling devices.

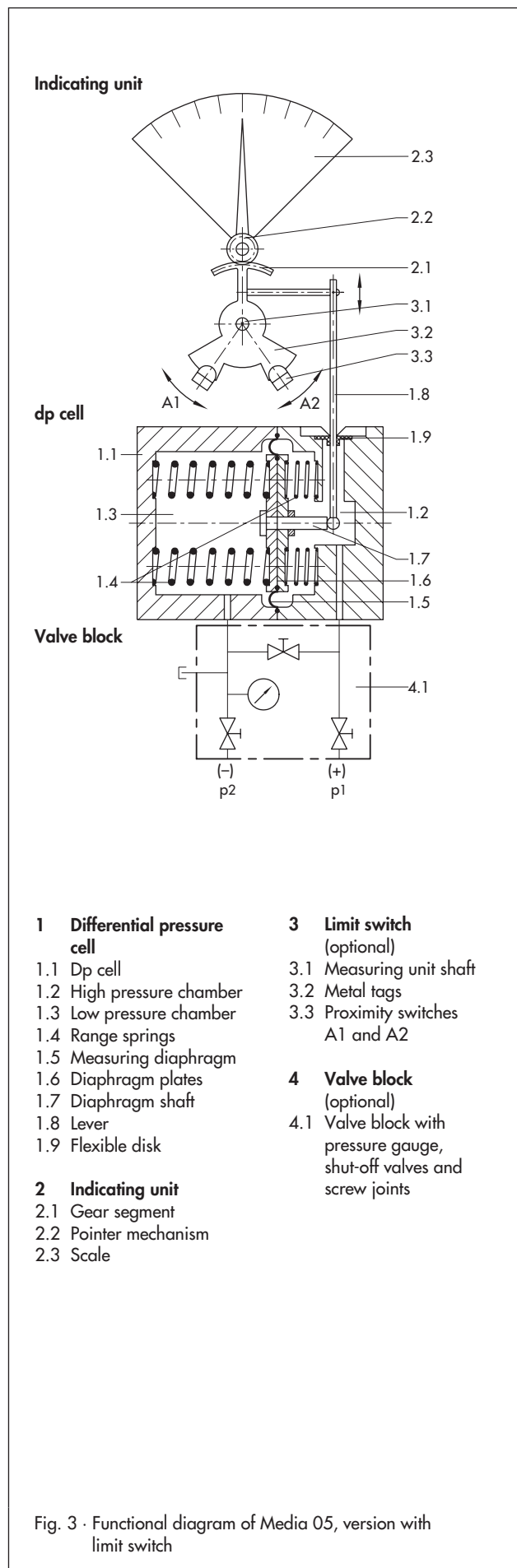
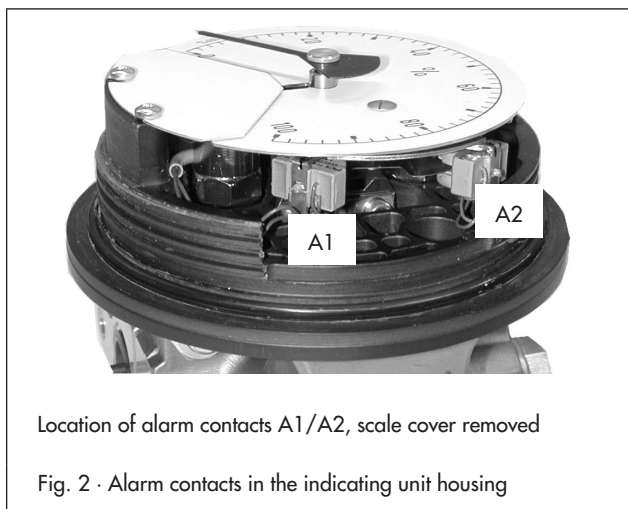


Table 1 · Technical data · All pressures in bar or mbar (gauge)

Media 05 Differential Pressure Meter											
Measuring range	mbar	0 to 60	0 to 100	0 to 160	0 to 250	0 to 400	0 to 600	0 to 1000	0 to 1600	0 to 2500	0 to 3600
Measuring span	min.	40	60	100	160	250	400	600	1000	1600	2500
	max.	to 60	to 100	to 160	to 250	to 400	to 600	to 1000	to 1600	to 2500	to 3600
Nominal pressure	PN 50, overloadable on one side up to 50 bar										
Indicator	Ø 100 mm										
Performance	Output and reading linear to the differential pressure										
Conforming error	≤ ± 2.5 % including hysteresis ¹⁾										
Sensitivity	< 0.5 %	< 0.25 %									
Effect of static pressure	< 0.03 % / 1 bar										
Degree of protection acc. to DIN 40050	IP 54										
Weight	w/o SAMSON valve block	Approx. 2.6 kg									
	With SAMSON valve block	Approx. 4.6 kg									
Use of Media 05 with gaseous oxygen	max. temperature	+60 °C									
	max. oxygen pressure	30 bar									
Permissible ambient temperature range	-40 to +80 °C										
	-40 to +60 °C with oxygen										
Permissible storage temperature range	-40 to +100 °C										
Limit switch unit (option)											
Operating principle	Max. 2 inductive alarm contacts A1 and A2 acc. to EN 60947-5-6 (limit switches)										
Control circuit	Values corresponding to connected isolating switch amplifier e.g. KFA6-SR2-Ex2.W										
Proximity switch	SJ2-SN, when used for hazardous areas corresponding to PTB 00 ATEX 2049 X										
Switching accuracy	< ± 2 %										
Range of inversion, approx.	< 0.6 %										

¹⁾ Based on the upper measuring range value

Note!

- All errors and deviations are specified in % of the adjusted measuring span!
- Refer to Data Sheet T 9550 EN for flow rate measurement.
- A correction of the measuring span is possible by changing the ratio in the limits of approx. 1:1.6.
- The Media 05 Differential Pressure and Flow Meter without limit switches may be used to measure flammable gases and liquids in which hazardous area conditions of Zone 0 are to be expected. The relevant regulations on the measurement of flammable gases and liquids of Zone 0 must be observed.
- Oxygen service
When the device is used for oxygen service, make sure that the dp cell and any SAMSON accessories (e.g. valve block) only come into contact with gaseous oxygen.
- Refer to EB 9520 EN for more details.

Table 2 · Materials

Differential Pressure Meter Media 05	
Differential pressure cell	Brass (CW617N) or CrNi steel
Measuring diaphragm and seals	ECO ¹⁾
Range springs	CrNi steel
Diaphragm plates and functioning parts	
Lever	
Housing of indicating unit	Polycarbonate

¹⁾ Different materials on request

Terminal assignment

- Only for version with inductive limit switch -

Connection to power supply

The device can be equipped with maximum two alarm contacts. The alarm contacts A1 and A2 of the indicator must be connected with an isolating switch amplifier for connecting to the power supply. SAMSON recommend isolating switch amplifiers from Pepperl + Fuchs. For two contacts, e.g. KFA6-SR2-Ex2.W and for one contact, KFA6-SR2-Ex1.W.

Switching characteristic of the proximity switches with opening function (NC, normally closed)

Metal tag outside inductive field · Switching signal "ON"
(L signal)

Function: Contact closed or output effectively conducting -
Low resistance (undamped), power consumption ≥ 3 mA.

Metal tag inside inductive field · Switching signal "OFF"
(O signal)

Function: Contact open or output effectively non-conducting -
High resistance (damped), power consumption ≤ 1 mA.

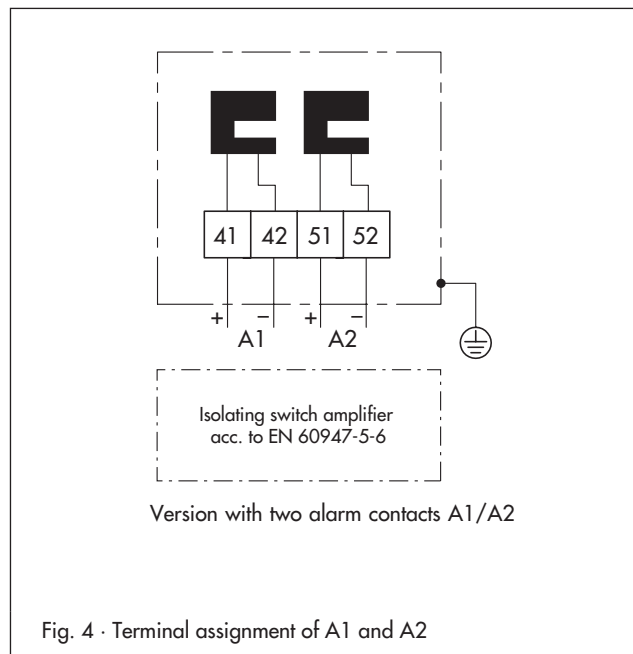


Fig. 4 · Terminal assignment of A1 and A2

The listed maximum values in the table apply concerning the connection of proximity switches to certified intrinsically safe circuits in the type of protection EEx ia IIC T6 (PTB 00 ATEX 2049 X):

Table 3 · Connection values for intrinsically safe circuits

	Type 1			Type 2		
U_i	16 V			16 V		
I_i	25 mA			25 mA		
P_i	34 mW			64 mW		
C_i	30 nF			30 nF		
L_i	100 μ H			100 μ H		
T	T6	T5	T4	T6	T5	T4
	73 °C	88 °C	100 °C	66 °C	81 °C	100 °C

Mounting

Observe the following points when mounting the device:

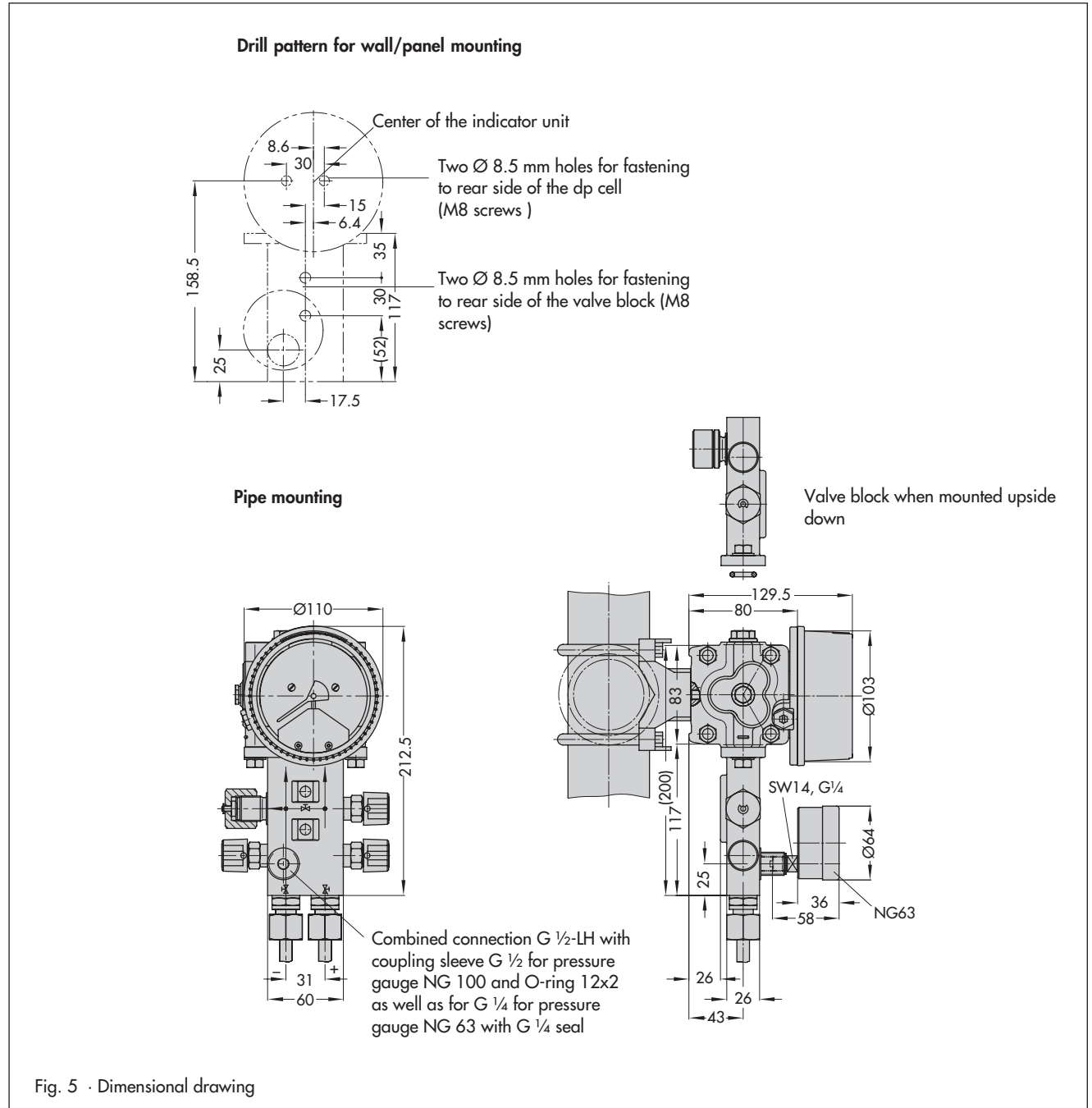
Wall/panel mounting - Using two M8 tapped holes located at the rear of the dp cell or two $\text{Ø} 8.3$ mm holes in the valve block.

Pipe mounting - With mounting device and clamp for attachment to a vertical or horizontal 2" pipe.

Device with burst protection is located in the rear wall of the indicator unit.

Process medium connection: Tapped hole ISO 228 G 3/8

Dimensions in mm



Accessories

The SAMSON product range includes a wide assortment of accessories (e.g. valve blocks, pressure gauges, high-pressure valves, condensation chambers, screw joints with restrictions, contact retrofit kits, range springs, etc.) for the Media series.

Refer to the Data Sheet T 9555 EN for further details.

A description of scales available at SAMSON can be found in Data Sheet T 9545 EN.

Ordering text

Differential Pressure/Flow Meter Media 05 · Order no.: **5005** - - - - -

Ordering code:

- Complete the order number with the order codes for the selected options -

			Order no. 5005-					
Media 05, dp cell made of brass			5					
Media 05, dp cell made of 1.4581 (stainless steel)			6					
Standard version				0				
Free of oil and grease for oxygen acc. to Company Standard 1.34-2 Sh. 1			1					
Measuring range	Measuring span							
	min.	max.						
0 to 60 mbar	40 mbar	60 mbar			0	2		
0 to 100 mbar	50 mbar	100 mbar			0	3		
0 to 160 mbar	100 mbar	160 mbar			0	4		
0 to 250 mbar	160 mbar	250 mbar			0	5		
0 to 400 mbar	250 mbar	400 mbar			0	6		
0 to 600 mbar	400 mbar	600 mbar			0	7		
0 to 1000 mbar	600 mbar	1000 mbar			2	0		
0 to 1600 mbar	1000 mbar	1600 mbar			2	1		
0 to 2500 mbar	1600 mbar	2500 mbar			2	2		
0 to 3600 mbar	2500 mbar	3600 mbar			2	3		
Zero point screw with concealed zero correction								1
Limit switch unit (inductive limit switch) ¹⁾								
Without alarm contact								0
With one inductive alarm contact, Type SJ2-SN (one min. contact A1)								1
With two inductive alarm contacts, Type SJ2-SN (one min. contact A1 and one max. contact A2)								4
With two inductive alarm contacts, Type SJ2-SN (two min. contacts A1 and A2)								5

Additionally required ordering specifications		Measured value setting ²⁾	Unit	
Alarm contacts adjusted to ...		0 to ...	mbar	
Version with limit switches , additional order specifications				
		Contact A1		Standard
A1 Min. contact = Value decreases	Metal tag is ...	Inside/outside ³⁾	at ... mbar	at 22-2%
		Contact A2		
A2 Min. contact = Value decreases	Metal tag is ...	Inside/outside ³⁾	at ... mbar	at 42-2%
A2 Max. contact = Value increases	Metal tag is ...	Outside/inside ³⁾	at ... mbar	at 93+2%

1) Limit switch unit default settings; Standard: without settings
 2) Measured value default settings; Standard: 0 ... max. measured value
 3) Delete specification that does not apply

Accessories: Parts and details in T 9555 EN · Scales in T 9545 EN

Specifications subject to change without notice.

