

Differential Pressure Meters

Media 6
Media 6 Z



Media 6 with mounted valve block

Mounting and Operating Instructions

EB 9527-3 EN

Firmware version 3.12

Edition October 2015



Definition of signal words



DANGER!

Hazardous situations which, if not avoided, will result in death or serious injury



WARNING!

Hazardous situations which, if not avoided, could result in death or serious injury



NOTICE

Property damage message or malfunction



Note:

Additional information



Tip:

Recommended action

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1 Safety instructions

- The device is to be mounted, started up or operated only by trained and experienced personnel familiar with the product. According to these mounting and operating instructions, trained personnel refers to individuals who are able to judge the work they are assigned to and recognize possible dangers due to their specialized training, their knowledge and experience as well as their knowledge of the applicable standards.
- Explosion-protected versions of this device are to be operated only by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas. See note in section 11 on page 35.
- Any hazards that could be caused in the device by the process medium or operating pressure are to be prevented by taking appropriate precautions. To ensure appropriate use, only use the device in applications where the operating pressure and temperatures do not exceed the specifications used at the ordering stage.
- The Media 6 Differential Pressure Meter is **not** approved for measuring flammable gases or liquids in hazardous areas of Zone 0.
- The device is designed for use in low voltage installations. For wiring and maintenance, you are required to observe the relevant regulations concerning device safety and electromagnetic compatibility.
- Proper shipping and storage are assumed.
- Devices with a CE marking fulfill the requirements of the Directives 2014/34/EU (ATEX) and 2014/30/EU. The Declaration of Conformity is available on request.



NOTICE

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.

2 Firmware version

Table 1: *Firmware versions*

Firmware revisions	
Old	New
A 2.03/B 2.03	A 2.10/B 2.10
Limit contacts	The limit contacts A1 and A2 are configured using software to function as either min. or max. alarms. They can be configured separately using the keys on the device.
Operating filling limit	The operating filling limit (UCW) can be set at the keys on the device independent from the limit contacts.
A 2.10/B 2.10	A 2.11/B 2.11
Error code	The current output of Media 6 is set to ≤ 3.6 mA.
A2.11/B2.11	V3.02
LCD	The LCD can be switched on and off using the \uparrow and \downarrow keys (LCD ON or LCD OFF).
Gas and medium code	The gas and medium code can contain max. 8 characters.
Error code	Error code changed. Changed response when confirming errors. Device errors are logged in the error history.
Operating mode	New operating modes: counting flow rate, differential pressure
Units for flow rate	Units for flow rate are displayed in .../h or .../min.
Units for static pressure (PTANK)	The following units were added: mbar, bar, kPa, psi, mmH ₂ O, cmH ₂ O, mH ₂ O, inH ₂ O.
DPO value	Pressure for 4 mA signal
LOAD reading	LOAD reading replaced by reading of version no. V3.02
V3.02	V3.03
Display mode	Counting flow rate operating mode: default display shows meter reading.
V3.03	V3.04
Digital potentiometer	Temperature control in LCD modified
V3.04	V3.10/index 02
Battery operation	New power supply: battery operation
Operating mode	New operating mode: level measurement in transportation vehicles
Boot loader	Firmware update

Firmware revisions	
Old	New
V3.10	3.11
Battery operation	Error remedied on changing to power-saving mode. Small corrections made.
V3.11	V3.12
Error detection	Detection and treatment of error codes 1 and 32768 changed.

3 Design and principle of operation

Differential pressure meters are used to measure and indicate differential pressure as well as derived measured variables for gases and liquids.

Measurement tasks

Liquid level measurement in stationary pressure vessels and in pressure vessels on transportation vehicles, in particular for cryogenic gases, such as argon, oxygen, and nitrogen.

- Differential pressure measurement between flow and return flow pipe
- Pressure drop measurement across valves and filters
- Flow rate measurement according to the differential pressure method

The device mainly consists of the dp cell with measuring diaphragm, range springs sized according to the measuring span as well as the indicating unit with two-wire transmitter (4 to 20 mA output signal) and an LCD. The power supply U_B is 12 to 36 V DC. Optionally, battery operation ¹⁾ with 9 V DC, without 4 to 20 mA output signal.

The differential pressure $\Delta p = p_1 - p_2$ creates a force at the measuring diaphragm (1.1), which is opposed by the range springs (1.2). The movement of the measuring diaphragm and lever (1.3), which is proportional to the differential pressure, is transmitted by the elastic disk (1.4) out of the pressure chamber and converted into an electric signal by the travel sensor (2).

Based on the evaluation of the data saved in the FRAM (4), the electric signal is processed by a microprocessor (3). It controls both the LCD (7) and the D/A converter (9) for the output signal, which is issued as a 4 to 20 mA two-wire transmitter signal at connector A.

The serial interface (10) allows the device to be configured with the TROVIS-VIEW software using a special memory pen or a cable connection to a computer. The user-specific data are saved in the memory (FRAM) (4). Data backup is also possible. The data remain saved until they are overwritten again. This allows operating data to be easily exchanged on site between Media 6 and the memory pen, and vice versa. The memory pen can be programmed on a computer using the TROVIS-VIEW software.

The operating data allow the differential pressure to be converted into values proportional to the tank capacity or flow rate ²⁾ and displayed or issued as a 4 to 20 mA signal.

The DIP switches (6) are used to select four saved gas types and different write protection functions for saved data.

Three operating keys (5) are used to adjust different operating functions (zero and span adjustment, filling limit during operation, limit contacts, and test function settings etc.) as well as set different operating states (load or save operating values).

¹⁾ Operating mode: liquid level measurement

²⁾ Counting pulse (Media 6 Z)

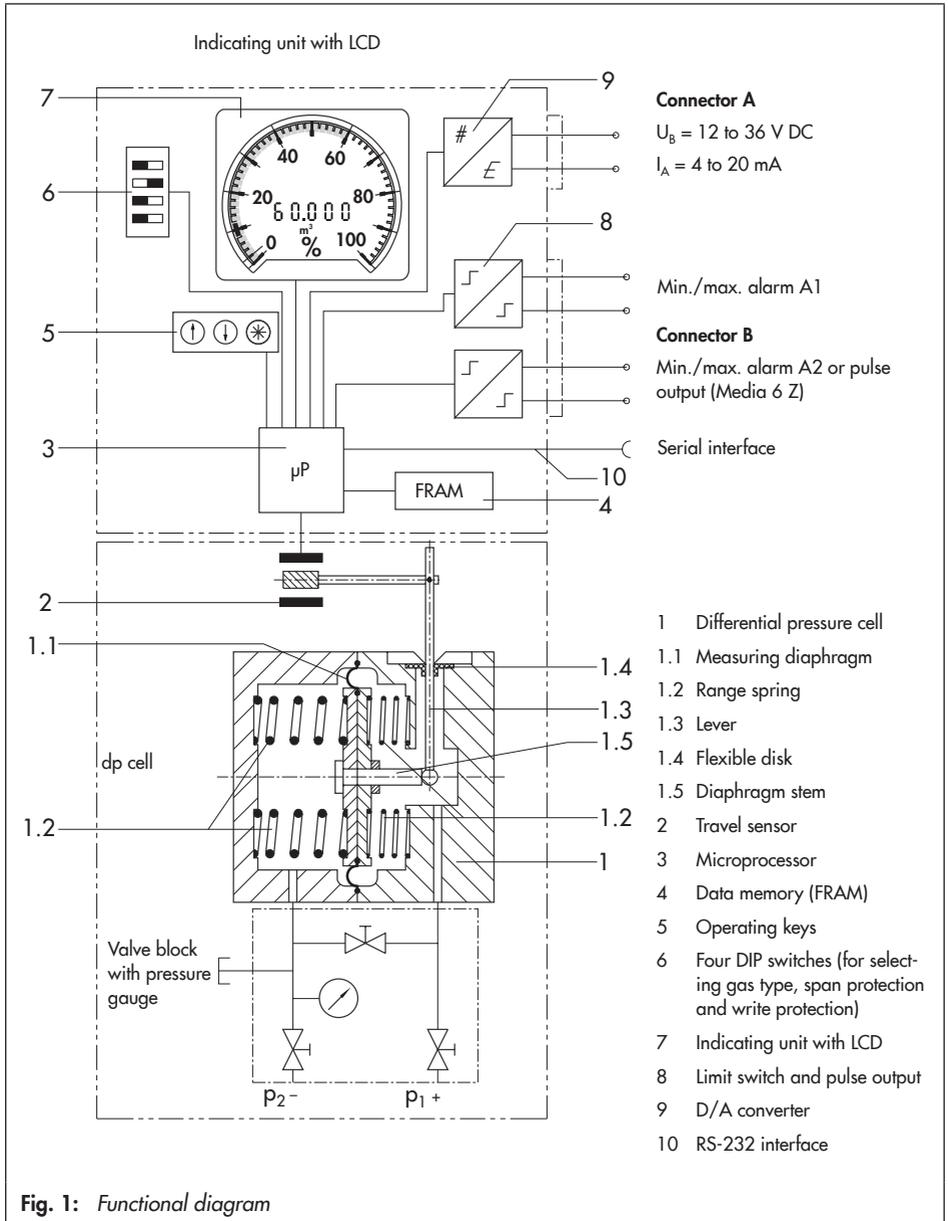


Fig. 1: Functional diagram

3.1 Technical data

Table 2: Technical data

All pressure in bar (gauge) · All errors and deviations are specified in % of the adjusted measuring span

Media 6 Differential Pressure Meter										
Measuring range in mbar		0 to 100	0 to 160	0 to 250	0 to 400	0 to 600	0 to 1000 ¹⁾	0 to 1600 ¹⁾	0 to 2500 ¹⁾	0 to 3600 ¹⁾
Adjustable measuring span in mbar										
Class $\pm 1\%$	to from	-	-	-	≤ 400 ≥ 100	≤ 600 ≥ 150	≤ 1000 ≥ 250	≤ 1600 ≥ 320	≤ 2500 ≥ 500	≤ 3600 ≥ 720
Class $\pm 1.6\%$	to from	-	-	≤ 250 ≥ 125	< 100 ≥ 80	< 150 ≥ 120	< 250 ≥ 200	-	-	-
Class $\pm 2.5\%$	to from	< 60 ≥ 35 ²⁾	< 60 ≥ 32	< 125 ≥ 50	-	-	-	-	-	-
	to from	≤ 100 ≥ 60	< 160 ≥ 160	-	-	-	-	-	-	-
Nominal pressure		PN 50, overloadable on one side up to 50 bar								
Display		LCD $\varnothing 90$ mm								
Characteristic		Output and reading linear or square root extraction depending on operating mode								
Deviation from terminal-based linearity		$< \pm 1.0\%$ to $< \pm 2.5\%$ (including hysteresis) depending on measuring span selected								
Sensitivity		$< 0.25\%$ or $< \pm 0.5\%$ depending on measuring span selected								
Effect of static pressure		$< 0.03\%/1$ bar								
Effect of ambient temperature in the range from -20 to $+70$ °C on zero on span		$< \pm 0.2\%/10$ K $< \pm 0.2\%/10$ K								
Limit contacts		Two configurable software limit contacts or one software limit contact acc. to EN 60947-5-6 and pulse output ⁵⁾								
Control circuit, in 1 % steps		Specifications corresponding to connected switching amplifier ³⁾								
Switching accuracy		1 % based on MCN or SCN ⁴⁾								
Dead band, approx.		$< 0.6\%$								
Pulse output ⁵⁾		Max. possible counting frequency: 120 pulses/min or 7200 pulses/h ⁶⁾ Floating transistor contact for connection of external counter								
Input voltage U_{DC}		50 V								
Input current I_{DC}		80 mA								
Residual current I_{off}		< 0.1 mA								
Voltage drop at 10 mA		< 3.5 V								
Voltage drop at 80 mA		< 4.8 V								
Pulse length T_{on}		200 ms								

Permissible ambient temperature range	-40 to +70 °C	T6: -20 to +60 °C T5: -20 to +70 °C
Perm. storage temperature range	-40 to +80 °C	
Use of Media 6 with gaseous oxygen	Max. temperature: +60 °C Max. oxygen pressure: 30 bar	
Degree of protection according to EN 60529	IP 65	
Weight	Approx. 3 kg without valve block Approx. 5 kg with valve block	
Version	5006- ... 0	5006- ... 1
Two-wire connection	4 to 20 mA output	
Perm. load R_b in Ω	$R_b = (U_b - 12 \text{ V})/0.020 \text{ A}$	
Output circuit	-	Intrinsically safe acc. to PTB 00 ATEX 2074 (see test certificate)
Power supply U_b for two-wire transmitter	12 to 36 V DC	12 to 28 V DC (only in conjunction with an intrinsically safe circuit)
Battery operation ⁷⁾ Power supply	9 V DC (6 x 1.5 V LR6 alkaline batteries)	

1) A class accuracy of 0.6 % can be expected in these measuring ranges with measuring spans $\leq 100\%$ to $\geq 50\%$ of the nominal range.

2) The accuracy of class 2.5 can be exceeded when this measuring span is not reached.

3) e.g. KFA6-SR2-Ex2.W according to EN 60947-5-6

4) MCN = Maximum tank content; SCN = Tank content up to overflow.

5) Pulse output only with Media 6 Z.

6) Determined flow rate is as follows: $Q = \frac{\text{Difference of counts within reading period}}{\text{Pulse/h}} \cdot Q_{\max}$

7) Battery operation only possible for level measurement and level measurement for transportation vehicles. The A1 and A2 limit contacts are deactivated.

Table 3: Materials

Media 6 Differential Pressure Meter	
dp cell	CW617N (brass) or CrNi steel
Measuring diaphragm and seals	ECO, NBR, FPM, EPDM
Springs, diaphragm plates and functional parts, lever	CrNi steel
Housing of indicating unit	Polycarbonate

! NOTICE

The Media 6 is **not** approved for measuring flammable gases or liquids in hazardous areas of Zone 0.

Devices intended to measure gaseous oxygen are labeled:

Oxygen! Keep free of oil and grease! 

These versions are cleaned and assembled under special conditions. When replacing parts that come into contact with gaseous oxygen, e.g. range springs, wear suitable gloves and make sure that the parts do not come into contact with oil or grease.

When returning devices for oxygen service for repair, the sender assumes full responsibility that the devices are handled to meet all requirements stipulated by VBG 62 or similar regulations until they are handed over to the manufacturer. Otherwise, SAMSON AG does not accept any responsibility.

4 Installation

See Fig. 2 on page 13.

In arrangements as illustrated by schematic drawing 2, the additional height z is included in the measurement. As a result, this height must be as low as possible.

The dimension K (compensation height) illustrated in schematic drawing 3 can be as large as required by the conditions in the plant.

4.1 Arrangement of devices for flow rate measurement

The decision whether the meter is to be mounted above or below the measuring point or whether compensation chambers are required depends on the process medium and the specific conditions in the plant. The installation drawing shows standard and reverse installation. Standard installation is

preferable in any case. Reverse installation can only be used when there is no other possibility, particularly for steam measurements. Refer to VDE/VDI 3512 Sheet 1 for details.

4.2 Media 6 indicating unit

Make sure that the high-pressure line is connected to the high-pressure connection and the low-pressure line is to the low-pressure connection.

Special screw fittings are required to connect the differential pressure lines. Depending on the device arrangement, seal any connections left unused with stoppers or vent plugs.

Liquid level measurement

Illustration with SAMSON valve block

- H Measuring range
- h Measured height
- z Additional height
- K Compensation height

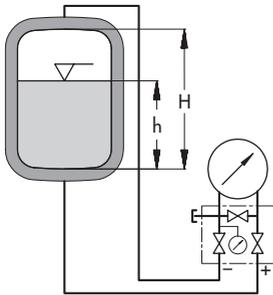


Diagram 1

Measurements in cryogenic systems (liquefied gases)

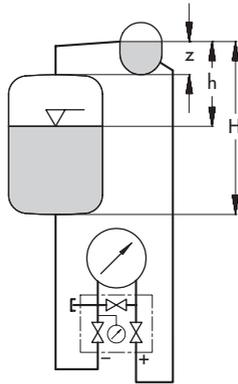


Diagram 2

Measurement on pressure vessels with condensing or non-condensing pressure cushion

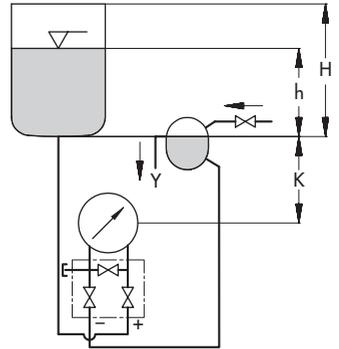


Diagram 3

Measurements on open vessels with the meter located in a low position

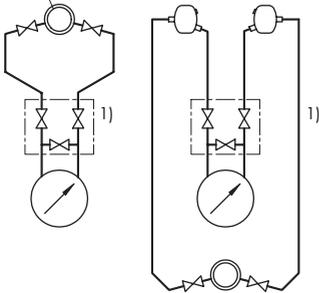
Flow rate measurement

Measurement of liquids

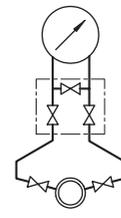
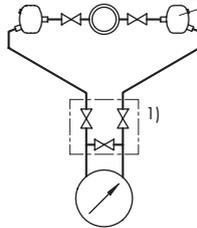
Measurement of steam

Measurement of gases

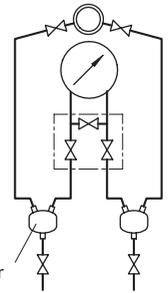
Orifice flange (orifice plate assembly)



Compensation chamber



Separation chamber



Installation

Standard

Reverse

Standard

Standard

Reverse

¹⁾ SAMSON valve blocks can be mounted upside down to ensure the assignment of plus (+) to plus (+) and minus (-) to minus (-) remains unchanged.

Fig. 2: Arrangement of devices

Carefully clean the connections before attaching the differential pressure lines. Do not rinse the device with compressed air or pressurized water.

Mount the device to a pipe, wall or mounting plate free of vibration.

Use mounting part with clamp for pipe mounting to attach it to a vertical or horizontal pipe. Use a mounting part without clamp for wall mounting. A bracket is required for panel mounting (see section 12 on page 37).

4.3 Differential pressure lines

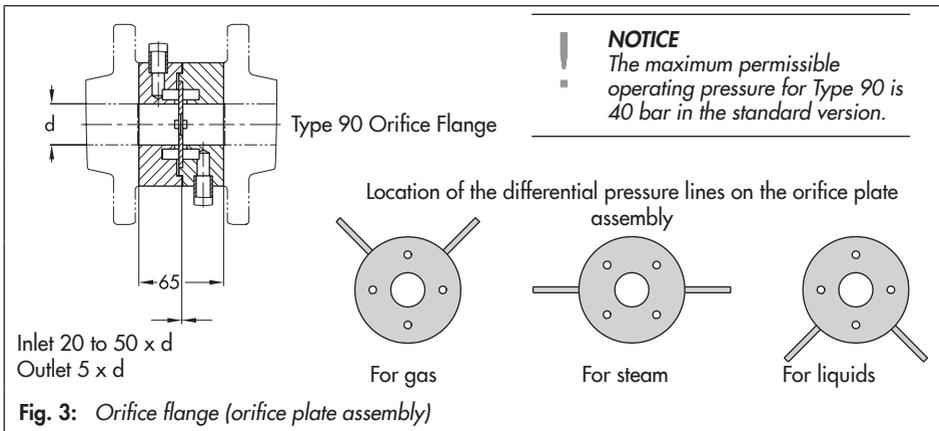
Install the differential pressure lines (pipes with 12 mm outside diameter) as shown in Fig. 3. Make sure you observe the proper order. Use appropriate screw fittings to ensure that the lines do not leak.

Install line sections, which would usually run horizontally, with a constant downward slope of at least 1:20, starting the slope either at the orifice plate or at the point where

venting is possible. The smallest permissible bending radius is 50 mm. Thoroughly flush the differential pressure lines before connecting them to the device. Make sure that the high-pressure line is connected to the high-pressure connection and the low-pressure line is to the low-pressure connection.

4.4 Orifice flange (orifice plate assembly)

The direction of flow must correspond to the arrow on the orifice plate. Unobstructed pipe sections are required upstream and downstream of the orifice plate assembly. For the orifice tubes delivered by SAMSON, these sections are ensured by the weld-on calibration pipes. For orifice flanges, the unobstructed pipe section upstream of the orifice plate is specified in the order confirmation. Make sure the orifice plate assembly as well as the gaskets are properly aligned with the pipeline.



Do not install any control valves that constantly change the operating state of the process medium (e.g. manually operated control valves or temperature regulators) upstream of the orifice plate assembly. The operating state must match the conditions calculated during sizing as closely as possible. It is, however, favorable to install equipment that keep the operating state constant (e.g. pressure regulators) upstream of the assembly.

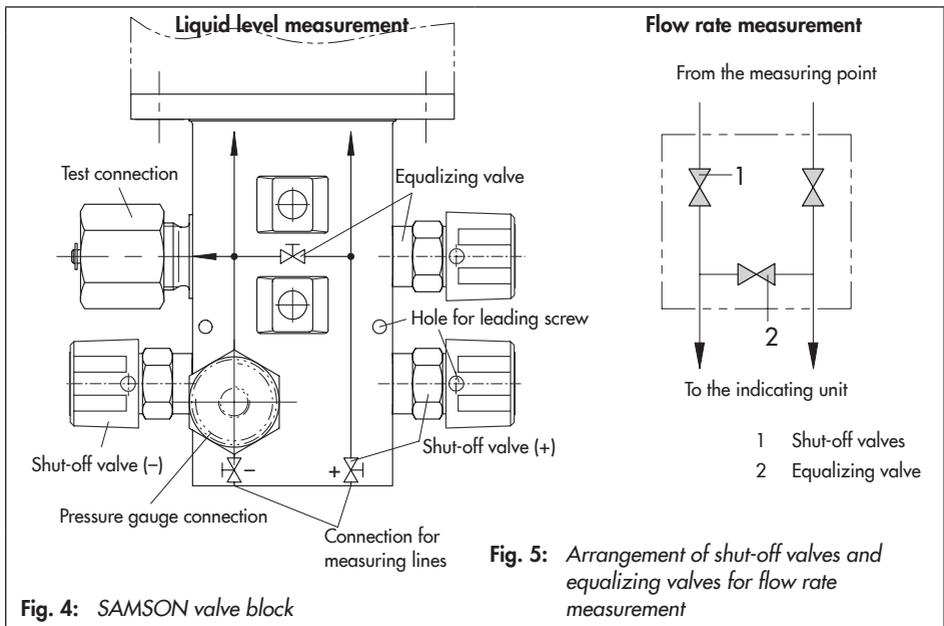
4.4.1 Accessories

We recommend installing a shut-off valve in the differential pressure lines as well as an equalizing valve. They can be used to shut off both differential pressure lines and to bypass the indicating unit when checking zero.

4.4.2 Valve block

A valve block comprising three valves (see Fig. 4) is available. It is bolted directly to the bottom of the dp cell.

When measuring the flow rate of liquids and gases, the SAMSON valve block can also be mounted upside down. As a result, the assignment of plus (+) to plus (+) and minus (-) to minus (-) remains unchanged. Due to this reverse installation, the pressure gauge connection can no longer be used and must be sealed with an O-ring and a G 1/2 - LH screw cap.



4.4.3 Shut-off and equalizing valves

As an alternative to the SAMSON valve block, the two shut-off valves as well as the bypass valve/equalizing valve can also be installed as illustrated in Fig. 5.

4.4.4 Compensation chambers

Compensation chambers that establish a constant liquid column are required when measuring steam. When measuring liquids, they are only required when the indicating unit is mounted above the measuring point. For gas measurements, separation chambers are required for condensate separation when the indicating unit is installed below the measuring point.

4.4.5 Accessories for connection

The devices are delivered without screw fittings (oxygen versions are protected against contamination by four NBR blanking plugs). Required screw fittings, screw plugs or vent screws as well as screw joints with restrictions to dampen medium-induced vibration (particularly when measuring gases) must be ordered separately.



Tip:

The screw fittings and SAMSON valve blocks with their associated order numbers are listed in Data Sheet
▶ T 9555.

5 Electrical connection



WARNING!

For electrical installation, observe the relevant electrotechnical regulations and the accident prevention regulations that apply in the country of use. In Germany, these are the VDE regulations and the accident prevention regulations of the employers' liability insurance.

The following regulation applies to installation in hazardous areas: EN 60079-14 (VDE 0165-1) Electrical Apparatus for Explosive Gas Atmospheres.

For intrinsically safe electrical equipment approved in accordance with Directive 94/9/EC (2014/34/EU from 20 April 2016), the data specified in the EC type examination certificate apply to the connection of intrinsically safe circuits.

Adhere to the terminal assignment specified in the certificate. Switching the assignment of the electrical terminals may cause the explosion protection to become ineffective. Do not loosen enameled screws in or on the housing.

In hazardous areas, only use an ammeter approved in accordance with ATEX to measure the current at the test connection (TEST).

The serial interface is not approved for use in hazardous areas. As a result, only the intrinsically safe SAMSON memory pen must be connected to transfer data.



NOTICE

Selection of cables and wires · Observe section 12 in EN 60079-14 (VDE 0165) when running several intrinsically safe circuits in one multi-core cable. The radial thickness of the insulation of a conductor for common insulating materials (e.g. polyethylene) must not be smaller than 0.2 mm. The diameter of an individual wire in a fine-stranded conductor must not be smaller than 0.1 mm. Protect the conductor ends against splicing, e.g. by using wire-end ferrules. When two separate cables are used for connection, an additional cable gland can be installed. Seal cable entries left unused with plugs. Fit equipment used in ambient temperatures below -40°C with metal cable entries.

5.1 Device connector

Connector A · Power supply

The same pair of conductors transmit the 4 to 20 mA measuring signal and the required power supply ($U_B = 12$ to 36 V) for the two-wire transmitter.

The Media 6 is connected over a DIN EN 175301-803 connector, type A, 4-pole.

Two-wire connection for 4 to 20 mA current signal:

$$R_B = \frac{U_B - 12 \text{ V}}{0.020 \text{ A}} \text{ in } \Omega$$

Rated power supply $U_B = 24 \text{ V DC}$. Taking the resistance of the supply leads directly at the terminals of the connector into account, it must be between 12 and 36 V DC.

Optionally, battery operation possible with 9 V DC power supply

Connector B · Limit contacts/pulse output

Connection of two software limit contacts in type of protection Ex ia IIC for control circuits according to NAMUR on switching amplifier according to EN 60947-5-6

Max. values:

$$U_i = 20 \text{ V}, I_i = 60 \text{ mA}, P_i = 250 \text{ mW}$$

$$C_i = 5.3 \text{ nF}, L_i = 8 \text{ } \mu\text{H}$$

Media 6 Z includes only one software limit contact (alarm 1) and one pulse output (instead of alarm 2/contacts 3 and 4), which is proportional to the tank capacity, to control an external counter.

Test connection

Connect an ammeter to the test terminals + and - to test the output signal during calibration. The output signal of the two-wire circuit is not interrupted during this procedure. Make sure that the ammeter provides a load of $< 0.4 \text{ V DC}$ for the test connection.

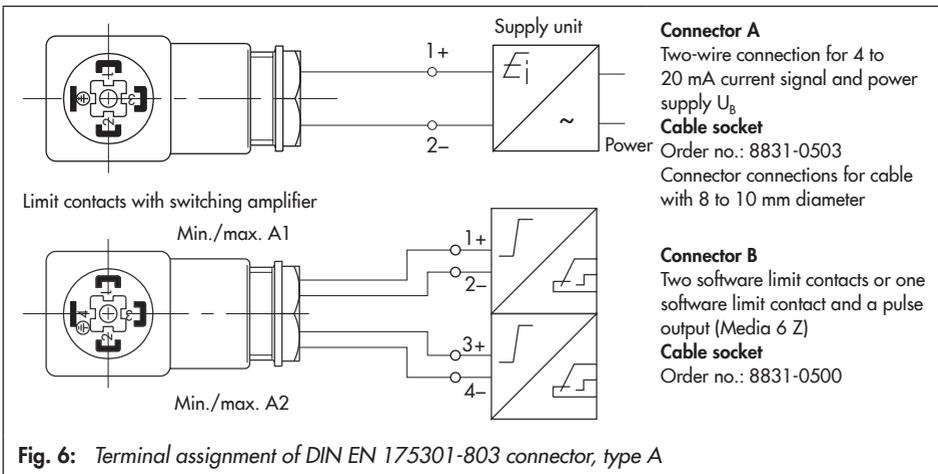


Fig. 6: Terminal assignment of DIN EN 175301-803 connector, type A



WARNING!

- Degree of protection IP 65 is no longer valid when the cable socket is removed from the device connector.
- Protect the device connector against moisture during installation and transport by keeping the cable socket part screwed on and sealed.

Table 4: Overview of functions of both software limit contacts A1 and A2 at connector B

Proximity switch for ...	1 min./1 max. contact (gas withdrawal/tank filling)		Two min. contacts (gas withdrawal)		Two max. contacts (tank filling)	
	A1	A2	A1	A2	A1	A2
Alarm contact	High resistance	Low resistance	High resistance	High resistance	Low resistance	Low resistance
Value below limit	High resistance	Low resistance	High resistance	High resistance	Low resistance	Low resistance
Value above limit	Low resistance	High resistance	Low resistance	Low resistance	High resistance	High resistance

Both limit contacts A1/A2 can be configured separately as minimum or maximum alarms.



Note:

Both limit contact outputs A1 and A2 are deactivated during battery operation.

Contact with low resistance

Switching signal ON · Function: Contact closed or output effectively conducting, power consumption ≥ 3 mA

Contact with high resistance

Switching signal OFF · Function: Contact opened or output effectively non-conducting, power consumption ≥ 1 mA

6 Operation

6.1 Display and operating controls

All necessary data and measured values saved in the memory of Media 6 are indicated on the LCD.

The operating controls are located on the bottom panel behind the protective cover, which can be opened:



Four DIP switches to select the gas type and write protection functions (see Fig. 7 on page 24) are located next to them.

Further details on the display and operating controls can be found at the back of these instructions.

6.1.1 Switching over to display mode

Depending on the operating mode, each pressing of the * key allows you to switch between the default display and up to eight other display readings.

After eight seconds or after the text has finished running across the display, the display automatically returns to the default display.

GKZ	Default mode (e.g. gas code (O ₂) and actual content)
Δp	Current differential pressure
MCN	Max. capacity nominal
MCN/R	100 % tank volume or max. possible flow rate at 20 mA signal
SCN	Save capacity nominal. Geometric tank volume up to overflow/gauge pipe.
SCN/R	100 % tank volume at 20 mA signal
UCW	Useable capacity work
Δp100	Maximum differential pressure
Δp0	Minimum differential pressure
PTANK	Nominal tank pressure. Value corresponds to the pressure assigned to the density (liquid) according to the steam pressure graph. If MCN and SCN are calculated on the basis of 1 bar, '1 bar' is displayed for PTANK .
TKZ	Tank/plant identifier
FLOW	Flow rate
ERROR	Error code automatically displayed in the event of an error (see section 10).
OFF	Special signal on opening the equalizing valve, I = 3.6 mA
LOW BAT	Special signals in battery operation
BAT MODE	Battery mode
EMS	Power-saving mode (ESM). 4 to 20 mA signal deactivated.

Table 5: *Operating mode*

Operating mode		Liquid level measurement ¹⁾	Flow rate measurement	Counting flow rate measurement	Differential pressure measurement
Default readings	Default mode	GKZ	GKZ	GKZ	GKZ
	Displayed values	Filling level	Flow rate	Meter reading	Differential pressure
Further display modes	1	ΔP	ΔP	FLOW	$\Delta P0$
	2	MCN (/R)	MCN (/R)	ΔP	$\Delta P100$
	3	SCN (/R)	$\Delta P100$	MCN (/R)	PTANK
	4	UCW	PTANK	$\Delta P100$	TKZ
	5	$\Delta P0$	TKZ	PTANK	
	6	$\Delta P100$		TKZ	
	7	PTank			
	8	TKZ			

¹⁾ Also for operating mode: level measurement in transportation vehicles

7 Start-up

See Fig. 2, Fig. 3 and Fig. 4.

Based on the following valve positions on the valve block upon delivery:

- Open high-pressure shut-off valve (+) and low-pressure shut-off valve (–)
- Closed equalizing valve



NOTICE

In cryogenic applications, the process medium circulates during measurement when the equalizing valve is opened, causing the valve block to ice up.

If necessary, check zero at the dp cell (see section 8.3) and put the device back into operation.



NOTICE

During measurement, the equalizing valve must be closed and the shut-off valves open.

7.1 Liquid level measurement

1. Slowly **open** the low-pressure line.
2. **Close** the equalizing valve or bypass of the valve block.
3. Slowly **open** the high-pressure line.

7.2 Flow rate measurement

Measurement of steam

Make sure that the steam does not have direct contact with the measuring diaphragm of the device. To prevent this, screw off the differential pressure lines below the shut-off valves or valve block and fill the device with water. Alternatively, make sure the shut-off and equalizing valves or valve block are shut off and wait approx. 20 min after start up of the plant (steam in the system) until condensate has collected in the differential pressure lines above the valve and up to the orifice plate.

1. Slowly **open** the high-pressure line.
2. **Close** the equalizing valve or bypass of the valve block.
3. **Open** the low-pressure line.
4. Wait a while. Open both vent screws of the dp cell one after the other until the escaping condensate is free of bubbles. Retighten the screws.
Vent the compensation chambers in the same way. Lightly tap the housing of the indicating unit or the compensation chambers to help let the air escape.
5. Check zero (see section 8.3), and put the device back into operation.

**NOTICE**

When using reverse installation (with the device mounted above the measuring point), the differential pressure lines may partly get drained when depressurizing the system.

When starting up the system again, vent the measurement setup to allow it to fill with condensate.

7.3 Water drainage

When measuring gas, drain condensed water from the separation chambers from time to time.

**NOTICE**

Close valves in the differential pressure lines (valve block) before opening the drain plugs.

Measurement of liquids

1. Slowly **open** the high-pressure line.
2. **Close** the equalizing valve or bypass of the valve block.
3. **Open** the low-pressure line.
4. Undo the vent screw on the dp cell until all the air has escaped. Retighten the screw.
5. Check zero (see section 8.3), and put the device back into operation.

8 Settings

8.1 Write protection

The device has two write-protection functions:

WRITE PROTECTION to prevent the operating data being changed unintentionally.

SPAN PROTECTION as additional write protection for the span settings.

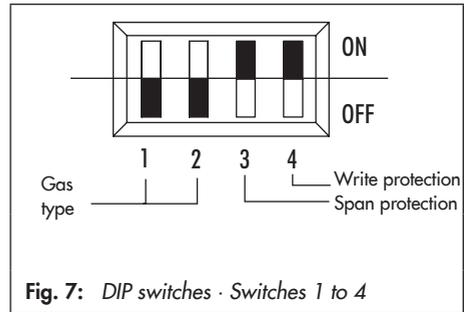
To perform certain operating functions, deactivate the write protection on switch 4 (**OFF**). Remember to reactivate write protection when the operating functions have been completed (**ON**).

8.2 Selecting the gas type

Select the required gas type over the positions of switches 1 and 2 (see Fig. 7).

Table 6: *Selecting the gas type*

Gas 1	1 OFF	2 OFF
Gas 2	1 ON	2 OFF
Gas 3	1 OFF	2 ON
Gas 4	1 ON	2 ON



The gas code for the selected gas (e.g. AR, CO₂, O₂, N₂ etc.) is indicated on the display.

- Select the gas type at the DIP switches as indicated in the table.

The reading is not active; only the selected gas is displayed.

- * Press key to activate the new gas type and to reactivate the reading.



Note:

In flow rate, differential pressure and counting flow rate (Media 6 Z) operating modes, only one gas or medium code is available.

8.3 Checking zero

To check zero, make sure that the pressures in both measuring chambers are identical at atmospheric pressure, i.e. the signal at **connector A** or at the **TEST** terminals must be 4 mA at a differential pressure of $\Delta p = 0$ mbar (see Fig. 8).



NOTICE

In hazardous areas, only use an ammeter approved in accordance with ATEX to measure the current at the test connection (TEST).



Note:

When gas column correction is selected, you need to take into account that the gas columns in the measuring lines reduce the differential pressure because they act in the opposite direction. When the pressures are identical ($\Delta p = 0$ mbar) the device indicates a negative value for the content. An output signal lower than 4 mA is indicated. In this case, readjust zero as described below so that the display shows 0 % = 0000 at $\Delta p = 0$ mbar. The output signal will change but remains below 4 mA due to the adjusted gas column correction.

At $\Delta p = 0$ mbar, the display must indicate 0 % or **0000**.

Correction when the tank is empty

Deactivate write protection by setting switch **4** to **OFF**.

- ↓ Press and hold key until **ZERO** and **X**, **0X** mbar are displayed. Current signal I indicates the current value in mA.
- * Press key to calibrate zero.
- ↓ Release key. 0 mbar is indicated on the display
Current signal I = 4 mA.

Activate write protection by setting switch **4** to **ON**.

Correction when the tank is filled

Zero can also be checked while the system is running, provided the differential pressure lines are equipped with shut-off and equalizing valves. In this case, place the valve block or equalizing valve in the test position to achieve identical pressures in both measuring chambers.

1. Close the shut-off valve in the high-pressure line.
2. Open the equalizing valve or bypass of the valve block.
3. Close the shut-off valve in the low-pressure line.

The valve block is in the test position.

Deactivate write protection by setting switch **4** to **OFF**.

- ↓ Press and hold key until **ZERO** and **X.X** mbar are displayed. The signal I indicates the current value in mbar.
- * Press key to calibrate zero.

- ↓ Release key. 0 mbar is indicated on the display. Signal I = 4 mA corresponds to filling level at 0 mbar differential pressure (see note on gas column correction).

Activate write protection by setting switch **4** to **ON**.

Place the valve block or equalizing valve back into the operating position:

1. Open the shut-off valve in the low-pressure line.
2. Close the equalizing valve.
3. Open the shut-off valve in the high-pressure line.

8.4 Checking the measuring range (span)

Upon delivery, the device is calibrated with a linear characteristic based on the upper measuring range value of the dp cell.

After entering the tank and gas data, the device adopts the tank characteristic. Based on the gas data for the activated gas type, the device calculates the readings and output signal (4 to 20 mA) proportional to the tank content.

In the same way, the device calculates the max. possible differential pressure Δp_{100} in **mbar** for the gas type and the predefined reference height (total height or gauge pipe).

At Δp_{100} , the output signal must be 20 mA.

To check the span, connect the device as shown in Fig. 6.



Note:

When checking the span, activate the gas with the highest density. The values for gases with a lower density are calibrated during this process as well.



Note:

*To calibrate the currently used gas, its reading must be at least 85 % of the adjusted upper measuring range value Δp_{100} . Calibration of the span is subject to particular protection (switch **3**) to prevent the span from being changed unintentionally due to improper operation of the keys.*

Checking the measuring range (span)

Press the key five times. In display mode, the value for the maximum differential pressure Δp_{100} is indicated.

Check zero as described in section 8.3.

- * Press the key five times.

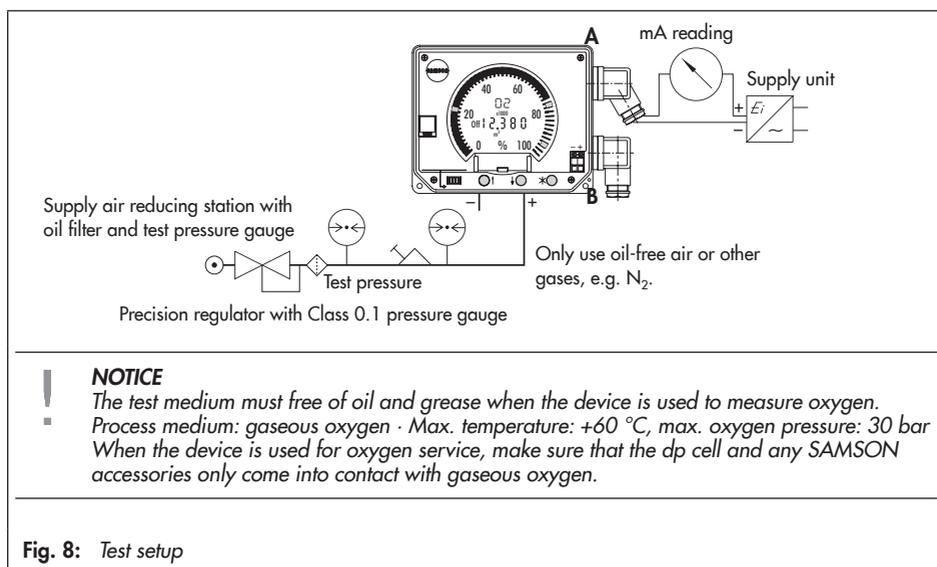
Display: $\Delta p_{100} = X.XXX (x1000)$ mbar.

- Use a precision regulator to apply a test pressure corresponding to the max. differential pressure Δp_{100} while monitoring the pressure gauge.

Set points: $\Delta p = 0$ mbar = 4 mA (see note on gas column correction on page 25).

$$\Delta p_{100} = XXXX \text{ mbar} = 20 \text{ mA.}$$

When the reading and output signal do not match the indicated Δp_{100} value, readjust the upper range value (span).



Adjusting the measuring range (span)

- Check zero as described in section 8.3 on page 25.
- Deactivate write protection and span protection by setting switch **4** and switch **3** to **OFF**.
- * Press the key five times.

Display: $\Delta p100 = X.XXX$ (x1000) mbar.

- Use a precision regulator to apply a test pressure corresponding to the max. differential pressure $\Delta p100$ while monitoring the pressure gauge.
- ↑ Press and hold key until the current measured value is displayed. The signal I indicates the current value in mA.

* Press key to calibrate span. The signal changes to 20 mA, the reading corresponds to $\Delta p100$.

↑ Release key.

Activate write protection and span protection by setting switch **4** and switch **3** to **ON**.

8.5 Adjusting limit contacts

8.5.1 Max. filling limit during operation



Note:

The filling limit during operation pre-set by the software can be modified only in filling level mode at the operating keys.

UCW marker

Deactivate write protection by setting switch **4** to **OFF**.

- * Press and hold key for approx. 8 s until **UCW** is shown at the top and the associated value in % at the bottom of the display.
- * Press key to confirm reading.
- ↓ Press key to reduce value in steps of 1 %, or
- ↑ Press key to raise the value.
- * Press key to confirm the adjusted value.

Activate write protection by setting switch **4** to **ON**.

8.5.2 Alarm contacts A1 and A2

Alarm **A1** and **A2** markers



Note:

In counting flow rate mode (Media 6 Z), only alarm A1 is available.

Both limit contacts are preset by the software to function as either min. or max. contacts. **A1MIN** or **A1MAX** as well as **A2MIN** or **A2MAX** appear on the display. Both contacts must be set and confirmed separately.

Deactivate write protection by setting switch **4** to **OFF**.

- * Press and hold key for approx. 8 s until **UCW** appears at the top of the display.
- ↑ Press keys to switch between **A1** and **A2** contacts.
- * Press key to confirm selected contact.
- ↓ Press key to reduce value in steps of 1 %, or
- ↑ Press key to raise the value.
- * Press key to confirm the adjusted value.
- ↑ Press and hold key for approx. 8 s until **UCW** appears.
- ↑ Press keys to switch to the second contact to be set.
- * Confirm selection and set alarm contact as described above.

Activate write protection by setting switch **4** to **ON**.

8.6 Switching the LCD on and off

The LCD can be switched on or off.

Press and hold the ↑ and ↓ keys for three seconds until the LCD is switched on or off.

8.7 Ammeter function



Note:

The ammeter function is not available during battery operation.

To check the function of connected devices, an output signal of 4 or 20 mA or 22.8 mA can be adjusted for a short period regardless of the current filling level in the tank.

Deactivate write protection by setting switch **4** to **OFF**.

Ammeter 4 mA

- * Press and hold the key.
- ↓ Press key within 8 s and hold it. The output signal reads 4.0 mA.
- ↓ Release key to switch the signal between 4.0 mA and 22.8 mA.
- * Release key. The signal I returns to indicating the mA value corresponding to the tank content.

Ammeter 20 mA

- * Press and hold the key.
- ↑ Press key within 8 s and hold it. The output signal reads 20.0 mA.
- ↑ Release key to switch the signal between 20.0 mA and 22.8 mA.
- * Release key. The signal I returns to indicating the mA value corresponding to the tank content.

Activate write protection by setting switch **4** to **ON**.

8.8 Battery operation

The SAMSON battery supply unit (order no. 1400-9744, not approved for hazardous areas) can be connected to connector A for supply over batteries.

The six 1.5 V LR6 alkaline batteries supply 9 V DC.

The **BAT MODE** (battery mode) is only possible in the operating modes for level measurement and level measurement for transportation vehicles. The 4 to 20 mA output and limit contacts (A1/A2) are deactivated and the device is switched to the power-saving mode (**ESM**).



Note:

Measuring cycles and readings in battery mode:

*Power-saving mode (ESM): **UCW** and **SCN** markers do not blink.*

*Active operation: **USW** and **SNC** markers blink.*

The following features apply to **BAT MODE**:

Device in power-saving mode (**ESM**) - 4 to 20 mA signal deactivated

- Measuring cycle: one measured value per minute
- Filling process: while the tank is being filled, the display switches to active operation.
It returns to **ESM** mode five minutes after the filling process has been completed.
- Bar graph: blinking bar graph function deactivated

- Operation: the display switches back again to **ESM** mode 30 seconds after the device was last operated.
- A power supply lower than 6.6 V causes **LOW BAT** and the measured reading to appear on the display.
- After the power supply has fallen to 6 V, only **LOW BAT** appears on the display without the reading. The batteries need replacing.

On-site operation

Deactivate write protection by setting switch 4 to **OFF**.

- * Press and hold key for approx. 8 s until **UCW** appears at the top of the display.
Press \uparrow or \downarrow key to switch to **BAT MODE**
- * Press key to confirm reading. **BAT MODE** blinks.
Press \uparrow or \downarrow key to select battery operation.
– **ON = 1/OFF = 0** –

- * Press key to confirm setting.

Activate write protection by setting switch 4 to **ON**.

9 Memory pen communication



NOTICE

In hazardous areas, only the intrinsically safe SAMSON memory pen must be connected to the serial interface for data exchange.

9.1 Data transmission using a memory pen

The memory pen is used to store and transfer data. It allows standardized data records (tank type and associated gas data) to be transferred to Media 6 devices on site without requiring a computer by simply plugging the pen into the serial RS-232 interface.

A key tag can be attached to the memory pen for identification.

The user-specific data are transferred to the memory pen either using the TROVIS-VIEW software and a computer or copied from a configured Media 6 device.

Depending on the status set in TROVIS-VIEW, the memory pen can be used to read and write, read only or write only (see Table 7).



Note:

Memory pens with data records or existing configurations for previous Media 6 versions up to firmware version 2.11 are fully compatible with Media 6 devices with firmware version V3.00 and higher.
Such records or configurations do not need to be loaded to TROVIS-VIEW for conversion any longer.

Table 7: Memory pen status

Memory pen status	Display	Process
Write and read	MEMWR or MEMRD	Write data from Media 6 to the memory pen or read Media 6 data from the memory pen
Read only	MEMRD	Read Media 6 data from the memory pen
Write only	MEMWR	Write data from Media 6 to the memory pen

Transfer data from Media 6 to the memory pen or from the memory pen to Media 6

Write and read status

Insert the memory pen into the serial interface.

MEMWR appears on the top of the display.

Press \uparrow or \downarrow key to switch between **MEMWR** (= write data from Media 6 to the memory pen) and

MEMRD = (read data from memory pen to Media 6)

- **MEMRD**: activate write protection by setting switch **4** to **ON**.

* Press to activate setting.

RUN appears on the display. **DONE** indicates that the data are saved to the Media 6. Remove the memory pen.

MEMRD: activate write protection by setting switch **4** to **ON**.

Transfer data from the memory pen to Media 6

Read only status

Deactivate write protection by setting switch **4** to **OFF**.

Insert the memory pen into the serial interface.

MEMRD appears on the top of the display.

* Press key to start reading data.

RUN appears on the display.

DONE indicates that the data are saved to the Media 6. Remove the memory pen.

Activate write protection by setting switch **4** to **ON**.

Transfer data from Media 6 to the memory pen

Write only status

Insert the memory pen into the serial interface.

MEMWR appears on the top of the display.

\uparrow Press key to start writing data.

* Key

RUN appears on the display. **DONE** indicates that the data are saved to the memory pen. Remove the memory pen.

9.2 Communication with computer

The Media 6 can also be operated using a computer connected to the serial interface and the TROVIS-VIEW software.

Refer to Operating Instructions ► EB 9527-2 for more details on operation.



NOTICE

The serial interface is not approved for use in hazardous areas.

Do not connect the device to a computer in this case.

See section 11.1 on page 35.

10 Troubleshooting

Errors on the LCD are indicated by **ERROR** at the top of the display and the associated error code (e.g. **16**) shown at the bottom of the display.

Refer to Table 8 for a list of error codes.

Errors can be reset or confirmed by pressing the * key.

The reaction to the * key differs depending on the error class:

Class E1: restarts the device

Class E2: error is suppressed for 8 s

Class E3: error is reset

Class E4: error is reset

All device errors (class E1 to E3) are logged in an error history, which can be read in TROVIS-VIEW (V3.11 and higher).

The errors are not saved. Only the error currently occurring causes the device to switch to the error mode.

The signal is switched to ≤ 3.6 mA when class E1 and E2 errors occur.

Table 8: Error codes

Error code	Description	Class
1	Oscillating circuit of differential inductor failed	E1
2	Checksum error in RAM	E1
4	Checksum error in FRAM	E1
8	Span outside permissible range	E2
16	Error in tank characteristic	E2
32	Δp sensor calibration	E2
128	Invalid memory pen	E4
256	Checksum error in memory pen	E4
512	Communication error in memory pen	E4
4096	Internal communication error	E1
8192	No factory calibration available	E1
16384	No LCD available	E3
32768	Crystal oscillator failed	E3



Note:

Error codes can also be added up and displayed as a sum of codes, e.g. ERROR 8 and ERROR 16 -> ERROR 24

Calibration error (error code 32)

After pressing the * key to confirm the error, error indication reappears after approx. 8 s. Recalibrate the device within this period.

Span error (error code 8)

or

error in tank characteristic (error code 16)

Troubleshooting using memory pen

If a SAMSON memory pen is available, it can be used to transfer new data to the device while the error is suppressed (approx. 8 s).

Troubleshooting using computer connected over a connecting cable

Communication using a computer over the serial interface also functions in error mode.

After pressing the * key to confirm the error, error indication reappears after approx. 8 s (as described above).

When communicating with a connected computer, the device is reset by copying data.



Tip:

An error status can be reset directly in the "Maintenance" menu item in TROVIS-VIEW.

Other errors

These errors must be confirmed by pressing * key to allow the device to continue operating normally or perform a restart.

11 Servicing explosion-protected devices

If a part of the Media 6 on which the explosion protection is based needs to be serviced, it must not be put back into operation until a qualified inspector has assessed it according to explosion protection requirements, has issued an inspection certificate or given the device a mark of conformity.

Inspection by a qualified inspector is not required if the manufacturer performs a routine test on the device before putting it back into operation. Document the passing of the routine test by attaching a mark of conformity to the device.

Replace explosion-protected components only with original, routine-tested components from the manufacturer.

Devices that have already been used outside hazardous areas and are intended for future use inside hazardous areas must comply with the safety requirements placed on serviced devices. Before being operated inside hazardous areas, test the devices according to the specifications in EN 60079-17: Explosive Atmospheres - Part 17: Electrical installations inspection and maintenance.

11.1 Firmware update

Firmware updates on differential pressure meters currently in operation can be performed as follows:

When updates are performed by a service employee appointed by SAMSON, the update is confirmed on the positioner by the test mark assigned by SAMSON's Quality Assurance.

In all other cases, only plant operator personnel with written approval may perform updates. Updates are to be confirmed by approved personnel on the device.

Laptops and computers connected to the power supply must **not** be used without an additional protective circuit.

This does not apply to laptops in battery operation. In this case, it is assumed that a battery-powered laptop runs briefly for software programming or testing purposes.

Updates outside the hazardous area

Remove the differential pressure meters. Update them outside the hazardous area.

Updates on site

Updates on site are only permitted after the plant operator presented a signed hot work permit.

After updating has been completed, add the current firmware to the nameplate; this can be done using a label.

! NOTICE

In hazardous areas, only meters approved in accordance with ATEX must be used to check the current at the test connection (TEST – +, see Fig. 10).

*The serial interface (Fig. 10) is **not** approved for use in hazardous areas.*

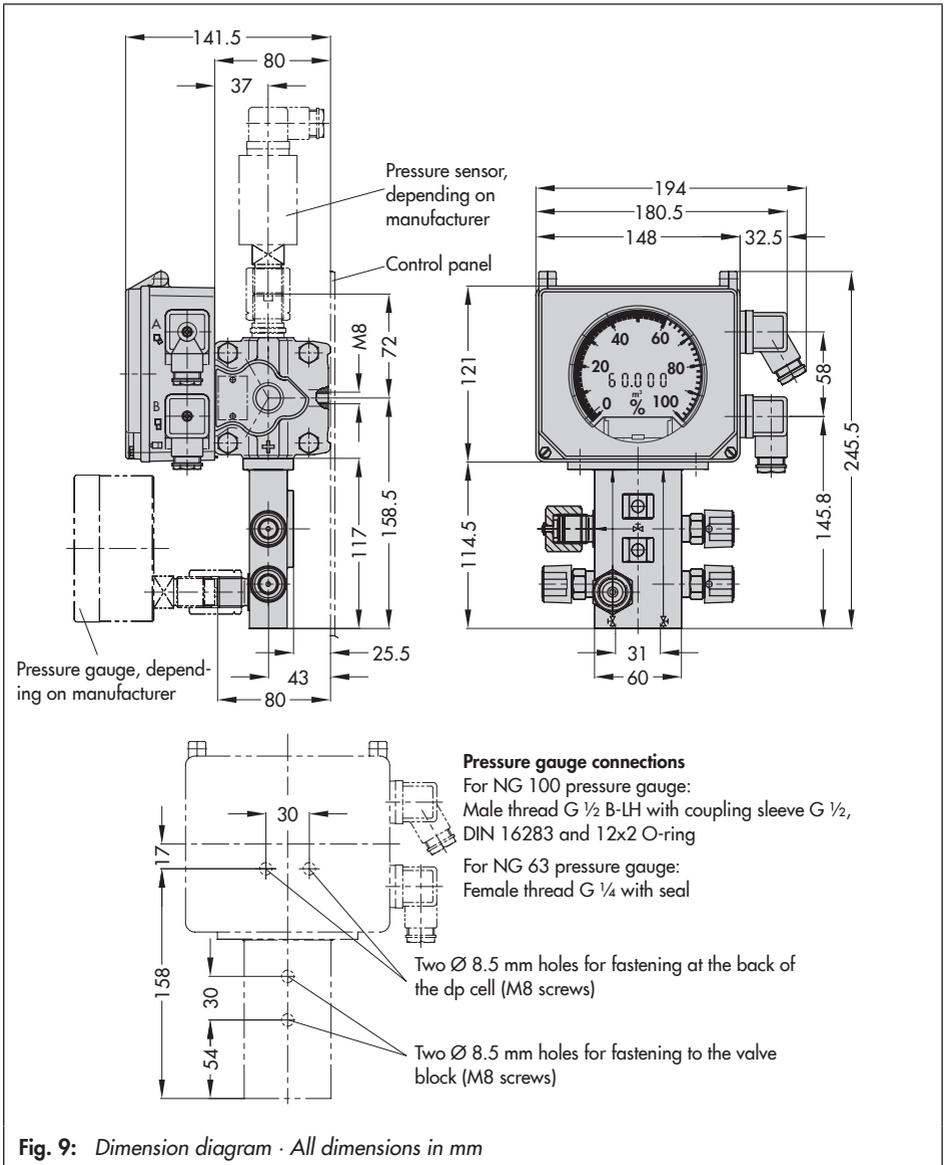
As a result, only the intrinsically safe SAMSON memory pen must be connected to transfer data or proceed as described in section 11.1.

11.2 Maintenance, calibration and work on equipment

Interconnection with intrinsically safe circuits to check or calibrate the equipment inside or outside hazardous areas is to be performed only with intrinsically safe current/voltage calibrators and measuring instruments to rule out any damage to components relevant to explosion protection.

Observe the maximum permissible values specified in the certificates for intrinsically safe circuits.

12 Dimensions





TRANSLATION

EC TYPE EXAMINATION CERTIFICATION

- (1) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres — Directive 94/9/EC
- (3) EC Type Examination Certificate Number
PTB 00 ATEX 2074
- (4) Equipment: Model MEDIA 5006... I Differential Pressure Meter
- (5) Manufacturer: SAMSON AG Mess- und Regeltechnik
- (6) Address: Weindillenstr. 3, D-60314 Frankfurt
- (7) This equipment and any acceptable variation thereof are specified in the schedule to this certificate and the documents referred to therein.
- (8) The Physikalisch-Technische Bundesanstalt, certified body number 0102, in accordance to Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report.

PTB Ex 00-20139

- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with

EN 50014: 1997 EN 50020: 1994

- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

- (11) According to the Directive 94/9/EC, this EC TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of the equipment.

EC Type Examination Certificate without signature and seal are invalid.

This EC Type Examination Certificate without signature and seal are invalid. Extract or changes shall require the prior approval of the Physikalisch-Technische Bundesanstalt.

Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig

ptb06-5006-dec



- (12) The marking of the equipment shall include the following:



Zertifizierungsstelle Explosionschutz Braunschweig, 29. June 2000
By order

(Signature) (Seal)

Dr. Ing. U. Johannsmeyer
Regierungsdirektor

EC Type Examination Certificate without signature and seal are invalid.
This EC Type Examination Certificate without signature and seal are invalid. Extract or changes shall require the prior approval of the Physikalisch-Technische Bundesanstalt.

Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig

ptb16-5006-dec

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

(1.3) **S c h e d u l e**

(1.4) **EC TYPE EXAMINATION CERTIFICATE No. PTB 00 ATEX 2074**

(1.5) **Description of Equipment**

The Model MEDIA 5006c-1 Differential Pressure Meter serves for measuring and indicating the differential pressure, or measured variables derived therefrom, in gases or liquids.

The Model MEDIA 5006c-1 Differential Pressure Meter is a passive two-terminal network that may be connected to all certified intrinsically safe circuits, provided the permissible maximum values of U_i and P are not exceeded.

The device may be used in hazardous and non hazardous locations.

The correlation between temperature classification and permissible ambient temperature range is shown in the table below.

Temperature class	Permissible ambient temperature range
T6	-20°C ... 60°C
T5	-20°C ... 70°C
T4	-20°C ... 80°C

Electrical data

Maximum values:
Signal circuit (plug A)

Type of protection: Intrinsic safety EX_i in IIC
only for connection to a certified intrinsically safe circuit

- U_i ≤ 28 V
- I_i ≤ 115 mA
- P_i ≤ 1 W
- C_i ≤ 5,3 nF U_i ≤ 30 µH

Maximum values:
Switches limit switches (plug B) only for connection to a certified intrinsically safe circuit

- U_i ≤ 20 V
- I_i ≤ 60 mA
- P_i ≤ 250 mW
- C_i ≤ 5,3 nF U_i = negligible

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Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

(1.6) Test Report **PTB EX.00-20139**

(1.7) **Special conditions for safe use**

None

(1.8) **Special Health and Safety Requirements**

In compliance with the standards specified above

Braunschweig, 29. June 2000

Zertifizierungsgesellschaft Explosionsschutz
By order

(Signature) (seal)

Dr.-Ing. U. Johannsmeyer
Regierungsreferent

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Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

TRANSLATION

ADDENDUM No.: 1

in compliance with Directive 94/9/EC Annex III Clause 6
to the **EC Type Examination Certificate PTB 00 ATEX 2074**

Equipment: Model Media 5006... I Differential Pressure Meter

Marking:  II 2 G Ex ia IIC T6

Manufacturer: SAMSON AG

Address: Weismüllerstr. 3, D-60314 Frankfurt, Germany

Description of the additions and modifications

In future the Model Media 5006... I Differential Pressure Meter may be manufactured in compliance with the certification documents identified in the associated test report.

The circuit was modified for functional reasons.

The modifications related to the design and construction.

The electrical data are changed as follows:

Electrical data

Signal circuit
(connector A)

Maximum values:
 $U = 28 \text{ V}$
 $I_L = 115 \text{ mA}$
 $P_L = 1 \text{ W}$
 $C_L = 9.3 \text{ nF}$
 $L_L = \text{negligible}$

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PTB24Add-1.docx

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

Addendum No. 1 to the EC Type Examination Certificate PTB 00 ATEX 2074

Software limit
 switches (connector B)
 Type of protection: Intrinsic Safety EEx ia IIC
 only for connection to a certified intrinsically safe
 circuit

Maximum values:

$U = 20 \text{ V}$
 $I = 60 \text{ mA}$
 $P = 250 \text{ mW}$
 $C = 5.3 \text{ nF}$
 $L = \text{negligible}$

All the other data apply without change also to this Addendum No. 1.

Test report: **PTB EX 01-21060**

Zertifizierungsstelle Explosionsschutz
 By order

Braunschweig, 07 June 2001

(Signature) (Seal)

Dr.-Ing. U. Johannsmeyer
 Regierungsdirektor

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Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig

TRANSLATION

ADDENDUM N 6: 2

in compliance with Directive 94/9/EC Annex III Class 6
to the EC Type Examination Certificate PTB 00 ATEX 2074

ADDENDUM No. 2 to the EC Type Examination Certificate PTB 00 ATEX 2074

Software limit contacts ...
(plug B)

Type of protection: Intrinsic safety EEx ia IIC
(plug B) only for connection to a certified
intrinsically safe circuit.

Equipment:

Model Media 5006-1 Differential Pressure Gauge



Marking: IIG; EEx ia IIC T6

Manufacturer: SAMSON AG Messe- und Regeltechnik

Address: Weismillstr. 3, D-40014 Frankfurt, Germany

Description of the additions and modifications

The Model Media 5006-1 Differential Pressure Gauge is permitted to be manufactured in the future also in compliance with the documents specified in the test records included in the test report.

The modifications relate to the internal and external construction.

All the other data apply also to this Addendum No. 2 without change.

Electrical data:

Signal circuit:

Type of protection: Intrinsic safety EEx ia IIC
Only for connection to a certified intrinsically
safe circuit.

Maximum values:

U_i = 28 V
I_n = 115 mA

P_m = 1 W

C_i = 5.3 nF

L_i = 8 µH

Serial interface circuit:

Type of protection EEx ia IIC
(internal circuit without external connection
options)

Test report: PTB Ex 06-26073

Zertifizierungsstelle: Explosionsverschuz
By order

Braunschweig, 24 August 2006

(Seal)

(Signature)

Dr.-Ing. U. Johannsmeyer
Director and Professor

PTB type examination Certificates without signature and seal are invalid.
This EC Type Examination Certificate is not valid for the purpose of issuing a certificate of approval for the use of the product in the field.
For more information, please contact the Physikalisch-Technische Bundesanstalt.

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For more information, please contact the Physikalisch-Technische Bundesanstalt.

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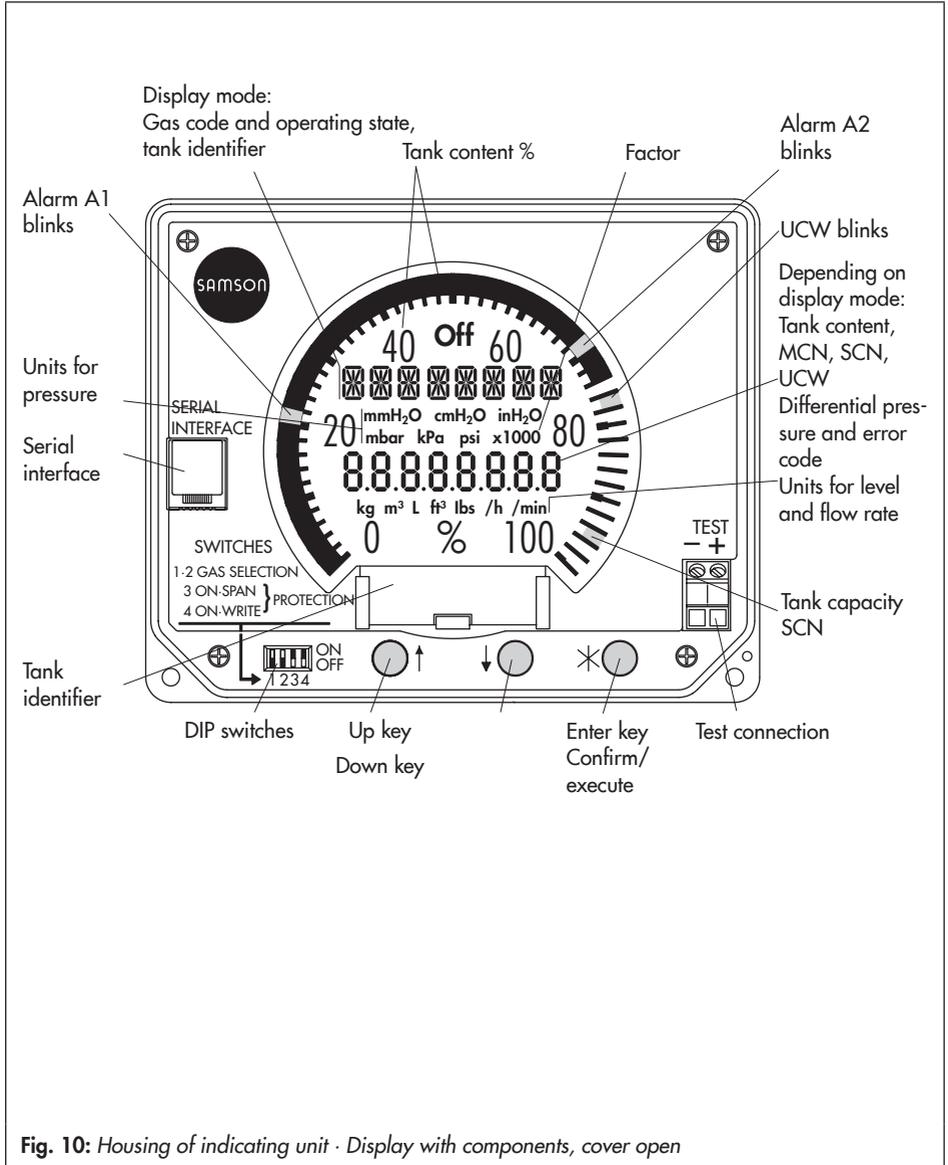


Fig. 10: Housing of indicating unit · Display with components, cover open



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