

MOUNTING AND OPERATING INSTRUCTIONS



EB 9510 EN

Translation of original instructions



Media 7 Differential Pressure Meter (Type 5007-1)
with remote data transmission

Firmware version 1.03.11

CE EAC Ex
certified

Edition January 2021

Note on these mounting and operating instructions

These mounting and operating instructions assist you in mounting and operating the device safely. The instructions are binding for handling SAMSON devices. The images shown in these instructions are for illustration purposes only. The actual product may vary.

- For the safe and proper use of these instructions, read them carefully and keep them for later reference.
- If you have any questions about these instructions, contact SAMSON's After-sales Service (aftersaleservice@samsongroup.com).



Documents relating to the device, such as the mounting and operating instructions, are available on our website at www.samsongroup.com > **Service & Support > Downloads > Documentation.**

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 and measures

Intended use

The Media 7 Differential Pressure Meter is a microprocessor-controlled transmitter with dp cell for measuring, indicating and transmitting the differential pressure, pressure or measured variables derived from them. The device is suitable for cryogenic gases, liquids, gases and vapors. The device is designed to operate under exactly defined conditions (e.g. operating pressure, process medium, temperature). Therefore, operators must ensure that the device is only used in operating conditions that meet the specifications used for sizing the device at the ordering stage.

The differential pressure meter must only be operated in hazardous areas in Zone 1 or higher. The measurement of flammable or explosive media is only permitted with the following approvals:

- Type 5007-1-120x (ATEX): II 1/2G Ex ia IIB T4 Ga/Gb
- Type 5007-1-121x (IECEX): Ex ia IIB T4 Ga/Gb (IECEX)

In case operators intend to use the device in other applications or conditions than specified, contact SAMSON.

SAMSON does not assume any liability for damage resulting from the failure to use the device for its intended purpose or for damage caused by external forces or any other external factors.

➔ Refer to the technical data for limits and fields of application as well as possible uses.

Reasonably foreseeable misuse

The differential pressure meter is **not** suitable for the following applications:

- Use outside the limits defined during sizing and by the technical data

Furthermore, the following activities do not comply with the intended use:

- Use of non-original spare parts
- Performing maintenance activities not described in these instructions

Qualifications of operating personnel

The device must be mounted, started up and serviced by fully trained and qualified personnel only; the accepted industry codes and practices are to be observed. 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 hazards due to their specialized training, their knowledge and experience as well as their knowledge of the applicable standards.

Safety instructions and measures

Explosion-protected versions of this device must 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.

Personal protective equipment

We recommend wearing the following protective equipment depending on the process medium:

- Protective clothing, gloves, eye protection and respiratory protection in applications with hot, cold and/or corrosive media
- ➔ Check with the plant operator for details on further protective equipment.

Revisions and other modifications

Revisions, conversions or other modifications of the product are not authorized by SAMSON. They are performed at the user's own risk and may lead to safety hazards, for example. Furthermore, the product may no longer meet the requirements for its intended use. Use of the device is no longer permitted in this case.

Warning against residual hazards

To avoid personal injury or property damage, operators and operating personnel must prevent hazards that could be caused in the device by the process medium and operating pressure by taking appropriate precautions. Plant operators and operating personnel must observe all hazard statements, warning and caution notes in these mounting and operating instructions, especially for installation, start-up and service work.

Responsibilities of the operator

Operators are responsible for proper use and compliance with the safety regulations. Operators are obliged to provide these mounting and operating instructions to the operating personnel and to instruct them in proper operation. Furthermore, operators must ensure that operating personnel or third parties are not exposed to any danger.

Responsibilities of operating personnel

Operating personnel must read and understand these mounting and operating instructions as well as the specified hazard statements, warning and caution notes. Furthermore, the operating personnel must be familiar with the applicable health, safety and accident prevention regulations and comply with them.

Referenced standards, directives and regulations

Devices with a CE marking fulfill the following requirements of the Directives:

- Type 5007-1: 2014/30/EU, 2014/35/EU, 2011/65/EU
- Type 5007-1-1x0: 2014/30/EU, 2014/34/EU, 2011/65/EU
- Type 5007-1 GSM: 2014/53/EU, 2011/65/EU

Devices with an EAC marking fulfill the following requirements of the Regulations:

- Type 5007-1: TR CU 020/2011

See the 'Certificates' section for the declarations of conformity and EAC certificates.

Referenced documentation

The following documents apply in addition to these mounting and operating instructions:

- Operating Instructions 'Media 7 Differential Pressure Meter – Configuration with TROVIS-VIEW' ► EB 9510-2
- Mounting and operating instructions for mounted pipeline valves (strainers, shut-off valves etc.)
- For oxygen service: Manual ► H 01

1.1 Notes on possible severe personal injury

DANGER

Risk of fatal injury due to electric shock (230 V version).

- Before connecting wiring, performing any work on the device or opening the device, disconnect the voltage supply and protect it against unintentional reconnection.
- Only use power interruption devices that are protected against unintentional reconnection of the power supply.

Risk of fatal injury due to the ignition of an explosive atmosphere.

Incorrect installation, operation or maintenance of the differential pressure meter in potentially explosive atmospheres may lead to ignition of the atmosphere and ultimately to death, even with a harmless supply voltage.

- For mounting and electrical installation in hazardous areas, observe the explosion protection approvals as well as the relevant electrotechnical regulations and the accident prevention regulations that apply in the country of use. EN 60079-14 applies in Europe.
- Do not connect the electrical supply before mounting is completed and any unused cable entries have been sealed.
- Installation, operation or maintenance of the differential pressure meter must only be performed by personnel with qualifications according to Clause 4.5 of IEC 60079-14 who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

Risk of fatal injury as a result of electrostatic discharge at the housing.

The housing of the differential pressure meter is made of polycarbonate and may become electrostatically charged when handled incorrectly. An electric spark generated by electrostatic discharge may lead to ignition of a potentially explosive atmosphere and cause death.

- Ensure that the device, cables and other plant components cannot rub against each other.
- Do not rub dry the housing surface of the differential pressure meter.
- Only use a damp cloth or wipes (e.g. with diluted mild soap or detergent) to clean the housing surface.

⚠ DANGER**Risk of bursting in pressure equipment.**

The dp cell of the differential pressure meter and pipelines are pressure equipment according to Directive 2014/68/EU. Improper opening can lead to leakage or bursting of plant or device components.

- Before starting any work on the differential pressure meter, depressurize all plant sections affected as well as the dp cell.
- Drain the process medium from all the plant sections affected as well as the dp cell.
- Wear protective clothing as specified in the material safety data sheet (MSDS) for the process medium.

Risk of injury due to incorrect handling of oxygen or cryogenic gases in applications.

The differential pressure meter is frequently used for oxygen service or applications with cryogenic gases (see the 'Markings on the device' section). Oxygen is a hazardous substance, which reacts quickly, leading to combustion and explosions. Contact with cryogenic gases causes severe frostbite and cold burns (cryogenic burns). Operating personnel must be trained for these applications. Unqualified operating personnel expose themselves and others to an increased risk of injury.

- Operating personnel must be sufficiently trained and be made aware of the hazards in applications involving oxygen or cryogenic gases.
- When replacing parts that come into contact with gaseous oxygen, wear suitable gloves and do not contaminate any parts with oil or grease.
- Instructions and information on how to safely handle devices for oxygen service can be found in the Manual ► H 01.

1.2 Notes on possible personal injury

⚠ WARNING

Incorrect electrical connection will render the explosion protection unsafe.

- Only operate the device with an intrinsically safe power supply while complying with the maximum permissible values for U_i or U_{0i} , I_i or I_0 and P_i or P_0 .
- Adhere to the terminal assignment and correct polarity.
- Do not undo the enameled screws.

Risk of personal injury due to residual process medium inside the dp cell.

While working on the dp cell, residual process medium can escape and, depending on its properties, may lead to personal injury, e.g. (chemical) burns.

- Drain the process medium from all the plant sections concerned and the dp cell, if possible.
- Wear protective clothing, safety gloves and eye protection.

Risk of personal injury due to process medium escaping from a damaged dp cell.

The long-term durability of all parts (including the dp cell) that come into contact with the process medium must be ensured.

- Only use process media which, according to their properties, are compatible with the materials used in the device.
- Observe the material numbers listed in the technical data as well as the material safety data sheets (MSDS) of the process media.

Risk of burn injuries due to hot or cold components and pipelines.

Depending on the process medium, valve components and pipelines may get very hot or cold and cause burn injuries.

- Allow components and pipelines to cool down or warm up to the ambient temperature.
- Wear protective clothing and safety gloves.

1.3 Notes on possible property damage

! NOTICE

Risk of dp cell damage due to unsuitable medium properties.

The device is designed for process media with defined properties.

- Only use process media suitable for the device version according to the article code (see the 'Markings on the device' section).

Risk of damage to the electronics due to the incorrect connection of the electrical power supply.

The differential pressure meter is designed to operate under exactly defined electrical conditions.

- Observe the permissible tolerances of the supply voltage.
- For wiring, you are required to observe the relevant regulations concerning device safety and electromagnetic compatibility.

Risk of damage to the device due to incorrect mounting position.

- Mount the device in the upright position only.

Risk of damage to components for optional additional functions due to incorrect handling during installation.

To tailor the differential pressure meter to a particular task, it can be fitted with option modules, a GSM module and a standby power supply. Special care needs to be taken when inserting and removing these components.

- Before inserting or removing the components for optional additional functions, disconnect the power supply.
- Observe the ESD requirements according to IEC 61340-5-1.

Risk of damage to the dp cell due to incorrect use of oxygen.

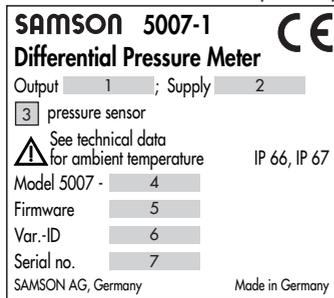
When liquid oxygen is used as the process medium, the permissible temperature range is exceeded.

- When the device is used for oxygen service, only allow the dp cell and any SAMSON accessories (e.g. valve block) to come into contact with **gaseous oxygen**.
- Do not allow the oxygen pressure to exceed the maximum permissible limit of 50 bar.

2 Markings on the device

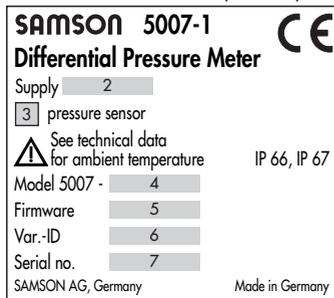
2.1 Nameplate

Two-wire version (without explosion protection):



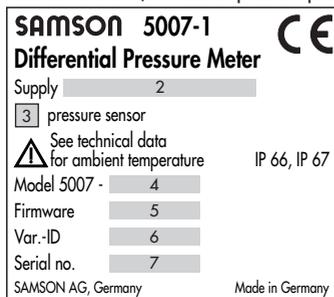
- 1 Signal range
- 2 Electric power supply
- 3 Pressure sensor (yes/no) ¹⁾
- 4 Model number
- 5 Firmware version
- 6 Configuration ID
- 7 Serial number ²⁾
- 8 Type of protection for explosion-protected devices
- 9 Temperature limits in the test certificates for explosion-protected devices
- 10 Optional additional function
- 11 Ordering number
- 12 Pressure rating
- 13 Measuring range
- 14 International Mobile Equipment Identity ³⁾
- 15 QR code
- 16 Activation code

24 V version (without explosion protection):



- 1) No pressure sensor is used in devices for use with flammable gases. Therefore, it is not specified on the nameplate.
- 2) The first two figures of the serial number in reverse order indicate the year of manufacture (example: serial number 71xxxxx → Year of manufacture = 2017).
- 3) 15-digit serial number for unique identification of mobile devices

230 V version (without explosion protection):



Markings on the device

Explosion-protected version (two-wire version only): dp cell:

SAMSON 5007-1		CE 0044
Differential Pressure Meter		
Output <input type="text" value="1"/>	; Supply <input type="text" value="2"/>	
<input type="checkbox"/> 3	pressure sensor	
<input type="text" value="8"/>		
<input type="text" value="9"/>		
 *See EU Type Exam. Certificate for further values -20 °C ≤ Ta* ≤ +70 °C IP 66, IP 67		
Model 5007 -	<input type="text" value="4"/>	
Firmware	<input type="text" value="5"/>	
Var.-ID	<input type="text" value="6"/>	
Serial no.	<input type="text" value="7"/>	
SAMSON AG, Germany		Made in Germany

SAMSON 5007		
<input type="text" value="12"/>		
<input type="radio"/>	Var.-ID <input type="text" value="6"/>	<input type="radio"/>
Serial no.	<input type="text" value="7"/>	
Nominal range	<input type="text" value="13"/>	mbar

GSM module:

SAMSON 5007 Option module [GSM]		
IMEI:	<input type="text" value="14"/>	<input type="text" value="15"/>
Firmware	<input type="text" value="5"/>	
Model	<input type="text" value="4"/>	
Activation-Code:	<input type="text" value="16"/>	

Option module:

SAMSON 5007-1	
<input type="text" value="10"/>	
<input type="text" value="1"/>	
Module	<input type="text" value="11"/>
<input type="text" value="8"/>	

2.2 Label on devices for oxygen service

Differential pressure meters intended to measure gaseous oxygen are labeled as follows:



Cleaned and degreased for oxygen according to:
ISO 23208 - cleaned oxygen
Inspection procedure according to appendix: A.2 and A.3

These versions are cleaned and assembled under special conditions.

2.3 Firmware versions

Firmware revisions	
Old	New
1.00.05	1.01.07
	<ul style="list-style-type: none"> • AO options (filling level, differential pressure, pressure sensor): test mode and fault alarm output • Two-wire output: test mode and fault alarm output • Battery voltage reading • Option module wizard
1.01.07	1.02.07
	<ul style="list-style-type: none"> • Option module wizard for AI, AIA and AO options • New 'Power line frequency' parameter to filter out any disturbances • Italian, French and Spanish added as menu and display language • Restricted offline configuration of options • Default setting of write protection (data transmission module) changed (inactive) • Zero and span calibration for the measured value of the analog input
1.02.07	1.03.09
	<ul style="list-style-type: none"> • Zoomed view of the display reading during tank filling • Automatic density correction for the medium • Changes made to the tank and medium database • Power supply unit (100 to 230 V AC) added • Increased measuring accuracy of the analog inputs • Improved operation • Russian and Turkish added as menu and display language
1.03.09	1.03.11
	Internal revisions

2.4 Article code

Media 7	5007-1- x x x x x x x x x x 0 x x x x x x x x												
With 4" LCD													
Explosion protection													
Without	0	0	0										
ATEX: II 2G Ex ia IIB T4 Gb	1	1	0										
IECEX: Ex ia IIB T4 Gb	1	1	1										
ATEX: II 1/2G Ex ia IIB T4 Ga/Gb	1	2	0										
IECEX: Ex ia IIB T4 Ga/Gb	1	2	1										
Energy supply													
Two-wire				0									
Power supply unit, 24 to 36 V DC				1									
Power supply unit, 100 to 230 V AC				2									
Option module slot 1													
Without				0									
AO: Analog output				5									
AI: Analog input				4									
AIA: Analog input active				6									
Option module slot 2													
Without				0									
AO: Analog output				5									
AI: Analog input				4									
AIA: Analog input active				6									
Option module slot 3													
Without				0									
AO: Analog output				5									
AI: Analog input				4									
AIA: Analog input active				6									
Option module slot 4													
Without				0									
AO: Analog output				5									
AI: Analog input				4									
AIA: Analog input active				6									

Media 7	5007-1- x x x x x x x x 0 x x x x x x x									
GSM module with antenna										
Without	0									
GSM module with antenna (including SIM card)	2									
dp cell material										
Brass	0									
Measuring range										
160 mbar		0	2							
600 mbar		0	5							
1600 mbar		0	7							
3600 mbar		0	9							
Diaphragm										
ECO: -40 to +80 °C, REACH compliant						0				
Version										
Version for cryogenic gases according to DIN EN ISO 23208, packed in plastic bags, free of oil and grease according to company standard WN 1.34-2 Sheets 1 and 1.1								1	1	
Version for oxygen according to DIN EN ISO 23208, packed in plastic bags, free of oil and grease according to company standard WN 1.34-2 Sheets 1 and 1.1								1	2	
Pressure rating										
50 bar, version for oxygen service, without valve block										1
60 bar, without valve block										2
50 bar, with valve block PN 50										3
Pressure sensor										
Without										1
With, non-flammable gases (Ex zone 0)										2

3 Design and principle of operation

The differential pressure meter is a microprocessor-controlled transmitter with dp cell for measuring, indicating and transmitting the differential pressure, pressure or measured variables derived from them in stationary pressure vessels and in transportation vehicles. The device is suitable for cryogenic gases, liquids, gases and vapors. Measuring ranges between 0 to 160 mbar and 0 to 3600 mbar, nominal pressure PN 60.

The device mainly consists of a dp cell (1), housing with transmitter and a display (6).

The differential pressure $\Delta p = p_1 - p_2$ is converted into an electric signal in the dp cell by a sensor and processed in the microcontroller (2) which controls the display and D/A converter in the two-wire version.

Four capacitive keys (4) are used to operate the differential pressure meter and allow users to navigate within the menu on the display.

The modular design of the differential pressure meter allows it to be tailored to meet specific requirements (see section 3.4).

Operating mode

- **Differential pressure measurement** between flow and return flow pipe as well as pressure drop measurement across valves and filters
- **Liquid level measurement** in stationary pressure vessels and transportation vehicles

3.1 Configuration using the TROVIS-VIEW software

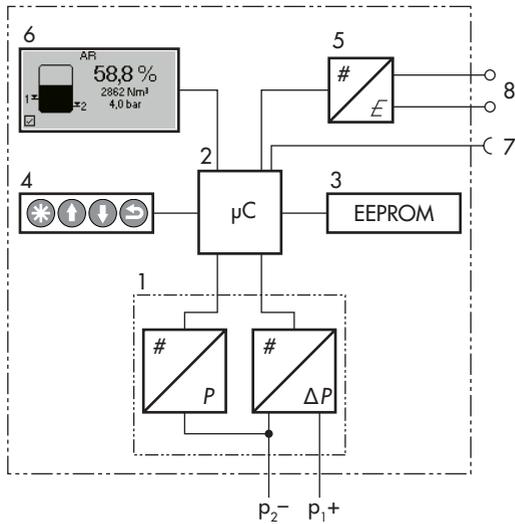
The differential pressure meter can be configured with SAMSON's TROVIS-VIEW Software (version 4). For this purpose, the differential pressure meter has a digital interface (SSP) to allow the USB port of a computer to be connected to it using an adapter cable (order no. 1400-9740).

The TROVIS-VIEW software enables the user to easily configure the differential pressure meter as well as view process parameters online.

i Note

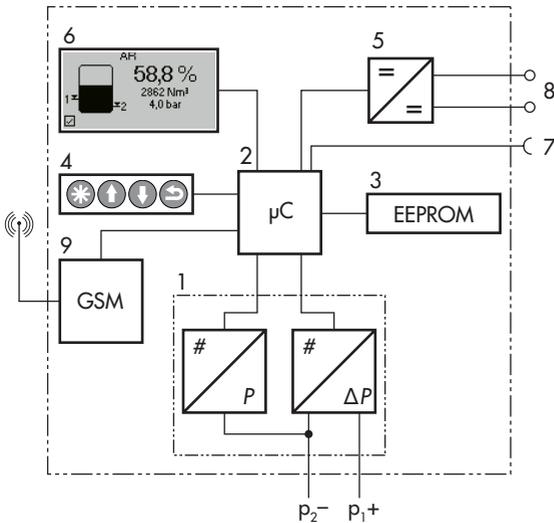
TROVIS-VIEW can be downloaded free of charge from our website at www.samsongroup.com > Service & Support > Downloads > TROVIS-VIEW.

Design and principle of operation



- 1 dp cell
- 2 Microcontroller
- 3 Data memory
- 4 Operating keys
- 5 D/A converter
- 6 Display
- 7 Serial interface
- 8 $I_A = 4$ to 20 mA

Fig. 3-1: Media 7 · Block diagram of two-wire version



- 1 dp cell
- 2 Microcontroller
- 3 Data memory
- 4 Operating keys
- 5 24 V power supply unit
- 6 Display
- 7 Serial interface
- 8 $U_B = 24$ to 36 V
- 9 GSM module

Fig. 3-2: Media 7 · Block diagram of 24 V version

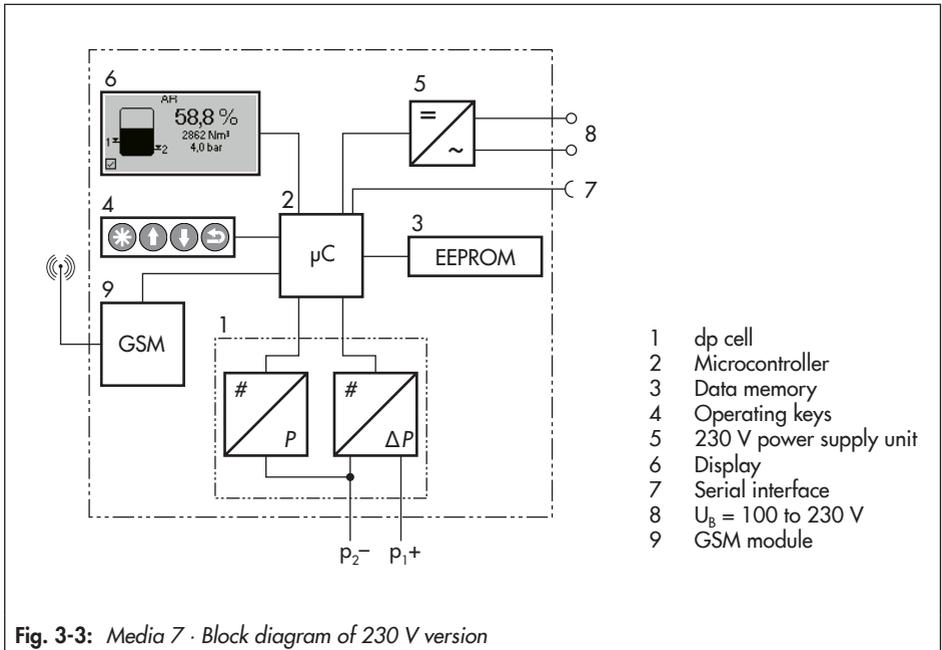


Fig. 3-3: Media 7 · Block diagram of 230 V version

3.2 Versions

3.2.1 Two-wire version

- Type 5007-1-000x...

To operate the two-wire version, a transmitter supply voltage for the 4 to 20 mA current loop is required ($U_B = 12$ to 36 V DC for the version without explosion protection).

- Type 5007-1-1xx0....

To operate the two-wire version, a transmitter supply voltage for the 4 to 20 mA current loop is required ($U_B = 12$ to 28 V DC for the version with explosion protection).

The current loop must be supplied only by a supply unit which has an equivalent or higher explosion protection approval. Its electrical connection data must be lower or identical to those in the explosion protection certificate of the Type 5007-1-1xx0.. device.

3.2.2 24 V version

- Type 5007-1-xxx1...

The 24 V version has a wider ambient temperature range. Due to a more powerful input signal, it has additional functions, such as an illuminated display and remote data transmission through the use of a retrofittable GSM module.

3.2.3 230 V version

- Type 5007-1-xxx2...

Due to a more powerful input signal, the 230 V version has additional functions, such as an illuminated display and remote data transmission through the use of a retrofittable GSM module.

3.3 Device overview and operating controls

→ See Fig. 3-4

- 1 Display
- 2 Confirm key
- 3 Up arrow key
- 4 Down arrow key
- 5 Back key
- 6 Error LED
- 7 Battery LED (SPS)
- 8 Status LEDs for GSM module
- 9 Signal input terminal
- 10 Slot for GSM module
- 11 SSP interface
- 12 Slots 1 to 4 for option modules
- 13 SPS: standby power supply
- 14 Grounding connection

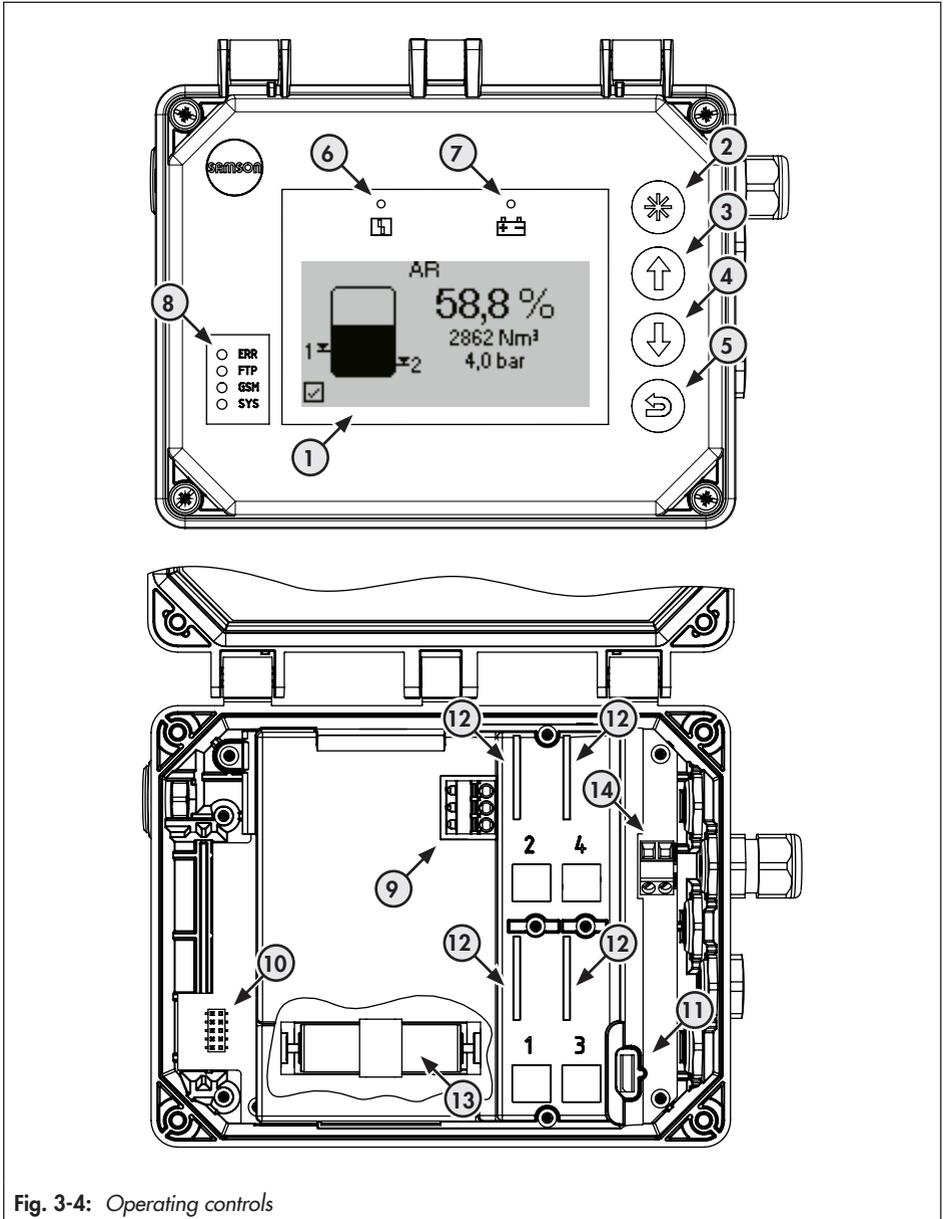


Fig. 3-4: Operating controls

3.4 Optional additional function

The modular design of the differential pressure meter allows it to be tailored to meet specific requirements.

3.4.1 Option modules

Additional functions are available for the differential pressure meter by adding option modules:

– **AO: Analog output**

The **Analog output** option module issues an internal measuring signal (4 to 20 mA) representing the tank pressure or, depending on the operating mode, the filling level or differential pressure. The analog output parameters can be configured.

The AO: Analog input option module is available with explosion protection.

The AO: Analog input option module can be combined with the **two-wire, 24 V** and **230 V** versions of the differential pressure meter.

– **AI: Analog input**

The **AI: Analog input** option module accepts 4 to 20 mA signals from filling level or pressure sensors of external equipment with their own power supply.

This module works passively and has galvanically isolated inputs.

The AI: Analog input option module can be combined with the **24 V with GSM module** and **230 V with GSM module**

versions of the differential pressure meter.

– **AIA: Analog input active**

The **AIA: Analog input active** option module accepts 4 to 20 mA signals from filling level or pressure sensors of external equipment.

This module works actively and has a 12 V output to power external equipment that do not have its own power supply.

The AIA: Analog input active option module can be combined with the **24 V with GSM module** and **230 V with GSM module** versions of the differential pressure meter.

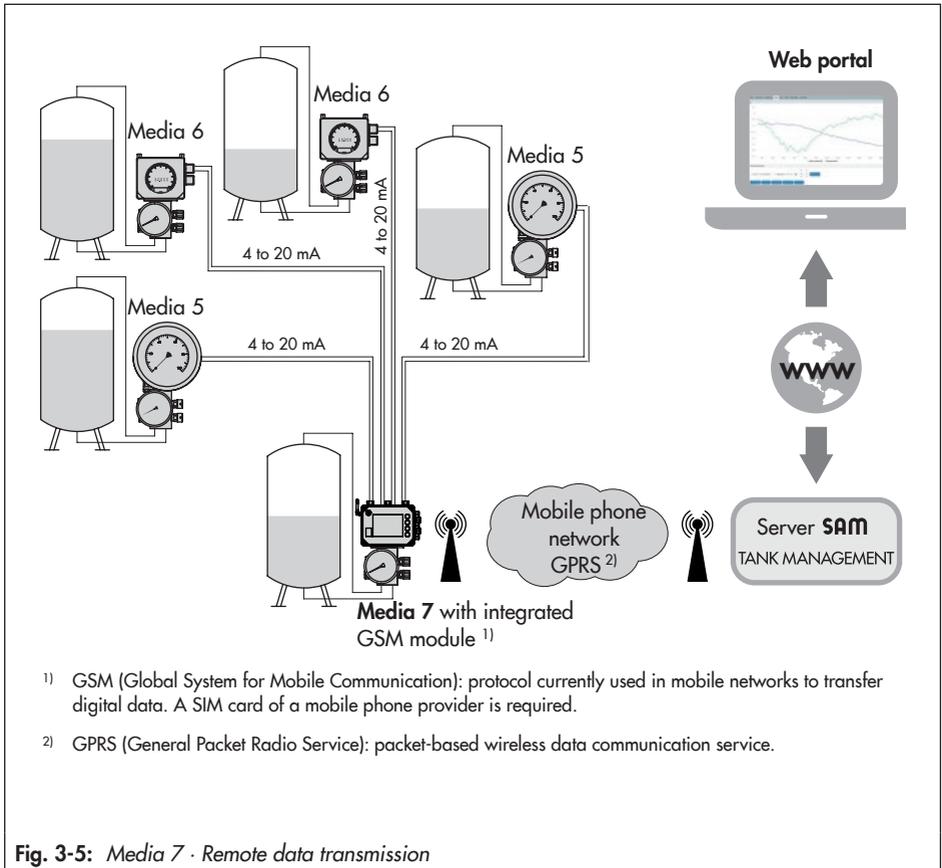
3.4.2 GSM module

A GSM module is available for the 24 V and 230 V versions of the differential pressure meter. The GSM module establishes connection to the SAM TANK MANAGEMENT web interface over a mobile network. It ensures a secure data exchange, polling of states as well as monitoring and operation of the differential pressure meter (see Fig. 3-5).

When the differential pressure meter is ordered with the GSM module, it is already installed upon delivery. The GSM module can also be retrofitted (see the 'Installation' section).

i Note

The GSM module does not function when the differential pressure meter is operated with the standby power supply (SPS).



3.4.3 Power supply unit with standby power supply (SPS)

The power supply units include a battery compartment for a 1.5 V battery which provides standby power supply upon power failure.

3.5 Technical data

Table 3-1: General technical data

Media 7 Differential Pressure Meter (All pressure in bar (gauge); all errors and deviations are specified in % of the adjusted measuring span)				
Mounting orientation	Upright with display facing sideways			
Principle of operation	The differential pressure at the diaphragm is converted into an electric signal by the AMR system.			
Pressure rating	PN 60, overloadable on one side up to 60 bar Oxygen: PN 50, overloadable on one side within the adjusted system pressure			
Characteristic	Differential pressure proportional to the tank geometry			
Deviation from terminal-based linearity	<±1.6 % (including hysteresis)			
Sensitivity	≤0.25 % or <±0.5 % depending on measuring span selected			
Effect of static pressure	<0.03 %/1 bar			
Display				
Display	LCD 128 x 64 (90 x 40 mm)			
Storage temperature	-40 to approx. +80 °C			
Operating temperature	Two-wire version: -20 to approx. +70 °C ¹⁾ 24 V version: -40 to +70 °C 230 V version: -20 to approx. +70 °C ¹⁾			
Measuring range in mbar	0 to 160	0 to 600	0 to 1600²⁾	0 to 3600²⁾
Adjustable measuring span in mbar				
Class ±1 %	-	≤630 to ≥150	≤1700 ²⁾ to ≥320	≤3800 ²⁾ to ≥720
Class ±1.6 %	≤170 to ≥60	≤150 to ≥120	-	-
Effect of ambient temperature in the range from -20 to +70 °C				
On zero in %/10 K	<±0.4	<±0.1	<±0.1	<±0.1
On span in %/10 K	<±0.4	<±0.1	<±0.1	<±0.1
Internal absolute pressure sensor				
Measuring range	0 to 60 bar			
Deviation from terminal-based linearity	<±1.6 %			
Effect of ambient temperature	≤0.018 % (within the range from -20 to +70 °C)			
Environmental influences				
Storage acc. to EN 60721-3-1 (long-term storage)	1K5 (air temperature -40 to +80 °C); 1M3 (The following restriction applies to GSM module: air temperatures -30 to +75 °C)			
Transportation acc. to EN 60721-3-2	2K4 (air temperature -40 to +40 °C in ventilated enclosures, up to +70 °C in unventilated enclosures), 2M1 (The following restriction applies to GSM module for low air temperatures down to -30 °C)			

Operation according to EN 60721-3-4 (stationary use at non-weather-protected locations)	4K4 (with restrictions: air temperature -40 to $+55$ °C, temperature inside the housing must not exceed $+70$ °C when exposed to direct sunlight); 4M4 – The display and GSM module are heated at low air temperatures (24 V version). – The restrictions for the oxygen testing additionally apply to versions for oxygen service: 50 bar/ $+60$ °C. – Observe the limits in the test certificate for explosion-protected versions.
Mechanical vibration	
Vibrations (sinusoidal) according to IEC 60068-2-6	2 to 9 Hz; 3.5 mm amplitude 9 to 200 Hz; 10 m/s ² acceleration 200 to 500 Hz; 15 m/s ² acceleration
Random and guidance vibration according to IEC 60068-2-64	1.0 m ² /s ³ ; 10 to 200 Hz 0.3 m ² /s ³ ; 200 to 2000 Hz
Shocks acc. to IEC 60068-2-27	Acceleration 100 m/s ² ; duration 11 ms
Requirements	
EMC	Devices with a CE marking fulfill the requirements of the Directive 2014/30/EU. Compliance with EN 61000-6-2, EN 61000-6-3, EN 61326-1 and NAMUR Recommendation NE 21 ³⁾
Degree of protection	IP 67 according to IEC 60529 (VDE 470 Part 1, 2014-09)
Explosion protection	
Type of protection	ATEX/IECEx: Ex ia IIB T4 Gb · Devices with a CE marking fulfill the requirements of Directive 2014/34/EU
Oxygen service	
Gaseous oxygen (process medium)	Operating temperature from -40 to $+60$ °C at max. 50 bar operating pressure (applies to parts inside and on the device which are included in the oxygen testing)
Electrical connections	
Cable glands	M16 x 1.5 (max. 5)
Terminals	0.2 to 2.5 mm ² wire cross-section
Spring-cage terminals (option modules)	0.13 to 1.5 mm ² wire cross-section
Communication	
Local	SAMSON SSP interface and serial interface adapter, TROVIS-VIEW
Remote data transmission	GSM module
Weight	
Device without valve block	Approx. 3300 g
Device with valve block (without pressure gauge)	Approx. 5200 g

¹⁾ Impaired operation and readability may arise outside the temperature range.

Measurement is not influenced in the range between -40 and $+70$ °C.

²⁾ A class accuracy of 0.6 % can be expected in these measuring ranges with measuring spans ≤ 100 % to ≥ 75 % of the nominal range.

³⁾ Differential pressure meters with the following article codes meet requirements of the NE 21 Recommendation:
 5007-1- x x x 0 x x x x 0 0 x x x x x x x x
 5007-1- x x x 1 x x x x 0 0 x x x x x x x x

Design and principle of operation

Table 3-2: Power supply

Optional power supply					
Two-wire version	5007-1-0000	5007-1-1100	5007-1-1110	5007-1-1200	5007-1-1210
Explosion protection	No explosion protection	ATEX Ex ia	IECEx Ex ia	ATEX Ex ia	IECEx Ex ia
Output	4 to 20 mA				
Permissible load R_b in Ω	$R_b = (U_b - 12 \text{ V})/0.020 \text{ A}$				
Output circuit	–	Intrinsically safe according to EN/IEC 60079-11			
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)			
24 V version	5007-1-0001				
Input voltage	24 to 36 V DC				
Power	24 W				
Version	Reverse polarity protection				
230 V version	5007-1-0002				
Input voltage	100 to 230 V/50 Hz · 100 to 110 V/60 Hz				
Output voltage	14 V DC				
Power	max. 10 W				

Table 3-3: Optional additional functions

AO: Analog output	
Version	Two-wire system, galvanic isolation, reverse polarity protection, reversible direction of action
Power supply	10 to 30 V DC
Output signal	4 to 20 mA
Operating range	3.8 to 20.5 mA (according to NAMUR Recommendation NE 43)
Error indication	3.4 or 21.6 mA
No-load current	1.36 mA
Static destruction limit	38 V DC · 30 V AC
Suitability	For Media 7: two-wire, 24 V and 230 V versions
AI: Analog input	
Version	4 to 20 mA current input, externally powered, galvanically isolated, reverse polarity protection
Load impedance	$\leq 5.0 \text{ V}$ external (corresponding to $\leq 200 \Omega$ at 20 mA)
Measuring range	0.1 to 21.6 mA
Accuracy	$\leq 0.5 \%$

Resolution	20 μ A
Effect of temperature	0.1 %/10 K
Static destruction limit	38 V DC · 30 V AC
Suitability	For Media 7: 24 V version with GSM module and 230 V version with GSM
AIA: Analog input active	
Version	4 to 20 mA current input, internally powered, reverse polarity protection
Load impedance	\leq 1 V internal (corresponds to \leq 50 Ω at 20 mA)
Output voltage at the terminal	\geq 12 VDC to power external two-wire devices
Measuring range	0.1 to 21.6 mA
Accuracy	\leq 0.5 %
Resolution	20 μ A
Effect of temperature	0.1 %/10 K
Static destruction limit	38 V DC · 30 V AC
Suitability	For Media 7: 24 V version with GSM module and 230 V version with GSM
GSM module for remote data transmission	
GSM frequency	E-GSM 850/900/1800/1900 MHz
Power output	Class 4 (2 W) with 850/900 MHz; Class 1 (1 W) with 1800/1900 MHz
Antenna connection	SMA connector in housing wall
Right-angle antenna	Type 2J010: SMA R/A male
Color	Black
Rating	25 W
Impedance	50 Ω
Polarization	Vertical
Frequency	GSM (900 MHz), AMPS (824-894 MHz), ISM (868 MHz), DCS (1800 MHz), PCS (1900 MHz), 3G (UMTS 2.1 GHz)
SIM card	M2M Industrial Plug in High Temperature, operating temperature: -40 to +105 °C; Provider: Telefonica Germany GmbH
Operating temperature	-40 to +70 °C (with active heating control)
Storage temperature	-30 to +75 °C
Web interface	SAM TANK MANAGEMENT
Suitability	For Media 7: 24 V and 230 V versions

Design and principle of operation

Table 3-4: Materials

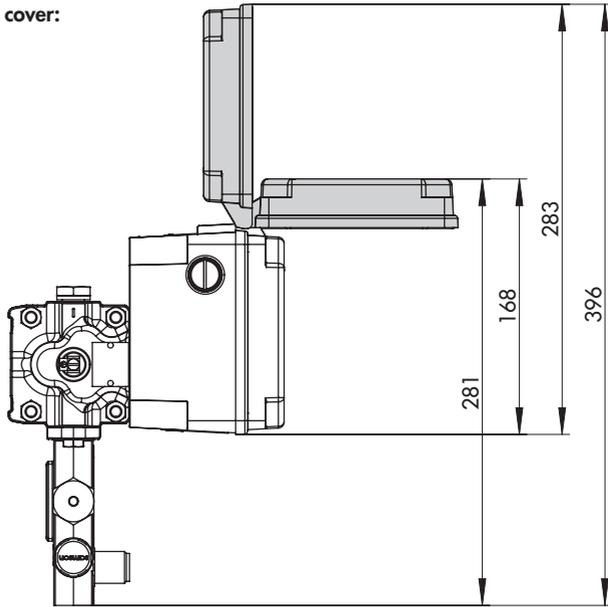
dp cell	
dp cell housing, high-pressure and low-pressure chambers	Brass CW617N-H070 (according to DIN EN 12420)
Elastomers	Standard cryogenic gases, oxygen, flammable gases of Group I: ECO 60 Shore A Further versions: FPM/FKM, EPDM, NBR
Springs and diaphragm plate	Corrosion-resistant steel
Screw fitting of process connections	Corrosion-resistant steel A2-70 and A4-70
Screw plugs	Brass CW608N-R380
Electronics housing and indicating unit	
Housing	UV-stabilized polycarbonate
Screws (housing)	Corrosion-resistant high-grade steel
Cover (transparent)	UV-stabilized polycarbonate
Screw fastenings (cover)	Corrosion-resistant high-grade steel
Cable glands	Polyamide with NBR seal

Table 3-5: Summary of explosion protection approvals

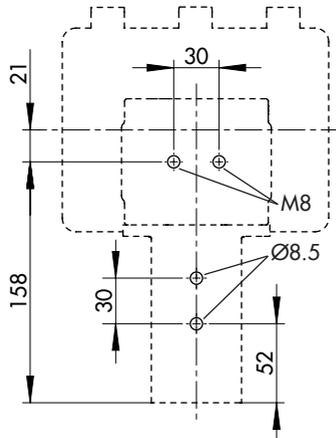
		Certification		Type of protection/comments	
Type 5007-1	-110		EU type examination certificate	Number KIWA 17ATEX0041X Date 2018-06-01	II 2 G Ex ia IIB T4 Gb
	-120		EU type examination certificate	Number KIWA 17ATEX0041X Date 2018-06-01	II 1/2 G Ex ia IIB T4 Ga/Gb
	-111	IECEx		Number IECEx KIWA 17.0020X Date 2018-06-01	Ex ia IIB T4 Gb
	-121	IECEx		Number IECEx KIWA 17.0020X Date 2018-06-01	Ex ia IIB T4 Ga/Gb

3.6.1 Dimensions for mounting (mm)

Dimensions with opened cover:



Drill pattern for wall/panel mounting:



4 Shipment and on-site transport

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

4.1 Accepting the delivered goods

After receiving the shipment, proceed as follows:

1. Check the scope of delivery. Check that the specifications on the nameplate and on the differential pressure meter itself match the specifications in the delivery note. See the 'Markings on the device' section for nameplate details.
2. Check the shipment for transportation damage. Report any damage to SAMSON and the forwarding agent (refer to delivery note).

4.2 Removing the packaging from the differential pressure meter and modules

Observe the following sequence:

- Do not remove the packaging until immediately before installation of the differential pressure meter.
- Dispose and recycle the packaging of the differential pressure meter in accordance with the local regulations.
- Keep the packaging of the modules for their interim storage.

4.3 Transporting the differential pressure meter

Transport instructions

- Only transport the differential pressure meter without any batteries in it.
- Protect the differential pressure meter against external influences (e.g. impact).
- Protect the differential pressure meter against moisture and dirt.
- Observe the environmental conditions according to EN 60721-3-2:
 - 2K4 for the differential pressure meter
 - 2M1 for a differential pressure meter with GSM module

4.4 Storing the differential pressure meter

! NOTICE

Risk of damage to the differential pressure meter due to improper storage.

- *Observe the storage instructions.*
 - *Avoid long storage times.*
 - *Contact SAMSON in case of different storage conditions.*
-

! Note

We recommend regularly checking the prevailing storage conditions during long storage periods.

Shipment and on-site transport

Storage instructions

- Protect the differential pressure meter against external influences (e.g. impact).
- Protect the differential pressure meter against moisture and dirt.
- Make sure that the ambient air is free of acids or other corrosive media.
- Do not place any objects on the differential pressure meter.
- Observe the environmental conditions according to EN 60721-3-1:
 - 1K5 for the differential pressure meter
 - 1M3 for a differential pressure meter with GSM module

5 Installation

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

⚠ DANGER

Risk of injury due to incorrect handling of oxygen.

- Work on differential pressure meters intended for the measurement of gaseous oxygen must only be performed by operating personnel who has undergone training for work involving oxygen service.

💡 Tip

We recommend installing the differential pressure meter in a shaded location. If this is not possible, we recommend mounting a sun shield.

5.1 Installation conditions

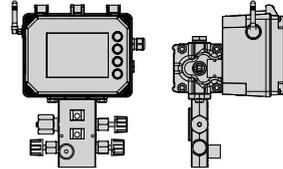
Work position

The work position for the differential pressure meter is the front view onto the operating controls on the differential pressure meter seen from the position of operating personnel.

Plant operators must ensure that, after installation of the differential pressure meter, the operating personnel can perform all necessary work safely and easily access the device from the work position.

Mounting orientation

- Keep rear blow-out opening clear.
- Mount the differential pressure meter in the upright position only:



💡 Tip

We recommend protecting the differential pressure meter with a sun shield (material no. 100112667) for mounting positions in which the differential pressure meter is exposed to direct sunlight (see section

5.2 Preparation for installation

Proceed as follows:

- Flush the pipeline thoroughly before installation of the differential pressure meter. Observe the maximum permissible pressure for dp cell and plant.
- Check the differential pressure meter to make sure that it is clean and not damaged.

i Note

The plant operator is responsible for cleaning the pipelines in the plant.

5.3 Setting up the optional additional functions

If the option modules, GSM module and standby power supply have not already been installed when the differential pressure meter was delivered, we recommend installing them before installing the differential pressure meter in the pipeline.

a) Setting up before installation of the differential pressure meter

NOTICE

Risk of damage to components for optional additional functions due to electrostatic discharge.

→ Observe the ESD requirements according to IEC 61340-5-1.

1. Make sure that the differential pressure meter is not yet connected to a electrical power supply.
2. Undo the five screws on the cover and remove the cover.
3. If applicable, insert an option module (see section 5.3.1).
4. If applicable, insert the GSM module (see section 5.3.2).
5. If applicable, set up the standby power supply (see section 5.3.3).
6. Place on the cover and make sure that the inserted option modules are seated in

the openings intended for them in the cover.

7. Fasten the cover.

b) Setting up when the differential pressure meter has already been put into service

DANGER

Risk of fatal injury due to electric shock (230 V version).

- Before connecting wiring, performing any work on the device or opening the device, disconnect the voltage supply and protect it against unintentional re-connection.
- Only use power interruption devices that are protected against unintentional re-connection of the power supply.

DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

- For mounting and electrical installation in hazardous areas, observe the explosion protection approvals as well as the relevant electrotechnical regulations and the accident prevention regulations that apply in the country of use. EN 60079-14 applies in Europe.
- Installation, operation or maintenance of the differential pressure meter must only be performed by personnel with qualifications according to Clause 4.5 of IEC 60079-14 who has undergone spe-

cial training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

⚠ DANGER

Risk of fatal injury as a result of electrostatic discharge at the housing.

→ Ensure that the device, cables and other plant components cannot rub against each other.

⚠ DANGER

Risk of bursting in pressure equipment.

- Before starting any work on the differential pressure meter, depressurize all plant sections affected as well as the dp cell.
 - Drain the process medium from all the plant sections affected as well as the dp cell.
 - Wear protective clothing as specified in the material safety data sheet (MSDS) for the process medium.
-

⚠ WARNING

Risk of burn injuries due to hot or cold components and pipelines.

- Prior to performing any work on the differential pressure meter, allow components and pipelines to cool down or warm up to the ambient temperature.
 - Wear protective clothing and safety gloves.
-

ⓘ NOTICE

Risk of damage to components for optional additional functions due to electrostatic discharge.

→ Observe the ESD requirements according to IEC 61340-5-1.

1. Disconnect the electrical power supply from the differential pressure meter and connected modules.
2. Undo the five screws on the cover and remove the cover.
3. If applicable, insert an option module (see section 5.3.1).
4. If applicable, insert the GSM module (see section 5.3.2).
5. If applicable, set up the standby power supply (see section 5.3.3).
6. Place on the cover and make sure that the inserted option modules are seated in the openings intended for them in the cover.
7. Fasten the cover.

5.3.1 Inserting option modules

i Note

When replacing an option module, remove the inserted option module as described in the 'Removal' section.

Four slots to hold option modules exist in the differential pressure meter (see Fig. 5-2).

1. Open the cover and insert the option module into one of the slots, making sure it is inserted correctly.
 - ➔ Refer to Table 5-1 for the permissible combination of slots when an AO: Analog output option module is used.
2. If necessary, break open the openings for the terminals in the cover (by pressing the predetermined breaking points).

Table 5-1: Permissible combinations of the AO: Analog output option modules

Option modules inserted	Permissible
Slot 1 and slot 2	YES
Slot 3 and slot 4	YES
Slot 1 and slot 4	YES
Slot 2 and slot 3	YES
Slot 1 and slot 3	No
Slot 2 and slot 4	No

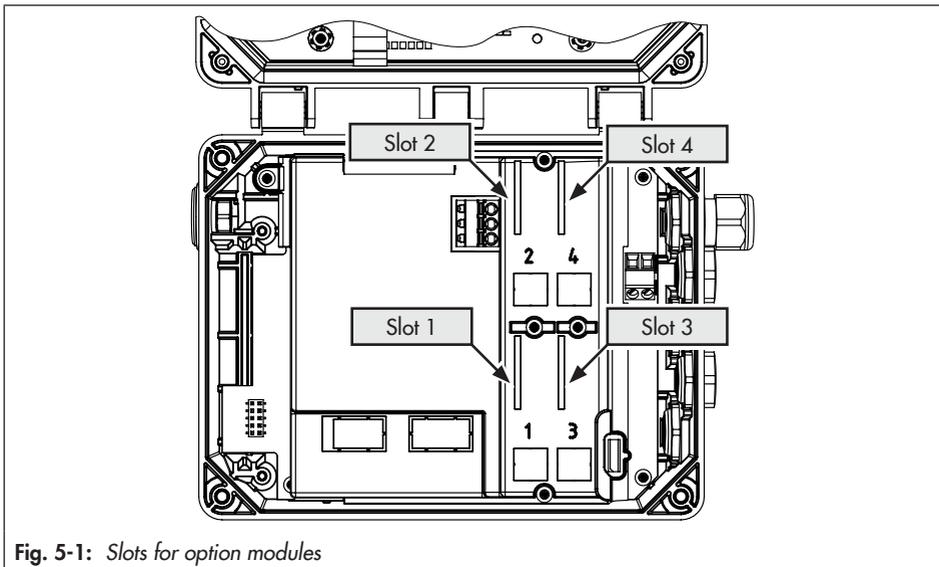
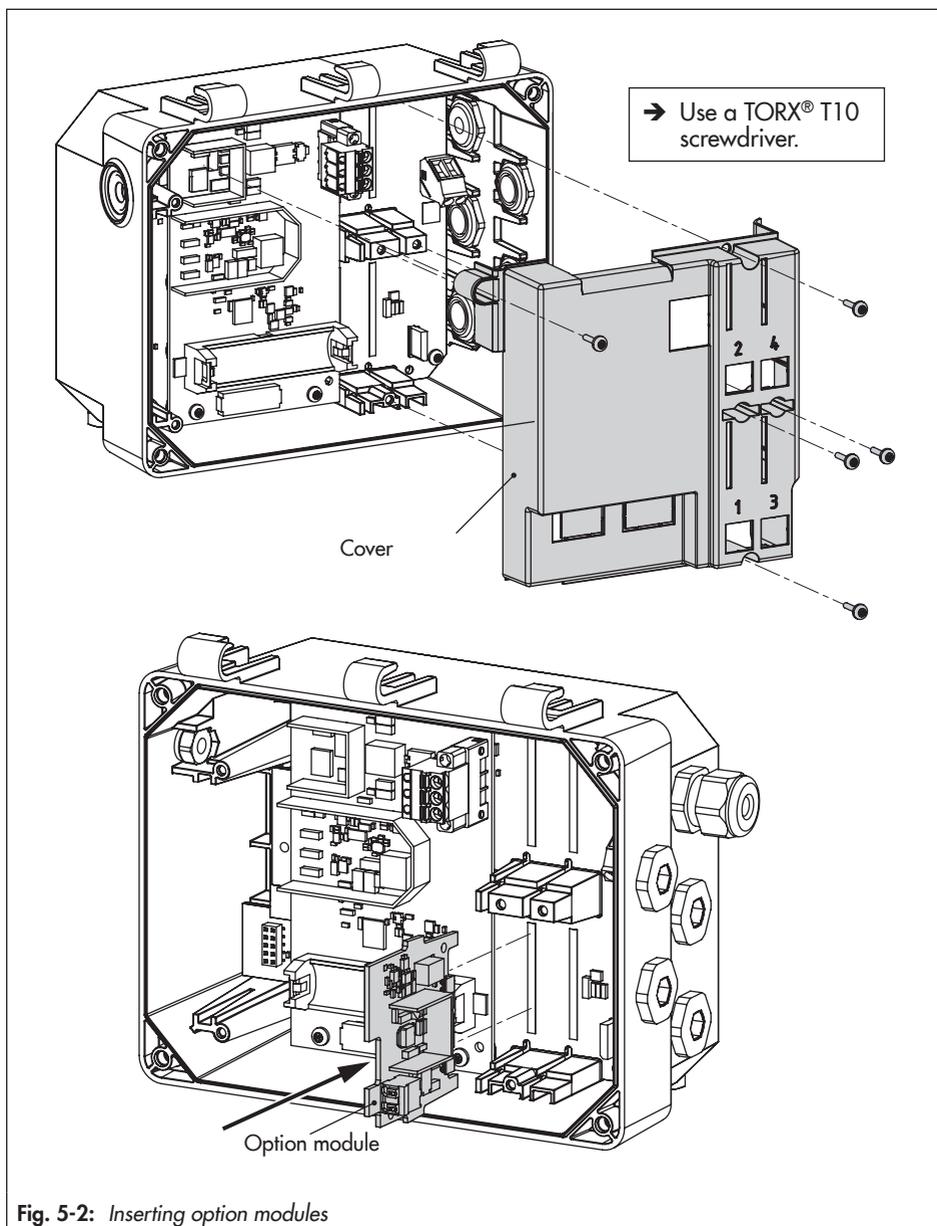


Fig. 5-1: Slots for option modules



5.3.2 Inserting the GSM module

i Note

The GSM module does not function when the differential pressure meter is operated with the standby power supply (SPS).

When the differential pressure meter was ordered with the GSM module, it is already installed upon delivery. The GSM module can also be retrofitted (see Fig. 5-3).

The GSM module unit consists of the module (including SIM card) and the right-angle antenna with cable and SMA bushing.

Mounting the cable and antenna

1. Remove the stopper in the housing (1).
2. Place the O-ring (5) on the SMA bushing (6) and push it into the groove intended for it.
3. Guide the SMA bushing (6) with O-ring (5) from inside through the hole in the housing (1) and push it as far as it will go.
4. Place the toothed lock washer (4) on the SMA bushing (6).
5. Place the nut (3) on the SMA bushing (6) and screw tight.
6. Screw the antenna (2) onto the SMA bushing.

Inserting the GSM module

1. Insert the male connector (7) into the female connector (8) on the module.
2. Insert the module into the slot as shown in the diagram.
3. Tighten the two fastening screws (9) of the module.

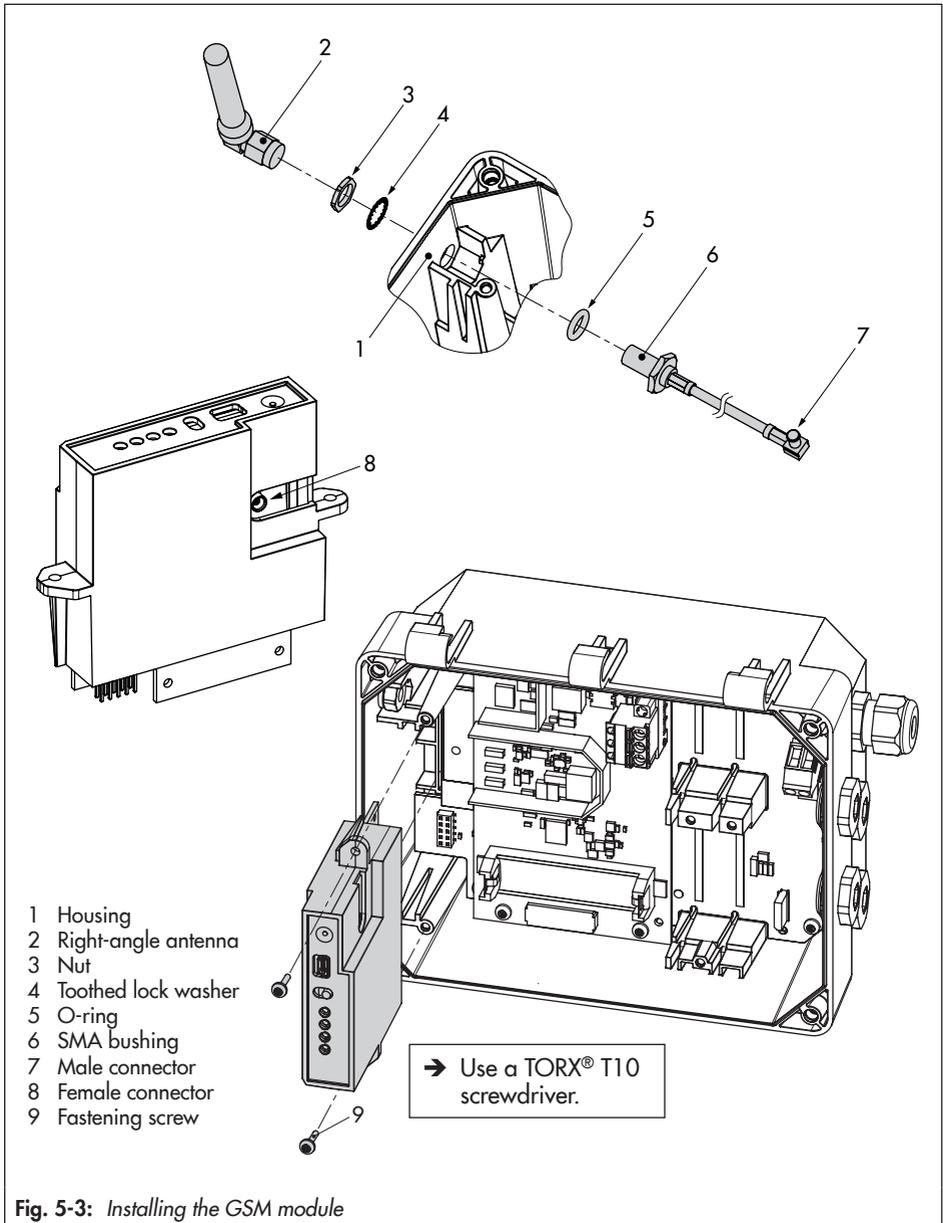


Fig. 5-3: Installing the GSM module

5.3.3 Setting up the standby power supply (SPS)

Note

The battery is not included in the scope of delivery.

Operation with standby power supply (SPS) is restricted as follows:

- The **GSM module** does not function in SPS mode.
 - The **AIA: Analog input active option module** does not supply any voltage.
-

Tip

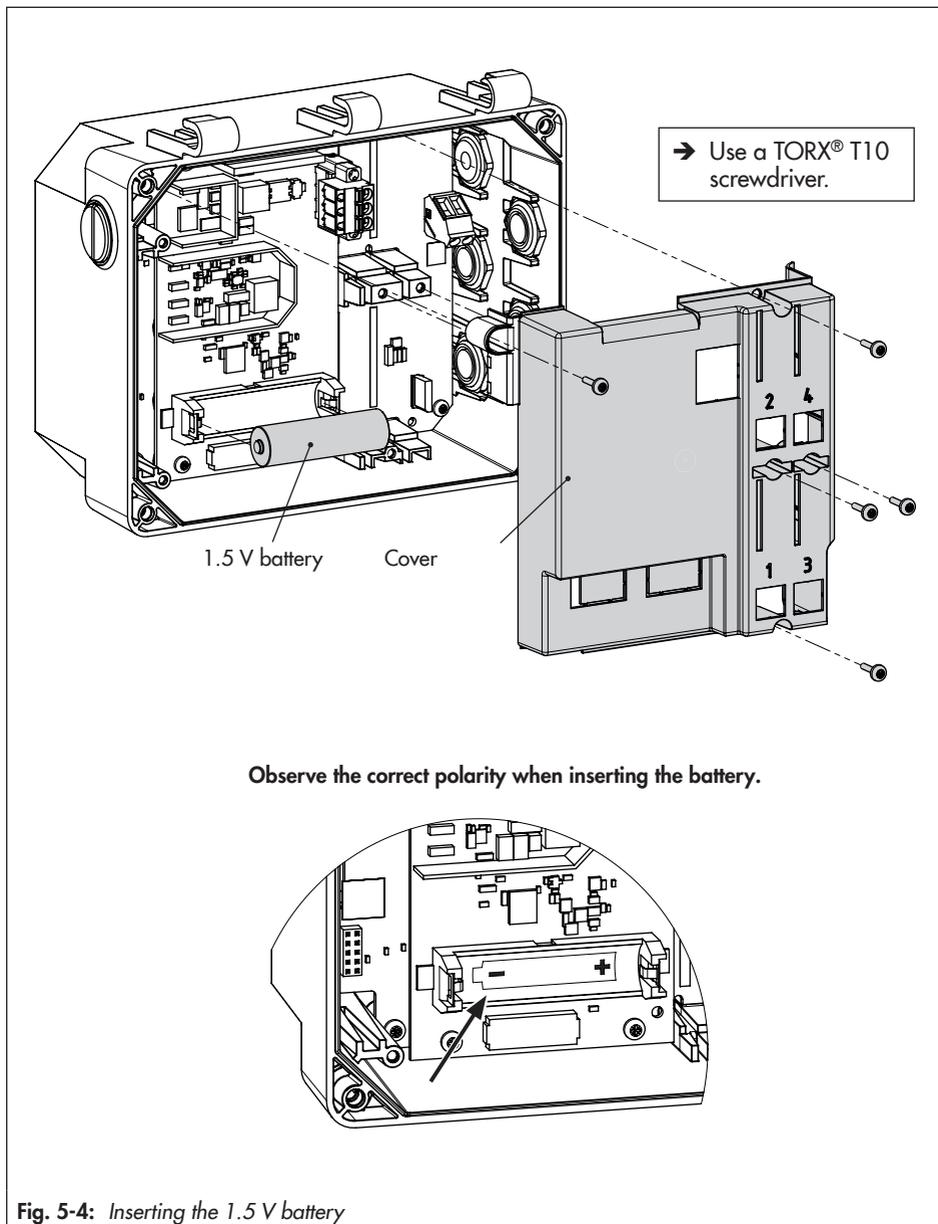
The standby power supply can also be used during the first start-up when no other power supply is available. A lithium battery allows the device to run for approx. seven days.

To continue to supply the power supply unit with power after a power failure, we recommend using a battery with the following specifications:

- AA lithium battery (mignon), 1.5 V
- Industrial battery with long service life (min. 3000 mAh recommended)
- Suitable for temperatures from -40 to +60 °C

Inserting the battery

1. Place the 1.5 V battery in the battery compartment (see Fig. 5-4)
- **Observe the correct polarity.** A battery symbol with plus and minus signs on the battery compartment indicates the polarity.



5.4 Mounting the differential pressure meter

The following options to mount the differential pressure meter in the plant are available:

- Two M8 tapped holes in the dp cell (see Fig. 5-6, 1)
- Two through holes for M8 screws in the valve block (see Fig. 5-6, 2)
- ➔ Mounting material for pipe and wall mounting as accessories (▶ T 9555)
- ➔ Drill pattern for wall/panel mounting: see Fig. 5-5.

Additional points that apply concerning installation:

- ➔ 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.

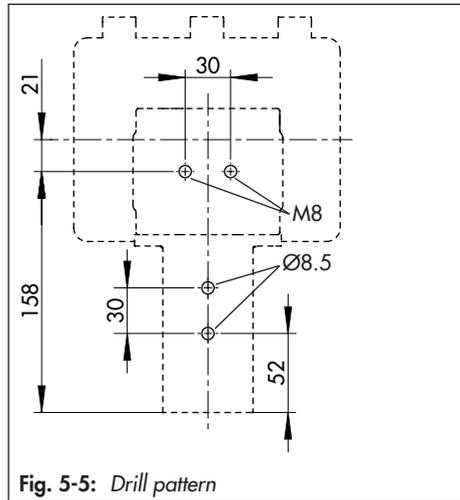
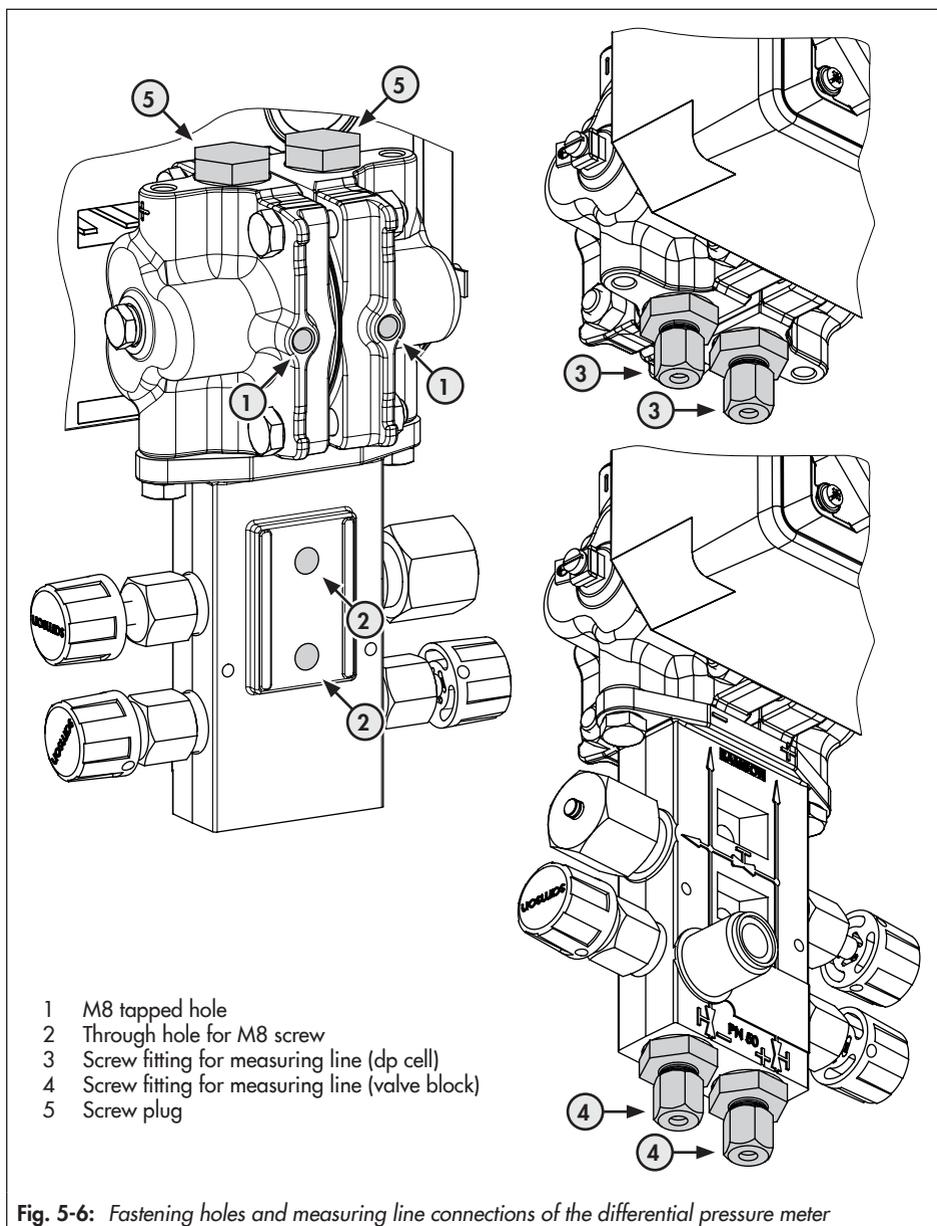


Fig. 5-5: Drill pattern



5.5 Connecting the measuring lines

i Note

In following, pressurized lines are designated "**measuring lines**".

! NOTICE

Risk of malfunction and incorrect measurements due to mixing up the measuring lines.

- Make sure that the high-pressure line is connected to the high-pressure connection and the low-pressure line to the low-pressure connection.
- Screw fittings are required to connect the measuring lines (see Fig. 5-6, 3/4 as well as accessories in Annex B).
- Depending on the device arrangement, seal the device connections that are left unused with screw plugs (see Fig. 5-6, 5 as well as accessories in Annex B).

5.6 Establishing electrical connections

! DANGER

Risk of fatal injury due to electric shock (230 V version).

- Before connecting wiring, performing any work on the device or opening the device, disconnect the voltage supply and protect it against unintentional re-connection.

- Only use power interruption devices that are protected against unintentional re-connection of the power supply.
- Upon installation of the electric cables, you are required to observe the regulations concerning low-voltage installations according to DIN VDE 0100 as well as the regulations of your local power supplier.
- Use a suitable voltage supply which guarantees that no dangerous voltages reach the device in normal operation or in the event of a fault in the system or any other system parts.

! DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

- For mounting and electrical installation in hazardous areas, observe the explosion protection approvals as well as the relevant electrotechnical regulations and the accident prevention regulations that apply in the country of use. EN 60079-14 applies in Europe.
- Do not connect the electrical supply before mounting is completed and any unused cable entries have been sealed.
- Installation, operation or maintenance of the differential pressure meter must only be performed by personnel with qualifications according to Clause 4.5 of IEC 60079-14 who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

⚠ DANGER

Risk of fatal injury as a result of electrostatic discharge at the housing.

- Ensure that the device, cables and other plant components cannot rub against each other.

⚠ WARNING

Incorrect electrical connection will render the explosion protection unsafe.

- Only operate the device with an intrinsically safe power supply while complying with the maximum permissible values for U_i or U_0 , I_i or I_0 and P_i or P_0 .
- Adhere to the terminal assignment and correct polarity.
- Do not undo the enameled screws.

ⓘ NOTICE

Incorrect connection of the electrical power supply will damage the electronics.

- Observe the permissible tolerances of the supply voltage.
- For wiring, you are required to observe the relevant regulations concerning device safety and electromagnetic compatibility.

Selecting cables and wires

- Observe the relevant clauses of EN 60079-14 for installation of intrinsically safe circuits.
- Use cable glands with M16x1.5 thread whose diameter and shape have been

approved by the manufacturer for the cable used.

- Seal cable entries left unused with plugs.
- The cable entry used must correspond with the ambient temperature range and have the specified IP rating (see technical data in the 'Design and principle of operation' section).

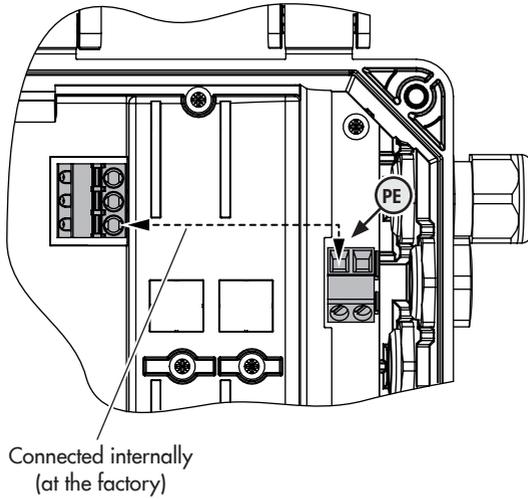
Cable glands and terminals

The housing of the differential pressure meter has five threaded boreholes, which can be fitted with cable glands as required.

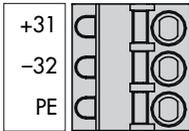
- The cable gland version depends on the ambient temperature range (see technical data in the 'Design and principle of operation' section).
- The cage clamp terminals hold wire cross-sections of 0.2 to 2.5 mm².

Electrical connection

- Connect the wiring as shown in Fig. 5-7.
- Insert the wire without force.
- To remove the wire, use a slotted screwdriver to press the unlocking slot of the cage clamp terminal and remove the wire.
- Route the grounding connection (PE) to the corresponding terminal.
- Set the local power line frequency (see the 'Start-up' section).



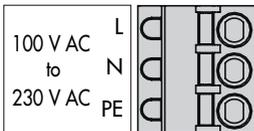
Two-wire version:



24 V version:



230 V version:



Option modules:

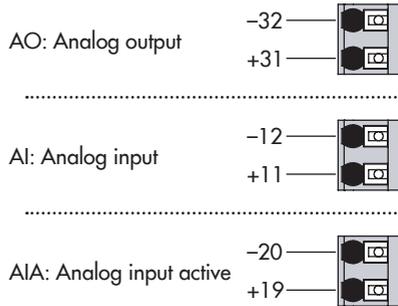


Fig. 5-7: Terminal assignment

5.7 Mounting and adjusting the sun shield

We recommend mounting a sun shield (material no. 100112667) to protect the differential pressure meter from direct sunlight and in mounting situations in which it is difficult or impossible to read the display in direct sunlight.

- Mount the sun shield as described in the installation notes supplied.
- Adjust the position of the sun shield at the two thumb screws (S7).

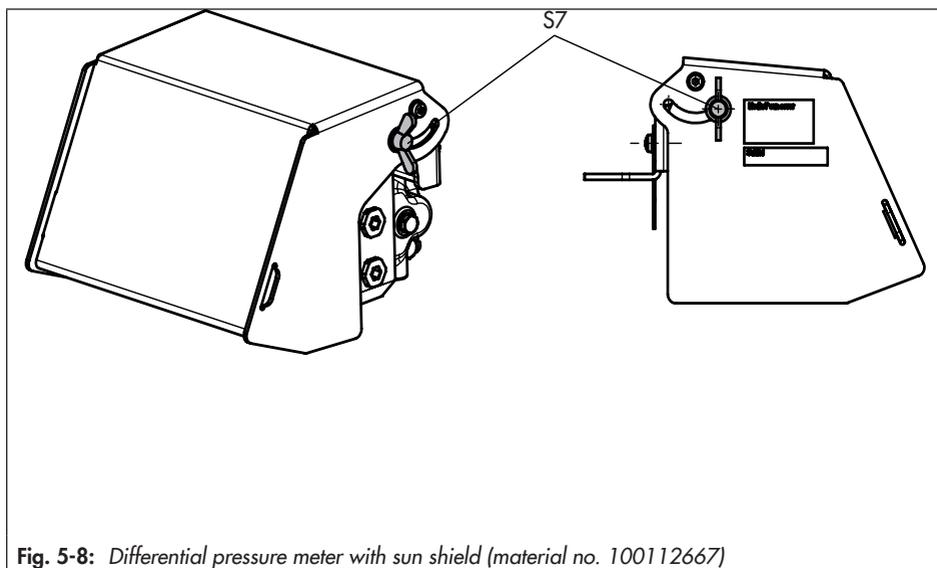
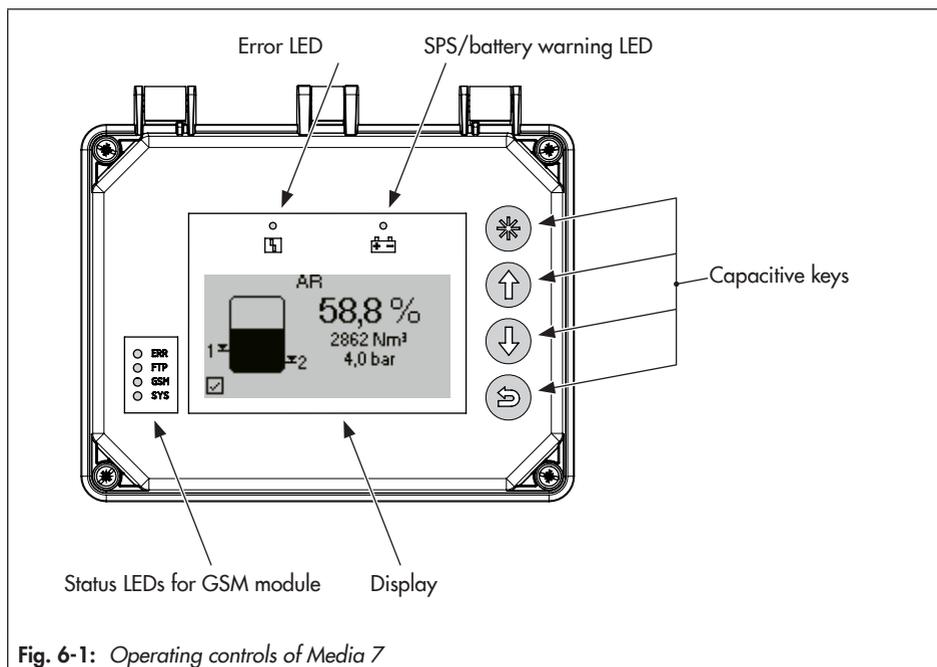


Fig. 5-8: Differential pressure meter with sun shield (material no. 100112667)

6 Operation



Tip

Examples for the operation of the differential pressure meter are described in section 6.3.

6.1 Capacitive keys

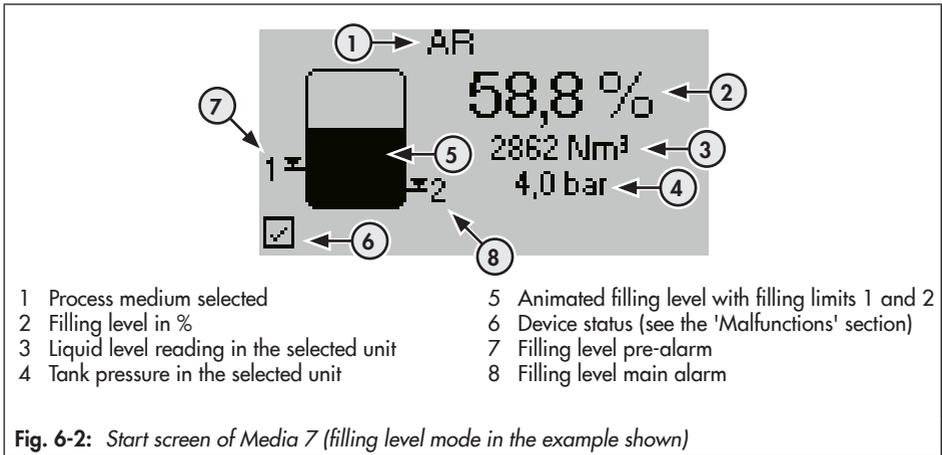
The capacitive keys for on-site operation are located to the right of the display.

-  Confirm, select, change
-  Scroll upward, increase value
-  Scroll downward, reduce value
-  Back

6.2 Display

After connection of the power supply for the first time, the **start-up wizard** automatically starts (see the 'Start-up and configuration' section). In all other cases, the start screen (see Fig. 6-2) appears. Press the  key to go to the main menu. Settings can be made and process values read in the main menu.

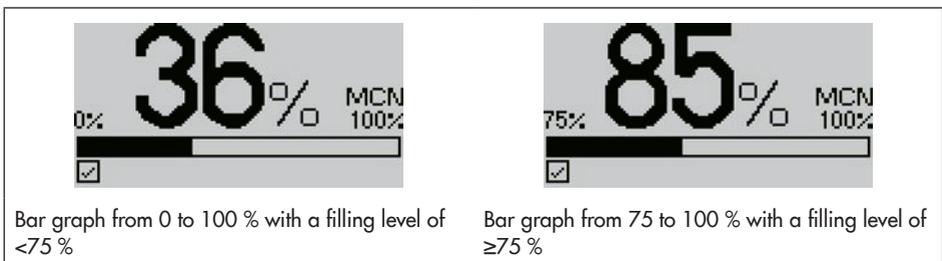
The 'Start-up and configuration' section contains a description of the first start-up settings. A list of parameters for on-site operation is included in Annex A.



6.2.1 Zoom function

In the filling level mode, after activating the zoom function [Zoomed view of tank filling | 2.2.11], the filling reading in % can be enlarged to ensure it can be read even at a distance while the tank is being filled.

→ Open and close the enlarged view with  key.



6.3 Examples for the operation

Note

The differential pressure meter has two user levels with different access privileges: **Maintenance staff** and **Specialist**.

Values and parameters can only be changed in the **Specialist** user level. See the 'Start-up and configuration' section for more information on the user level and maximum password protection.

If no settings are entered within five minutes, the display returns to the start screen and the user level returns to **Maintenance staff**.

Tip

The instructions below apply to the general navigation through the menus of the differential pressure meter and to changing the parameters.

➔ Description of the operating controls (see Fig. 6-1).

Example 1: changing the language

1. Press  key (in start screen) to go to the main menu.
 2. Select [Start-up | 1] with  or  key and confirm with  key.
 3. Select [User level | 1.2] with  or  key and confirm with  key.
 4. Press  key and select 'Specialist' with  or  key.
 5. Press  key to confirm the setting.
- ▶▶ It is now possible to change parameters in the differential pressure meter.

Changing the language:

1. Press  key (in start screen) to go to the main menu.
 2. Select [Start-up | 1] with  or  key and confirm with  key.
 3. Select [Sprache/Language | 1.3] with  or  key and confirm with  key.
 4. Press  key and select the required language with  or  key.
 5. Press  key to confirm the setting.
- ▶▶ The language has been changed.

Example 2: changing the medium in the filling level mode

1. Press  key (in start screen) to go to the main menu.
2. Select [Start-up | 1] with  or  key and confirm with  key.
3. Select [User level | 1.2] with  or  key and confirm with  key.
4. Press  key and select 'Specialist' with  or  key.
5. Press  key to confirm the setting.
▶ It is now possible to change parameters in the differential pressure meter.

Changing the medium (in the filling level mode only):

1. Press  key (in start screen) to go to the main menu.
2. Select [Device settings | 2] with  or  key and confirm with  key.
3. Select [Filling level mode | 2.2] with  or  key and confirm with  key.
4. Select [Medium | 2.2.2] with  or  key and confirm with  key.
5. Select [Medium selection | 2.2.2.1] with  or  key and confirm with  key.
6. Press  key and select the required medium with  or  key.
7. Press  key to confirm the setting.
▶ The medium has been changed.

Example 3: changing the unit (medium) in the filling level mode

1. Press  key (in start screen) to go to the main menu.
2. Select [Start-up | 1] with  or  key and confirm with  key.
3. Select [User level | 1.2] with  or  key and confirm with  key.
4. Press  key and select 'Specialist' with  or  key.
5. Press  key to confirm the setting.
▶ It is now possible to change parameters in the differential pressure meter.

Changing the unit (medium) in the filling level mode:

1. Press  key (in start screen) to go to the main menu.
2. Select [Device settings | 2] with  or  key and confirm with  key.
3. Select [Filling level mode | 2.2] with  or  key and confirm with  key.
4. Select [Medium | 2.2.2] with  or  key and confirm with  key.

5. Select [Unit | 2.2.2.2] with  or  key and confirm with  key.
 6. Press  key and select the required unit with  or  key.
 7. Press  key to confirm the setting.
- ▶▶ The unit has been changed.

Example 4: changing the unit of pressure sensor

1. Press  key (in start screen) to go to the main menu.
 2. Select [Start-up | 1] with  or  key and confirm with  key.
 3. Select [User level | 1.2] with  or  key and confirm with  key.
 4. Press  key and select 'Specialist' with  or  key.
 5. Press  key to confirm the setting.
- ▶▶ It is now possible to change parameters in the differential pressure meter.

Changing the unit (pressure sensor) in the filling level mode/differential pressure mode:

1. Press  key (in start screen) to go to the main menu.
 2. Select [Device settings | 2] with  or  key and confirm with  key.
 3. Select [General | 2.1] with  or  key and confirm with  key.
 4. Select [Pressure sensor | 2.1.5] with  or  key and confirm with  key.
 5. Press  key and select the required unit with  or  key.
 6. Press  key to confirm the setting.
- ▶▶ The unit has been changed.

Example 5: changing the medium identifier

The medium identifier is the user-defined name of the medium. A maximum of 15 characters can be used. The default setting for this parameter is 'MEDIA7'.

1. Press  key (in start screen) to go to the main menu.
 2. Select [Start-up | 1] with  or  key and confirm with  key.
 3. Select [User level | 1.2] with  or  key and confirm with  key.
 4. Press  key and select 'Specialist' with  or  key.
 5. Press  key to confirm the setting.
- ▶▶ It is now possible to change parameters in the differential pressure meter.

Changing the medium identifier:

1. Press  key (in start screen) to go to the main menu.
2. Select [Device settings | 2] with  or  key and confirm with  key.
3. Select [General | 2.1] with  or  key and confirm with  key.
4. Select [Identifier | 2.1.1] with  or  key and confirm with  key.
 - ▶▶ The identifier currently used is shown.
5. Press the  key. The cursor jumps to the first of maximum 15 characters.
6. Move the cursor to the position you want to change with  or  key and activate it with  key.
 - Select a letter, number or special character with  or  key from the listed characters and confirm with  key.
 - ▶▶ The cursor automatically jumps to the next position on the right.
7. Continue as described in step 6 to enter further characters (max. 15 characters can be selected).
8. Press  key after you have completed entering the identifier.
9. Select OK with  or  key and confirm with  key.
 - ▶▶ The medium identifier has been changed.

7 Start-up and configuration

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

→ Installation, operation or maintenance of the differential pressure meter must only be performed by personnel with qualifications according to Clause 4.5 of IEC 60079-14 who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

NOTICE

Risk of damage to the differential pressure meter due to impermissible conditions during measurement.

The test medium must be free of oil and grease when the device is used to measure oxygen.

Additional conditions include:

- Gaseous oxygen (process medium)
- Temperature: max. +60 °C
- Oxygen pressure: max. 30 bar

→ When the device is used for oxygen service, make sure that the dp cell and any SAMSON accessories only come into contact with gaseous oxygen.

The differential pressure meter is ready for use immediately after the electrical power supply has been connected. After the differential pressure meter is put into operation for the first time after shipment, the wizard starts automatically after the electrical power is connected.

Tip

We recommend proceeding as follows during first start-up:

1. Run the start-up wizard (see section 7.1).
2. Set user level (see section 7.2).
3. Enter the local power line frequency (see section 7.3).
4. Perform zero calibration of the differential pressure (see section 7.4 c)).

7.1 Running the start-up wizard

i Note

- The language is set to English by default on first start-up.
- If no settings are entered within five minutes, the display returns to the start screen.

Step 1 of 6: select language

1. Select the required language with  or  key.
2. Confirm the selected language with  key. Press  key again to continue.

Step 2 of 6: select unit

1. Select the required unit with  or  key.
2. Confirm the selected unit with  key. Press  key again to continue.

Step 3 of 6: set the minimum differential pressure Δp_0

1. Select the required digit within the number with  or  key. Press  key to confirm the selected digit.
2. Select the required number with  or  key. Press  key to confirm the changed number.
3. After selecting all digits of the number, press  key.
4. Press  key to continue.

Step 4 of 6: set the maximum differential pressure Δp_{100}

1. Select the required digit within the number with  or  key. Press  key to confirm the selected digit.
2. Select the required number with  or  key. Press  key to confirm the changed number.
3. After selecting all digits of the number, press  key.
4. Press  key to continue.

Step 5 of 6: enter the medium identifier

1. Press  key to enter the first character.

2. Select the required character with  or  key. Press  key to confirm the selected character.
3. Proceed in the same way to enter the other characters of the medium identifier.
4. Press  key.
5. Select OK with  or  key and confirm with  key.
6. Press  key again to continue.

Step 6 of 6: complete start-up wizard

- Press  key (Done) to close the wizard.
The display returns to the start screen.

Note

- Select **ESC** to exit the wizard at any time.
- Select **forward** (>) and **back** (<) to navigate between steps 1 and 6.
- The wizard can be started at any time in the [Start-up | 1] menu by selecting menu item 1.5 ('Specialist' user level only).

7.1.1 Option module wizard

If option modules are installed, the option module wizard automatically starts during first start-up after completion or exiting the start-up wizard.

After the option module wizard starts, the slots for option modules are shown.

1. Press  or  key to select the required slot or option module.
2. Press  key to confirm the setting.
 - ▶ Depending on the selected option module, diverse settings, such as name, signal source, limit etc., can be made. Descriptions to the parameters can be found in the parameter list in Annex A for the corresponding option modules from menu item 2.4 onwards.

Note

- Select **ESC** to exit the option module wizard at any time.
- Select **forward** (>) and **back** (<) to navigate between steps.

Start-up and configuration

- The option module wizard can be started from the [Device settings | 2] menu/[Option modules | 2.4]/[Overview of option modules | 2.4.1 und 2.4.1.1] by selecting a slot/option module ('Specialist' user level only).
 - If no settings are entered within five minutes, the display returns to the start screen.
-

7.2 Setting the user level

The differential pressure meter has two user levels with different access privileges:

- **Maintenance staff:** values and parameters can be selected and read in this user level. Changes are not possible in this level.
- **Specialist:** all values can be accessed and parameters changed in this user level. This user level can be password-protected to prevent unauthorized access.

1. Press  key (in start screen) to go to the main menu.
2. Select [Start-up | 1] with  or  key and confirm with  key.
3. Select [User level | 1.2] with  or  key and confirm with  key.
4. Press  key and select 'Specialist' with  or  key.
5. Press  key to confirm the setting.

Activating password protection

The password can only be changed and activated in the Specialist user level.

1. Press  key (in start screen) to go to the main menu.
2. Select [Start-up | 1] with  or  key and confirm with  key.
3. Select [Password protection | 1.11] with  or  key.
4. Press  key to activate password protection.
➔ The default password is **1234**. To change the password, proceed as follows:
 1. In the [Start-up | 1] menu, select [Password | 1.12] with  or  key and confirm with  key.
 2. Press  key. Select the digit within the password with  or  key.
 3. Press  key. Change the number (0 to 9) within the password with  or  key.
 4. Confirm with  key (proceed in the same way for the rest of the password).
 5. After selecting all digits of the password, press  key.

7.3 Setting the local power line frequency

The local power line frequency must be entered to be able to properly filter out any disturbances which are transmitted over ground wires or external power supply units. The default power line frequency is 50 Hz.

1. Press  key (in start screen) to go to the main menu.
2. Select [Start-up | 1] with  or  key and confirm with  key.
3. Select [Power line frequency | 1.14] with  or  key and confirm with  key.
4. Press  key and select 50 Hz or 60 Hz with  or  key.
5. Press  key to confirm the setting.

7.4 Calibrating the differential pressure

c) Zero of the differential pressure

We recommend performing a zero calibration of the differential pressure after first start-up and after changes have been made to the plant.

To set zero, the pressure in the measuring lines must be equal. To check zero, make sure that the pressures in both measuring chambers are identical at atmospheric pressure, i.e. the signal at the terminals 31 and 32 must be 4 mA at a differential pressure of $\Delta p = 0$ mbar (see the 'Installation' section).

At $\Delta p = 0$ mbar, the 0.0 % reading must be displayed.

i Note

The user level must be set to 'Specialist' for the zero calibration (see section 7.2).

i 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 oppose each other. When the pressures are identical ($\Delta p = 0$ mbar) a negative value appears on the display for the content. An output signal lower than 4 mA is indicated. In this case, readjust zero as described below so that the display reads 0 % at $\Delta p = 0$ mbar. The output signal will change but remains below 4 mA due to the adjusted gas column correction.

Zero calibration of the differential pressure when the tank is empty

1. Press  key (in start screen) to go to the main menu.
2. Select [Start-up | 1] with  or  key and confirm with  key.
3. Select [Zero point of differential pressure | 1.6] with  or  key and confirm with  key.
 - ▶ The current values for differential pressure, zero, and maximum differential pressure (Δp_{100}) are displayed.
4. Press  key to set zero.

Zero calibration of the differential pressure when the tank is filled

➔ To equalize the pressures, isolate the measuring lines to the tank and connect them over a bypass. When a SAMSON valve block is used, proceed as follows (see 'Accessories' in Annex B):

1. Close shut-off valve (+) and shut-off valve (-).
2. Open the equalizing valve.
 - ➔ The valve block is now in the test position.
3. Perform a zero calibration of the differential pressure (see 'Zero calibration of the differential pressure when the tank is empty').
 - ➔ Place the valve block or equalizing valve back into the operating position:
4. Open the shut-off valve in the low-pressure line.
5. Close the equalizing valve.
6. Open the shut-off valve in the high-pressure line.

d) Measuring range (differential pressure span)

Upon delivery, the device is calibrated with a linear characteristic based on the upper measuring range value (differential pressure span) of the dp cell. After entering the tank and gas data, the device automatically 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).

How to proceed:

i Note

The user level must be set to 'Specialist' for the measuring range calibration (differential pressure span). See section 7.2.

- Observe the sequence:
 1. Calibrate the zero point of differential pressure (see section 7.5 c)).
 2. Set and check the measuring range (differential pressure span).
- At Δp_{100} , the output signal must be 20 mA.
- To check the measuring range, connect the differential pressure meter as shown in Fig. 7-3.

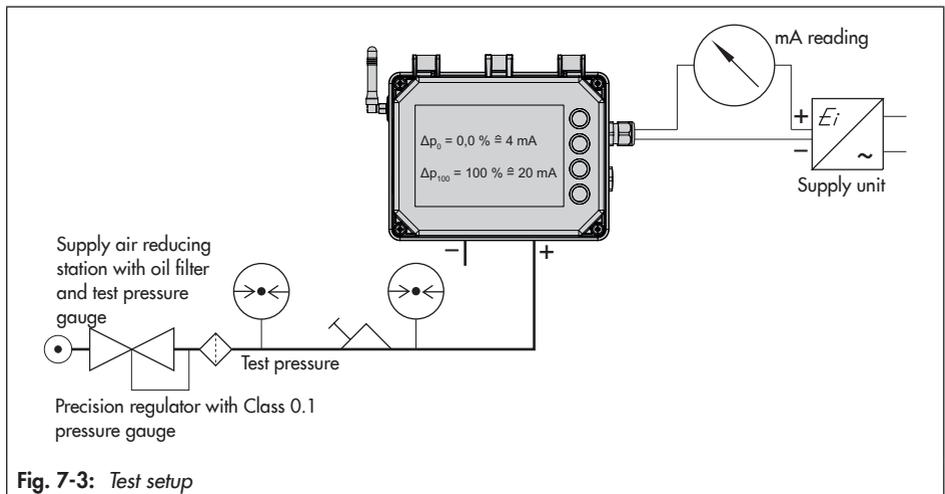


Fig. 7-3: Test setup

Checking the measuring range (differential pressure span)

1. Press  key (in start screen) to go to the main menu.
2. Select [Start-up | 1] with  or  key and confirm with  key.
3. Select [Differential pressure span | 1.7] with  or  key and confirm with  key.
▶ The current values for differential pressure, span and maximum differential pressure (Δp_{100}) are displayed.
4. 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 or 4 mA (read note on 'Gas column correction').
➔ 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)

1. Press  key (in start screen) to go to the main menu.
2. Select [Start-up | 1] with  or  key and confirm with  key.
3. Select [Differential pressure span | 1.7] with  or  key and confirm with  key.
4. Press  key to set the span.
▶ The span setting is active. If it is to be no longer used, it must be reset ([Differential pressure span | 1.7] parameter).

7.5 Calibrating the pressure sensor

To be able to calibrate the pressure sensor, make sure that the pressure sensor in the differential pressure meter is activated ([Pressure sensor | 2.1.4] parameter = YES).

How to proceed:

1. Press  key (in start screen) to go to the main menu.
2. Select [Device settings | 2] with  or  key and confirm with  key.
3. Confirm [General | 2.1] with  key.
4. Select [Pressure sensor | 2.1.4] with  or  key and check whether the parameter is set to YES. If this is not the case:
Set the [Pressure sensor | 2.1.4] to YES with  key.

a) Zero point of pressure sensor

We recommend for devices with pressure sensor (Type 5007-1-xxxxxxxxxxxxxxxxxx2) performing a zero calibration of the pressure sensor during start-up and in cases when the pressure reading on the display of the differential pressure meter does not match the pressure reading on the pressure gauge.

Before performing a zero calibration, a pressure sensor span set beforehand must be reset.

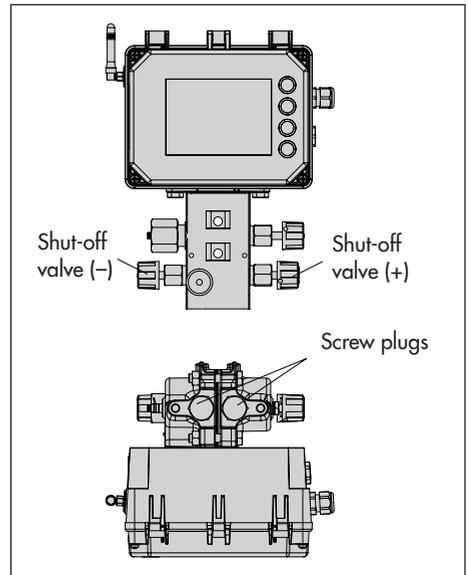
Preparing zero calibration

To perform a zero calibration, 0 bar must be applied to the low-pressure chamber (low-pressure pipe p_2) of the dp cell:

- Close the shut-off valves (+) and (-).
- Open the bypass valve.
- Slowly open one of the screw plugs to relieve the pressure from the low-pressure chamber.

i Note

The error "Large differential pressure drop" is generated when the bypass valve is open. Confirm this error by pressing the  key.



Performing zero calibration

i Note

The user level must be set to 'Specialist' for the zero calibration (see section 7.2).

1. Press  key (in start screen) to go to the main menu.
2. Select [Start-up | 1] with  or  key and confirm with  key.
3. Select [Pressure sensor span | 1.10] with  or  key and confirm with  key.
4. Select 'Set span' with  or  key and confirm with  key.
5. Select 'Reset span' with  or  key and confirm with  key.
6. Press  to exit the [Pressure sensor span | 1.9] parameter.
7. Select [Zero point of pressure sensor | 1.8] with  or  key and confirm with  key.
8. Select 'Set zero' with  or  key and confirm with  key.
 - ▶▶ The current values for measured value and zero are displayed.
9. Press  key to set zero.

After zero calibration is completed:

- Close the open screw plug.
- Close the bypass valve.
- Slowly open the shut-off valves (+) and (-).

b) Pressure sensor span

For a more detailed calibration of the pressure sensor, the measuring range (span) can also be set and checked in addition to the zero point.

- Observe the sequence:
 1. Calibrating the zero of the pressure sensor (see section 7.5 a)).
 2. Set and check the measuring range (pressure sensor span).
- Create a defined reference pressure (e.g. 10.0 bar) at the low-pressure pipe (p₂).

How to proceed:

1. Press  key (in start screen) to go to the main menu.
2. Select [Pressure span (reference) | 1.9] with  or  key and confirm with  key.
3. Set the reference pressure (e.g. 10 bar) with  or  key and confirm with  key.
4. Press  to exit the [Pressure span (reference) | 1.9] parameter.
5. Select [Pressure sensor span | 1.10] with  or  key and confirm with  key.
 - ▶▶ The current values for the measured value, span and reference are displayed.
6. Press  key twice to set the span.
 - ▶▶ The span setting is active. If it is to be no longer used, it must be reset ([Pressure sensor span | 1.10] parameter).

8 Operation

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

⚠ DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

- Installation, operation or maintenance of the differential pressure meter must only be performed by personnel with qualifications according to Clause 4.5 of IEC 60079-14 who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

⚠ WARNING

Risk of personal injury due to process medium escaping from a damaged dp cell.

- Only use process media which, according to their properties, are compatible with the materials used in the device.
- Observe the material numbers listed in the technical data as well as the material safety data sheets (MSDS) of the process media.

ⓘ NOTICE

Risk of dp cell damage due to unsuitable medium properties.

- Only use process media suitable for the device version according to the article code (see the 'Markings on the device' section).

ⓘ NOTICE

Risk of damage to the dp cell due to incorrect use of oxygen.

- When the device is used for oxygen service, only allow the dp cell and any SAMSON accessories (e.g. valve block) to come into contact with **gaseous oxygen**.
- Do not allow the oxygen pressure to exceed the maximum permissible limit of 50 bar.

Operation

The differential pressure of liquids, vapors and gases are measured by the integrated dp cell in the Media 7 device. The measured differential pressure is used for the differential pressure and filling level measurement.

The operating mode (differential pressure or filling level) is set in the [Operating mode | 1.4] parameter. The differential pressure measurement is the default setting in the differential pressure meter.

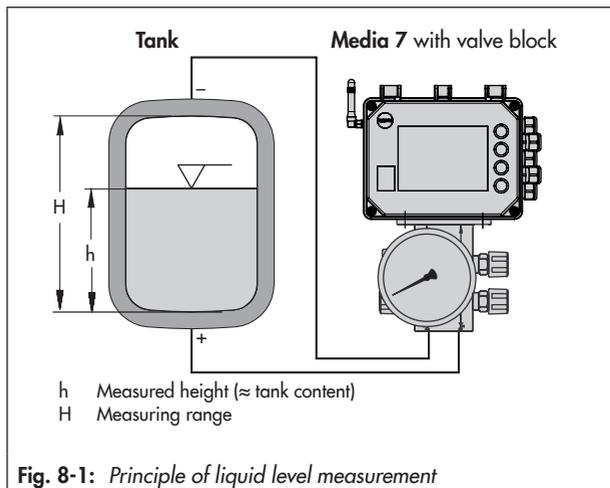
1. Press \odot key (in start screen) to go to the main menu.
2. Select [Start-up | 1] with \uparrow or \downarrow key and confirm with \odot key.
3. Select [Operating menu | 1.4] with \uparrow or \downarrow key and confirm with \odot key.
4. Press \odot key and select differential pressure or filling level with \uparrow or \downarrow key.
5. Press \odot key to confirm the setting.

8.1 Differential pressure measurement

Two absolute pressures p_1 and p_2 are compared for the differential pressure measurement. This allows, for example the filters to be monitored by measuring the upstream and downstream pressures at the filter.

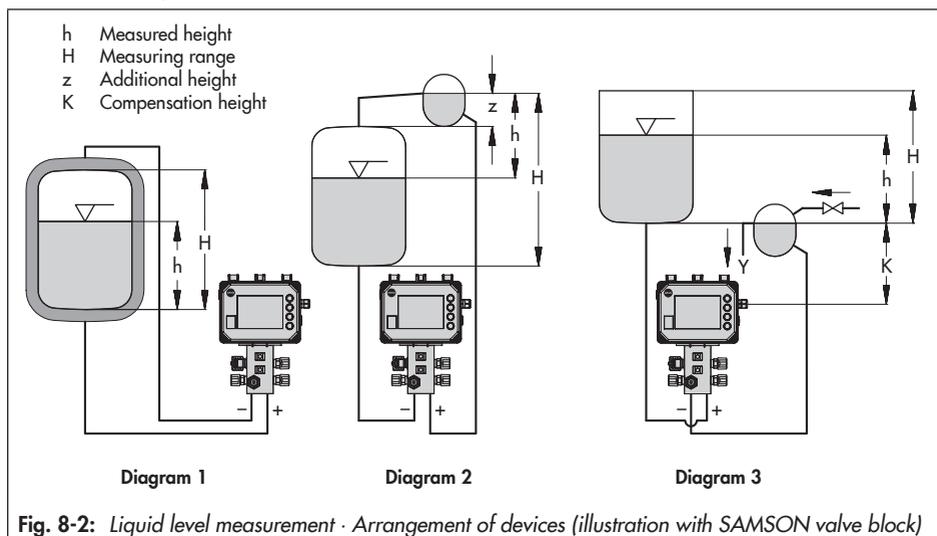
8.2 Liquid level measurement

The tank content (function of hydrostatic pressure, tank geometry and liquid density of the stored gas) is displayed proportionally and the operating pressure is indicated in the selected unit on the display. The adjacent image illustrates the principle of the liquid level measurement.



Device arrangement for liquid level measurement

- Fig. 8-2, diagram 1: measurement on cryogenic tanks
- Fig. 8-2, diagram 2: measurement on pressure vessels with condensing or non-condensing pressure reserve. The additional height z is included in the measurement. As a result, this height (z) must be as low as possible.
- Fig. 8-2, diagram 3: measurement on open vessels with the meter located in a low position. The compensation height K can be as large as required depending on the conditions in the plant.



8.2.1 Density calculation in the tank – approximation method 0.1

i Note

In the filling level mode, the liquid and gas density can be calculated manually or automatically. The first implementation of the automatic density calculation is based on an approximation method with a tolerance of $\pm 10\%$. In this device version, it serves as orientation.

Operation

The density calculation is based on the following laws of physics:

- The momentary pressure drop used for the differential pressure measurement ($\Delta p = p_1 - p_2$) in cryogenic tanks is the total of the individual static pressure differences which arise due to the various heights in the tank and the measuring lines.
- The static pressure differences are proportional to the product resulting from multiplying the column height of the medium (liquid or gas) with the momentary medium density.
- The momentary density of the medium is calculated from its boiling curve.
- The gas columns in the high-pressure and low-pressure pipes reduce the differential pressure as they oppose each other

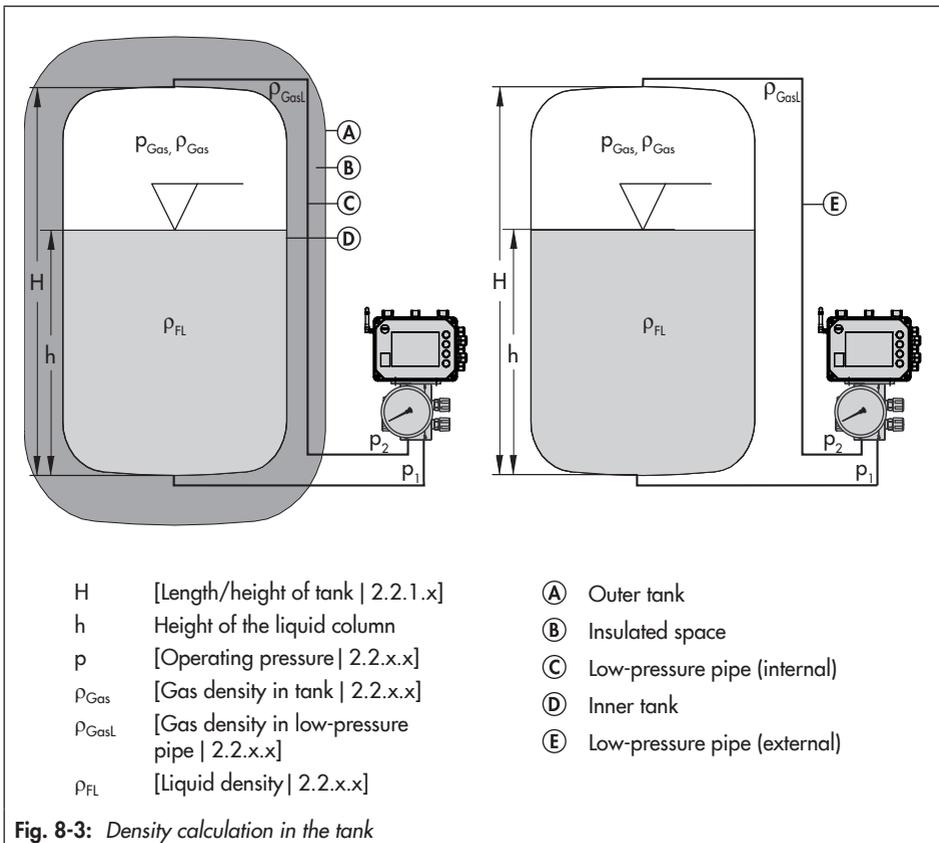


Fig. 8-3: Density calculation in the tank

i Note

- The default density calculation is performed manually by the [Calculate densities | 2.2.x.x] parameter based on the parameters listed in Fig. 8-3. Additionally, the density calculation is determined by the process medium ([Medium for density correction | 2.2.2.x] and [Ambient temperature | 2.2.x.x]).
- The density calculation can be changed from manual to automatic in the TROVIS-VIEW software. The automatic density calculation provides a reference value with an accuracy of $\pm 10\%$.

8.3 Remote data transmission

i Note

The remote data transmission can only be used when a GSM module is installed.

To use remote data transmission, SAMSON creates a user account for each customer in the SAM TANK MANAGEMENT web interface. All devices are added to the account by SAMSON.

- ➔ Contact SAMSON's After-sales Service for details on how to register in SAM TANK MANAGEMENT.

8.3.1 Status LEDs of the GSM module

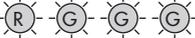
The table below describes the meaning of the LEDs:

LED	Color	Illuminated	Blinks
ERR	Red	Error or failure	2x: GSM module without SIM card 3x: incorrect PIN
FTP	Green		Fast blinking: data transmission in progress
GSM	Green	Searching for a network	1x: GSM connection OK 2x: server connection OK 3x: PIN code failed 4x: hardware error Fast blinking: incoming SMS text message
SYS	Green		1x: system ON

8.3.2 Improving the signal quality

The signal strength can be indicated by the LEDs on the GSM module. Proceed as follows:

1. Press the service key on the GSM module and hold for three seconds (see Fig. 8-4).
2. The LEDs indicate the signal strength as follows:

Reading	CSQ value ¹⁾	Signal quality
Red LED 	< 8 (< -96 dBm)	No signal
Red LED + 1x green LED 	< 15 (< -82 dBm)	Poor quality
Red LED + 2x green LEDs 	< 21 (< -70 dBm)	Fair quality
Red LED + 3x green LEDs 	≥ 21 (≥ -70 dBm)	Good quality

¹⁾ CSQ (Cell Signal Quality), parameter to indicate the signal strength (signal quality) in mobile networks

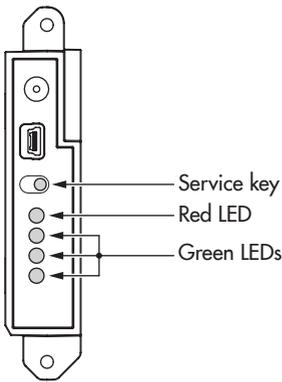


Fig. 8-4: Signal strength indication

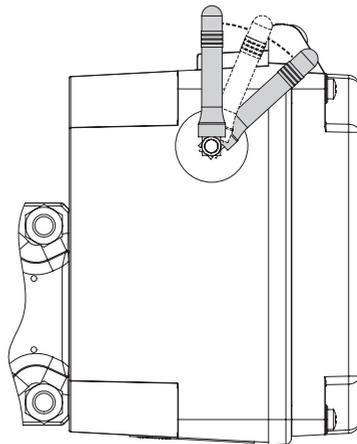


Fig. 8-5: Aligning the antenna

Aligning the antenna

Move the antenna to the upright position for the best reception results. If a weather guard or other housing parts are located directly above the device due to the mounting situation, tilt the antenna slightly (see Fig. 8-5).

i Note

If the signal is poor in the location where the device is installed, an external mobile network antenna with SMA connection (commonly available mobile network accessories) can be used.

9 Malfunctions

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

⚠ DANGER

Risk of fatal injury due to electric shock (230 V version).

- Before connecting wiring, performing any work on the device or opening the device, disconnect the supply voltage and protect it against unintentional re-connection.
- Only use power interruption devices that are protected against unintentional re-connection of the power supply.

⚠ DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

- For mounting and electrical installation in hazardous areas, observe the explosion protection approvals as well as the relevant electrotechnical regulations and the accident prevention regulations that apply in the country of use. EN 60079-14 applies in Europe.
- Installation, operation or maintenance of the differential pressure meter must only be performed by personnel with qualifications according to Clause 4.5 of IEC 60079-14 who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

⚠ DANGER

Risk of fatal injury as a result of electrostatic discharge at the housing.

- Ensure that the device, cables and other plant components cannot rub against each other.
- Do not rub dry the housing surface of the differential pressure meter.
- Only use a damp cloth or wipes (e.g. with diluted mild soap or detergent) to clean the housing surface.

⚠ DANGER

Risk of bursting in pressure equipment.

- Before starting any work on the differential pressure meter, depressurize all plant sections affected as well as the dp cell.
- Drain the process medium from all the plant sections affected as well as the dp cell.
- Wear protective clothing as specified in the material safety data sheet (MSDS) for the process medium.

⚠ DANGER

Risk of injury due to incorrect handling of oxygen.

- Work on differential pressure meters intended for the measurement of gaseous oxygen must only be performed by operating personnel who has undergone training for work involving oxygen service.
- When replacing parts that come into contact with gaseous oxygen, wear suit-

Malfunctions

able gloves and do not contaminate any parts with oil or grease.

WARNING

Risk of personal injury due to residual process medium inside the dp cell.

- *If possible, when working on the dp cell, drain the process medium from all the plant sections concerned and the dp cell.*
 - *Wear protective clothing, safety gloves and eye protection.*
-

WARNING

Risk of personal injury due to process medium escaping from a damaged dp cell.

- *Only use process media which, according to their properties, are compatible with the materials used in the device.*
 - *Observe the material numbers listed in the technical data as well as the material safety data sheets (MSDS) of the process media.*
-

WARNING

Risk of burn injuries due to hot or cold components and pipelines.

- *Prior to performing any work on the differential pressure meter, allow components and pipelines to cool down or warm up to the ambient temperature.*
 - *Wear protective clothing and safety gloves.*
-

9.1 Troubleshooting

Malfunctions are indicated on the display by error messages in conjunction with an icon for status classification and an error ID. The meaning of the icons and their order of priority are listed in Table 9-1.

Table 9-1: Icon showing status classification

Status icon	Priority	Meaning
	1	Failure
	2	Out of specification
	3	Maintenance required
	4	No message

On the start screen, error messages can be cleared by pressing the  key. Error messages and recommended action for troubleshooting are listed in Table 9-2.

Table 9-2: Troubleshooting

Error ID	Message	Possible causes and recommended action
101	AMR magnet lost	The Media 7 device has an internal device error. → Contact SAMSON's After-sales Service.
102	AMR sensor not recognized	
103	Memory error (calibration)	
104	Memory error (data)	
105	No factory calibration	
106	Pressure sensor error	
107	Internal data processing error	
201	AMR signal outside range	→ Reset the Media 7 device. Contact SAMSON's After-sales Service department when this error reoccurs.
202	Measuring span error	→ Check the settings for the tank and media data. Correct them, if necessary.
203	Characteristic error	An invalid tank geometry has been entered: → Re-enter tank data (only possible in TROVIS-VIEW).
204	AMR temperature sensor	The temperature sensor has failed. → Reset error message. Contact SAMSON's After-sales Service when this error reoccurs.
205	Temperature inside device below min. limit	The temperature limit inside the device has fallen below the adjusted min. limit. → Check whether the heating functions properly and the heating control is switched on. → Select lower temperature limit.
206	Temperature inside device above max. limit	The temperature limit inside the device has exceeded the adjusted max. limit. → Check whether the heating functions properly and the heating control is switched on. → Select a better location to mount the Media 7 device, if necessary.
207	Large differential pressure drop	The bypass valve has been opened. A diaphragm rupture in the dp cell exists. The dp cell leaks. → Check all screw fittings.

Malfunctions

Error ID	Message	Possible causes and recommended action
301	Power supply unit not recognized	The current firmware of the device does not support the supply voltage. A firmware update is necessary. → Contact SAMSON's After-sales Service.
302	Option not recognized	The current firmware of the device does not support the option. A firmware update is necessary. The option is defective. → Contact SAMSON's After-sales Service.
303	Option module combination invalid	Option modules are inserted incorrectly or the incorrect combination of modules has been used. → Check the combination and how the option modules are inserted.

10 Servicing

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

⚠ DANGER

Risk of fatal injury due to electric shock (230 V version).

- Before connecting wiring, performing any work on the device or opening the device, disconnect the supply voltage and protect it against unintentional re-connection.
- Only use power interruption devices that are protected against unintentional re-connection of the power supply.

⚠ DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

- For mounting and electrical installation in hazardous areas, observe the explosion protection approvals as well as the relevant electrotechnical regulations and the accident prevention regulations that apply in the country of use. EN 60079-14 applies in Europe.
- Installation, operation or maintenance of the differential pressure meter must only be performed by personnel with qualifications according to Clause 4.5 of IEC 60079-14 who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

⚠ DANGER

Risk of fatal injury as a result of electrostatic discharge at the housing.

- Ensure that the device, cables and other plant components cannot rub against each other.
- Do not rub dry the housing surface of the differential pressure meter.
- Only use a damp cloth or wipes (e.g. with diluted mild soap or detergent) to clean the housing surface.

⚠ DANGER

Risk of bursting in pressure equipment.

- Before starting any work on the differential pressure meter, depressurize all plant sections affected as well as the dp cell.
- Drain the process medium from all the plant sections affected as well as the dp cell.
- Wear protective clothing as specified in the material safety data sheet (MSDS) for the process medium.

⚠ DANGER

Risk of injury due to incorrect handling of oxygen.

- Work on differential pressure meters intended for the measurement of gaseous oxygen must only be performed by operating personnel who has undergone training for work involving oxygen service.
- When replacing parts that come into contact with gaseous oxygen, wear suit-

able gloves and do not contaminate any parts with oil or grease.

⚠ WARNING

Risk of personal injury due to residual process medium inside the dp cell.

- If possible, when working on the dp cell, drain the process medium from all the plant sections concerned and the dp cell.
- Wear protective clothing, safety gloves and eye protection.

⚠ WARNING

Risk of personal injury due to process medium escaping from a damaged dp cell.

- Only use process media which, according to their properties, are compatible with the materials used in the device.
- Observe the material numbers listed in the technical data as well as the material safety data sheets (MSDS) of the process media.

⚠ WARNING

Risk of burn injuries due to hot or cold components and pipelines.

- Prior to performing any work on the differential pressure meter, allow components and pipelines to cool down or warm up to the ambient temperature.
- Wear protective clothing and safety gloves.

i Note

The differential pressure meter was checked by SAMSON before it left the factory.

- The product warranty becomes void if service or repair work not described in these instructions is performed without prior agreement by SAMSON's After-sales Service.
- Only use original spare parts by SAMSON, which comply with the original specifications.

10.1 Servicing explosion-protected devices

If a part of the device on which the explosion protection is based needs to be serviced, the device 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 and the passing of the routine test is documented by attaching a mark of conformity to the device.

- Retain testing and servicing documents as well as certificates issued by the manufacturer or inspector together with other safety-relevant documents for the device or plant.

Replace explosion-protected components only with original, routine-tested components

by the manufacturer. Specify the type and serial number on ordering the device.

Devices that have already been operated 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 for servicing explosion-protected devices.

Devices delivered without an intrinsically safe power supply unit must not be put back into operation in hazardous areas until a qualified inspector or the manufacturer has tested it.

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.

10.2 Periodic inspection and testing of the differential pressure meter

We recommend inspection and testing according to Table 10-1 at the minimum.

Servicing

Table 10-1: *Recommended inspection and testing*

Inspection and testing	Action to be taken in the event of a negative result
Check the markings, labels and nameplates on the differential pressure meter for their readability and completeness.	Contact SAMSON when nameplates or labels are damaged, missing or incorrect to renew them.
	Clean any inscriptions that are covered with dirt and are illegible.
Check the differential pressure meter to ensure it is mounted properly.	Tighten the any loose mounting screws.
Check the measuring lines.	Tighten any loose screw fittings.
	Replace any leaking lines.
Check the power lines.	Tighten any loose cable glands.
	Make sure that the stranded wires are pushed into the terminals and tighten any loose screws on the the terminals.
	Renew damaged lines.
Check error messages on the display (indicated by the ⊗, ⚠, ⚡ and ☑ icons).	Troubleshooting (see the 'Malfunctions' section).

11 Decommissioning

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

⚠ DANGER

Risk of fatal injury due to electric shock (230 V version).

- Before connecting wiring, performing any work on the device or opening the device, disconnect the supply voltage and protect it against unintentional re-connection.
- Only use power interruption devices that are protected against unintentional re-connection of the power supply.

⚠ DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

- For mounting and electrical installation in hazardous areas, observe the explosion protection approvals as well as the relevant electrotechnical regulations and the accident prevention regulations that apply in the country of use. EN 60079-14 applies in Europe.
- Installation, operation or maintenance of the differential pressure meter must only be performed by personnel with qualifications according to Clause 4.5 of IEC 60079-14 who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

⚠ DANGER

Risk of fatal injury as a result of electrostatic discharge at the housing.

- Ensure that the device, cables and other plant components cannot rub against each other.

⚠ DANGER

Risk of bursting in pressure equipment.

- Before starting any work on the differential pressure meter, depressurize all plant sections affected as well as the dp cell.
- Drain the process medium from all the plant sections affected as well as the dp cell.
- Wear protective clothing as specified in the material safety data sheet (MSDS) for the process medium.

⚠ DANGER

Risk of injury due to incorrect handling of oxygen.

- Work on differential pressure meters intended for the measurement of gaseous oxygen must only be performed by operating personnel who has undergone training for work involving oxygen service.

⚠ WARNING

Risk of burn injuries due to hot or cold components and pipelines.

- ➔ *Prior to performing any work on the differential pressure meter, allow components and pipelines to cool down or warm up to the ambient temperature.*
 - ➔ *Wear protective clothing and safety gloves.*
-

To decommission the differential pressure meter before removing it, proceed as follows:

1. Isolate measuring lines.
 - ➔ When a valve block is used:
 2. Close the shut-off valves.
 3. Open the equalizing valve.
 4. Slowly open the screw of the test connection to release the pressure.
5. Disconnect the power supply.
6. Open the housing cover of the differential pressure meter and disconnect the wires for the power supply.

12 Removal

The work described in this section is only to be performed by personnel appropriately qualified to carry out such tasks.

⚠ DANGER

Risk of fatal injury as a result of electrostatic discharge at the housing.

→ Ensure that the device, cables and other plant components cannot rub against each other.

⚠ DANGER

Risk of injury due to incorrect handling of oxygen.

→ Work on differential pressure meters intended for the measurement of gaseous oxygen must only be performed by operating personnel who has undergone training for work involving oxygen service.

⚠ WARNING

Risk of burn injuries due to hot or cold components and pipelines.

→ Prior to performing any work on the differential pressure meter, allow components and pipelines to cool down or warm up to the ambient temperature.

→ Wear protective clothing and safety gloves.

ⓘ NOTICE

Electrostatic discharge will damage the installed modules.

→ Observe the ESD requirements according to IEC 61340-5-1.

12.1 Removing the option module

1. Put the differential pressure meter out of operation (see the 'Decommissioning' section).
2. Disconnect the connecting lines on the option module.
3. Undo the five screws on the cover and remove the cover.
4. Pull the option module out of the slot and store it in its packaging.

If the differential pressure meter is to continue operating without the option module:

- Place on the cover and fasten it.
- Put the differential pressure meter back into operation (see the 'Start-up and configuration' section).

12.2 Removing the GSM module

1. Put the differential pressure meter out of operation (see the 'Decommissioning' section).
2. Undo the five screws on the cover and remove the cover.
3. Pull the GSM module out of the slot and store it in its packaging.

Removal

If the differential pressure meter is to continue operating without the option module:

- Place on the cover and fasten it.
- Put the differential pressure meter back into operation (see the 'Start-up and configuration' section).

12.3 Removing the differential pressure meter

1. Put the differential pressure meter out of operation (see the 'Decommissioning' section).
2. Remove the option module.
3. Disconnect the wires for the power supply from the differential pressure meter.
4. To remove the differential pressure meter, loosen the fastening screws on the device.

13 Repairs

A defective differential pressure meter must be repaired or replaced.

! NOTICE

Risk of damage to the differential pressure meter due to incorrect repair work.

- Do not perform any repair work on your own.
- Contact SAMSON's After-sales Service for repair work.

2. Remove the differential pressure meter (see the 'Removal' section).
3. Proceed as described on the Returning goods page of our website
▶ www.samsongroup.com > Service & Support > After-sales Service > Returning goods

13.1 Returning devices to SAMSON

i Note

When returning differential pressure meters which are intended for measuring gaseous oxygen 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 does not accept any responsibility.

Defective differential pressure meters can be returned to SAMSON for repair.

Proceed as follows to return devices to SAMSON:

1. Put the differential pressure meter out of operation (see the 'Decommissioning' section).

14 Disposal

⚠ WARNING

Risk of personal injury due to process medium escaping from a damaged dp cell.

- Only use process media which, according to their properties, are compatible with the materials used in the device.
- Observe the material numbers listed in the technical data as well as the material safety data sheets (MSDS) of the process media.



We are registered with the German national register for waste electric equipment (stiftung ear) as a producer of electrical and electronic equipment, WEEE reg. no.: DE 62194439

- Do not dispose of components, lubricants and hazardous substances together with your other household waste.
- Check whether a battery is inserted in the differential pressure meter and remove it before disposing of the device.
- Observe local, national and international refuse regulations before disposing of the device and its batteries.

i Note

We can provide you with a recycling passport according to PAS 1049 on request. Simply e-mail us at aftersaleservice@samsung.com giving details of your company address.

💡 Tip

On request, we can appoint a service provider to dismantle and recycle the product.

15 Certificates

The following certificates are included on the next pages:

- EU declaration of conformity for Type 5007
- EU declaration of conformity for Type 5007-1-121
- EAC certificate for Type 5007
- EU type examination certificate for Type 5007-1-110 and Type 5007-1-120
- IECEx certificate for Type 5007-1-111 and Type 5007-1-121

The certificates shown were up to date at the time of publishing. The latest certificates can be found on our website:

▶ www.samsongroup.com > Products & Applications > Product selector > Automation Systems > Media 7 (5007-1)



EU Konformitätserklärung / EU Declaration of Conformity / Déclaration UE de conformité

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller/
This declaration of conformity is issued under the sole responsibility of the manufacturer/
La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.
Für das folgende Produkt / For the following product / Nous certifions que le produit

Messumformer für Differenzdruck und Durchflussmesser Media 7 / Transmitter for Differential Pressure and Flow Media 7 / Mesure de pression différentielle et de débit Media 7 Typ/Type/Type 5007-1

wird die Konformität mit den einschlägigen Harmonisierungsrechtsvorschriften der Union bestätigt /
the conformity with the relevant Union harmonisation legislation is declared with/
est conforme à la législation d'harmonisation de l'Union applicable selon les normes:

EMC 2014/30/EU	EN 61000-6-2:2019, EN 61000-6-3:2007 +A1:2011, EN 61326-1:2013
LVD 2014/35/EU	EN 60730-1:2016, EN 61010:2020
RoHS 2011/65/EU	EN 50581:2012

Hersteller / Manufacturer / Fabricant:

SAMSON AKTIENGESELLSCHAFT
Weismüllerstraße 3
D-60314 Frankfurt am Main
Deutschland/Germany/Allemagne

Frankfurt / Francfort, 2020-09-29

Im Namen des Herstellers/ On behalf of the Manufacturer/ Au nom du fabricant.

Dipl.-Ing. Jens Bieger
Zentralabteilungsleiter/Head of Department/Chef de département
Entwicklung Ventilanbaugeräte und Messtechnik
Development Valve Attachments and Measurement Technologies

Dipl.-Ing. Silke Bianca Schäfer
Total Quality Management/
Management par la qualité totale

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EU Konformitätserklärung / EU Declaration of Conformity / Déclaration UE de conformité

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Messumformer für Differenzdruck und Durchflussmesser Media 7 / Transmitter for Differential Pressure and Flow Media 7 / Mesure de pression différentielle et de débit Media 7 Typ/Type/Type 5007-1-1x0

entsprechend der EU-Baumusterprüfbescheinigung KIWA 17ATEX0041 X ausgestellt von der/
according to the EU Type Examination KIWA 17ATEX0041 X issued by/
établi selon le certificat CE d'essais sur échantillons KIWA 17ATEX0041 X émis par:

KIWA Nederland B.V.
Wilmsdorf 50
P.O. Box 137
7300 AC Apeldoorn

Benannte Stelle/Notified Body/Organisme notifié 0620

wird die Konformität mit den einschlägigen Harmonisierungsrechtsvorschriften der Union bestätigt /
the conformity with the relevant Union harmonisation legislation is declared with/
est conforme à la législation d'harmonisation de l'Union applicable selon les normes:

EMC 2014/30/EU	EN 61000-6-2:2019, EN 61000-6-3:2007 +A1:2011, EN 61326-1:2013
Explosion Protection 2014/34/EU	EN 60079-0:2012+A11:2013, EN 60079-11:2012, EN 60079-26:2015
RoHS 2011/65/EU	EN 50581:2012

Hersteller / Manufacturer / Fabricant:

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Für das folgende Produkt / For the following product / Nous certifions que le produit

Messumformer für Differenzdruck und Durchflussmesser Media 7 / Transmitter for Differential Pressure and Flow Media 7 / Mesure de pression différentielle et de débit Media 7 Typ/Type/Type 5007-1 GSM

wird die Konformität mit den einschlägigen Harmonisierungsrechtsvorschriften der Union bestätigt /
the conformity with the relevant Union harmonisation legislation is declared with /
est conforme à la législation d'harmonisation de l'Union applicable selon les normes:

RED 2014/53/EU	EN 301489-1:V1.9.2, EN 301489-7:V1.3.1 EN 301511:V12.1.1, TS 151010-1:V12.2.0
RoHS 2011/65/EU	EN 50581:2012

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Total Quality Management/
Management par la qualité totale

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СЕРТИФИКАТ СООТВЕТСТВИЯ

№ ЕАЭС RU C-DE.ЭА11.В.00055/20

Серия **RU** № **0197364**

ОРГАН ПО СЕРТИФИКАЦИИ Общества с ограниченной ответственностью «ТМС РУС». Место нахождения (адрес юридического лица): Российская Федерация, 127083, город Москва, улица Верхняя Масловка, дом 20, строение 2; адрес места осуществления деятельности: Российская Федерация, 127083, город Москва, улица Верхняя Масловка, дом 20, строение 2, помещения № 18, 28. Аттестат аккредитации № РОСС RU.0001.11ЭА11 от 02.07.2015. Номер телефона: +7 (495) 221-18-04; адрес электронной почты: info@tms-cs.ru.

ЗАЯВИТЕЛЬ Общество с ограниченной ответственностью «Самсон Контролс». Место нахождения (адрес юридического лица) и адрес места осуществления деятельности: Российская Федерация, 109544, город Москва, бульвар Энтузиастов, дом 2, этаж 5, комната 11. ОГРН 1037700041026. Номер телефона: +7 (495) 777-45-45; адрес электронной почты: samson@samson.ru.

ИЗГОТОВИТЕЛЬ «SAMSON AG Mess- und Regeltechnik». Место нахождения (адрес юридического лица) и адрес места осуществления деятельности по изготовлению продукции: Weismüllerstrasse 3, D-60314 Frankfurt am Main, Германия.

ПРОДУКЦИЯ Манометры дифференциальные, типы Media 05, Media 5, Media 7. Изготовление в соответствии со стандартами, указанными в приложении к сертификату соответствия на бланке № 0724295. Серийный выпуск.

КОД ТН ВЭД ЕАЭС 9026 20 200 0, 9026 20 800 0

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ технического регламента Таможенного союза «Электromагнитная совместимость технических средств» (ТР ТС 020/2011).

СЕРТИФИКАТ СООТВЕТСТВИЯ ВЫДАН НА ОСНОВАНИИ протокола сертификационных испытаний № 191210-015-02/ИР от 26.12.2019, выданного испытательной лабораторией Общества с ограниченной ответственностью «Инновационные решения», аттестат аккредитации РОСС RU.0001.21AB90; акта о результатах анализа состояния производства № 00062-А от 04.07.2019 органа по сертификации Общества с ограниченной ответственностью «ТМС РУС»; руководства по эксплуатации 4212-5005-5006-2019.РЭ. Схема сертификации – 1с.

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ Стандарт, в результате применения которого на добровольной основе обеспечивается соблюдение требований технического регламента: подразделы 6.2 и 7.2 ГОСТ Р 51522.1-2011 (МЭК 61326-1:2005) «Электрическое оборудование для измерения, управления и лабораторного применения. Часть 1. Общие требования и методы испытаний». Назначенный срок службы – 12 лет. Назначенный срок хранения – 2 года. Условия хранения указаны в руководстве по эксплуатации 4212-5005-5006-2019.РЭ.

СРОК ДЕЙСТВИЯ С 16.01.2020 **ПО** 15.01.2025

ВКЛЮЧИТЕЛЬНО

Руководитель (уполномоченное лицо) органа по сертификации
 Эксперт (эксперт-аудитор) (эксперты (эксперты-аудиторы))

(подпись)
(подпись)



Назарова Лилия Юрьевна (Ф.И.О.)
 М.П.
 Ходоров Владимир Игоревич (Ф.И.О.)



CERTIFICATE

1 EU – Type Examination Certificate

2 Equipment or Protective System Intended for use in Potentially Explosive Atmospheres
Directive 2014/34/EU

3 EU – Type Examination Certificate Number: **KIWA 17ATEX0041 X** Issue: 1

4 Product: **Differential Pressure Gauge / Transmitter Type 5007-1-1x0**

5 Manufacturer: **SAMSON AG**

6 Address: **Weismüllerstraße 3, 60314 Frankfurt
Germany**

7 This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Kiwa Nederland B.V., Notified Body number 0620 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in confidential ATEX Assessment Report No. 170701565.

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 60079-0 : 2012 + A11 : 2013 EN 60079-11 : 2012 EN 60079-26 : 2015

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

11 This EU – Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:



II 2 G Ex ia IIB T4 Gb (Type 5007-1-110)

or

II 1/2 G Ex ia IIB T4 Ga/Gb (Type 5007-1-120)

Kiwa Nederland B.V.
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Kiwa Nederland B.V.

Pieter van Breugel
Certification Officer

Issue date:

1 June 2018

First issue:

This certificate shall, as far as applicable, be revised before the date of cessation of presumption of conformity of (one of) the included standards above as communicated in the Official Journal of the European Union.

© Integral publication of this certificate in its entirety and without any change is allowed.

ExVision Form 81
Version 3.0 (2016-06)



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13 SCHEDULE

14 EU – Type Examination Certificate KIWA 17ATEX0041 X Issue No. 1

15.1 Description of Product

The Differential Pressure Gauges / Transmitters type 5007-1-1x0 are 2 wire loop powered (4 – 20 mA) and are used to convert a differential pressure signal into an electrical signal.

The Gauge consists of a non-metallic enclosure for the electronics, equipped with an indicator for local read-out and a number of push buttons for control, mounted on a differential pressure measuring cell made from brass.

Optionally the Gauge can be equipped with up to 4 additional 4 - 20 mA analog outputs.

Gauges Type 5007-1-120 provide a EPL Ga/Gb separation towards the process in the sensor enclosure, where gauges type 5007-1-110 are equipped with an additional pressure sensor that is in contact with the process.

Ambient temperature range: -20 °C to +70 °C.

15.2 Electrical Data

Supply and output circuit (terminals +31, -31):
in type of protection intrinsic safety Ex ia IIB, only for connection to a certified intrinsically safe circuit, with the following maximum values:

$U_i = 28 \text{ V}$; $I_i = 115 \text{ mA}$; $P_i = 1,0 \text{ W}$; $C_i = 25 \text{ nF}$; $L_i = 0 \text{ mH}$

Output circuit (option module terminals +31, -31):
in type of protection intrinsic safety Ex ia IIB, only for connection to a certified intrinsically safe circuit, with the following maximum values:

$U_i = 28 \text{ V}$; $I_i = 115 \text{ mA}$; $P_i = 1,0 \text{ W}$; $C_i = 25 \text{ nF}$; $L_i = 0 \text{ mH}$

The output circuits of the option modules are galvanically isolated from each other and from the supply and output circuit up to a voltage of 500 V.

15.3 Instructions

The instructions provided with the product shall be followed in detail to assure safe operation.

16 ATEX Assessment Report Number

170701565.

17 Specific Conditions of Use

The equipment shall be installed and maintained such that hazards caused by electrostatic discharge are excluded.

18 Essential Health and Safety Requirements

All relevant Essential Health and Safety Requirements are covered by the standards listed at section 9.

19 Drawings and Documents

As listed in ATEX Assessment Report No. 170701565.





IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEX Scheme visit www.iecex.com

Certificate No.: IECEX KIWA 17.0020X Issue No: 0 Certificate history:
Issue No. 0 (2018-06-01)

Status: Current Page 1 of 3

Date of Issue: 2018-06-01

Applicant: SAMSON AG
Weismüllerstraße 3
60314 Frankfurt
Germany

Equipment: Differential Pressure Gauge / Transmitter type 5007-1-1x1
Optional accessory:

Type of Protection: Ex ia

Marking: Ex ia IIB T4 Gb (Type 5007-1-111),
Ex ia IIB T4 Ga/Gb (Type 5007-1-121)

Approved for issue on behalf of the IECEX
Certification Body:

Pieter van Breugel

Position:

Certification Officer

Signature:
(for printed version)

Date:


15th of June, 2018

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEX Website.

Certificate issued by:

Kiwa Nederland B.V. (Unit Kiwa ExVision)
Wimersdorf 50
7327 AC Apeldoorn
P.O. Box 137
The Netherlands





IECEx Certificate of Conformity

Certificate No: IECEx KIWA 17.0020X

Issue No: 0

Date of Issue: 2018-08-01

Page 2 of 3

Manufacturer: SAMSON AG
Weismüllerstraße 3
60314 Frankfurt
Germany

Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-11 : 2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "I"
IEC 60079-26 : 2014-10 Edition:3.0	Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga

This Certificate does not indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

[NUKIWAEXTR17.0022/00](#)

Quality Assessment Report:

[DE/TUN/QAR06.0011/07](#)



IECEX Certificate of Conformity

Certificate No: IECEX KIWA 17.0020X

Issue No: 0

Date of Issue: 2018-06-01

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The Differential Pressure Gauges / Transmitters type 5007-1-1x1 are 2 wire loop powered (4 – 20 mA) and are used to convert a differential pressure signal into an electrical signal. The Gauge consists of a non-metallic enclosure for the electronics, equipped with an indicator for local read-out and a number of push buttons for control, mounted on a differential pressure measuring cell made from brass. Optionally the Gauge can be equipped with up to 4 additional 4 - 20 mA analog outputs.

Gauges Type 5007-1-121 provide a EPL Ca/Gb separation towards the process in the sensor enclosure, where gauges type 5007-1-111 are equipped with an additional pressure sensor that is in contact with the process.

Ambient temperature range: -20 °C to +70 °C.

Electrical Data

Supply and output circuit (terminals +31, -31):

in type of protection intrinsic safety Ex ia IIB, only for connection to a certified intrinsically safe circuit, with the following maximum values:
 $U_i = 28 \text{ V}$; $I_i = 115 \text{ mA}$; $P_i = 1.0 \text{ W}$; $C_i = 25 \text{ nF}$; $L_i = 0 \text{ mH}$

Output circuit (option module terminals +31, -31):

in type of protection intrinsic safety Ex ia IIB, only for connection to a certified intrinsically safe circuit, with the following maximum values:
 $U_i = 28 \text{ V}$; $I_i = 115 \text{ mA}$; $P_i = 1.0 \text{ W}$; $C_i = 25 \text{ nF}$; $L_i = 0 \text{ mH}$

The output circuits of the option modules are galvanically isolated from each other and from the supply and output circuit up to a voltage of 500 V.

SPECIFIC CONDITIONS OF USE: YES as shown below:

The equipment shall be installed and maintained such that hazards caused by electrostatic discharge are excluded.

16 Annex A (configuration instructions)

The menu structure and parameters for on-site operation are described below. Further settings can also be made in the TROVIS-VIEW software. These settings are described in the Operating Instructions 'Media 7 Differential Pressure Meter – Configuration with TROVIS-VIEW' ► EB 9510-2.

i Note

The availability of executed menu items and parameters depends on the version and configuration of the differential pressure meter as well as the option modules used. Default settings are marked 'default'.

Menu		Adjustment range/values/description
Start-up	1	
Switch off	1.1	Switch off the differential pressure meter <i>This parameter is only available after the differential pressure meter has been disconnected from the input voltage and the device is still powered by the internal uninterruptible power supply.</i>
User level	1.2	Select user level <ul style="list-style-type: none"> ▪ Maintenance staff: restricted access ▪ Specialist: full access (password protection possible in menu item 1.12)
Sprache/Language	1.3	Select the menu and display language: <ul style="list-style-type: none"> ▪ German/English (default)/French/Italian/Russian/Spanish/Turkish
Operating mode	1.4	Select the operating mode: <ul style="list-style-type: none"> ▪ Differential pressure (default): differential pressure measurement with linear characteristic ▪ Filling level: the device issues an mA signal (4 to 20 mA) which is proportional to the tank content.
Start-up wizard	1.5	Run the wizard.
Zero point of differential pressure	1.6	Set zero (resetting zero is possible)
Differential pressure span	1.7	Set span (resetting span is possible)
Zero point of pressure sensor	1.8	Set zero (resetting zero is possible)

Annex A (configuration instructions)

Menu		Adjustment range/values/description
Pressure span (reference)	1.9	Set the currently applied operating pressure <ul style="list-style-type: none"> ▪ 0 to 60 bar (default: 10 bar)
Pressure sensor span	1.10	Set span (resetting span is possible)
Password protection	1.11	The 'Specialist' user level can be protected by a four-digit code (menu item 1.12). <ul style="list-style-type: none"> ▪ Not active ▪ Active
Password	1.12	Enter a four-digit code <ul style="list-style-type: none"> ▪ 0000 to 9999
Write protection (data transmission module)	1.13	Activate write protection (data transmission module) <ul style="list-style-type: none"> ▪ Yes ▪ No
Power line frequency	1.14	The local power line frequency must be entered to be able to properly filter out any disturbances which are transmitted over ground wires or external power supply units. <ul style="list-style-type: none"> ▪ 50 Hz (default) ▪ 60 Hz
Start test	1.15	Executable function: two-wire test signal issued.
Test mode	1.16	Test mode is <i>Active</i> while the test is in progress (test duration: 30 s). <ul style="list-style-type: none"> ▪ Not active ▪ Active
Test signal of analog output	1.17	Test signal in % based on the 4 to 20 mA signal range. <ul style="list-style-type: none"> ▪ -10.00 to +110.00 %
Further parameters exist in TROVIS-VIEW (see ► EB 9510-2)		
Device settings	2	
General	2.1	
Identifier	2.1.1	Enter a freely selectable name for the device (max. 15 characters) <ul style="list-style-type: none"> ▪ Enter characters as required (default: MEDIA7)
Filling level	2.1.2	The filling level in % can be displayed on the start screen. <ul style="list-style-type: none"> ▪ Yes ▪ No

Menu		Adjustment range/values/description
Differential pressure	2.1.3	The differential pressure together with a unit can be displayed on the start screen. <ul style="list-style-type: none"> ▪ Yes ▪ No
Pressure sensor	2.1.4	The value measured by the pressure sensor together with a unit can be displayed on the start screen. <ul style="list-style-type: none"> ▪ Yes ▪ No
Unit of pressure	2.1.5	Determine the unit for the value measured by the pressure sensor <ul style="list-style-type: none"> ▪ Selectable units: bar (default)/kPa/psi/cmH₂O/mH₂O/inH₂O
MCN/SCN	2.1.6	MCN (maximum tank content in %) or SCN (tank content up to overflow/gauge pipe) reading on the display. <ul style="list-style-type: none"> ▪ No (default) ▪ Yes
Hazard warning for filling limit	2.1.7	Select filling limit to be indicated on the display when this limit is reached. <ul style="list-style-type: none"> ▪ SCN (volume up to gauge pipe) ▪ UCW (operating filling limit)
LCD backlight	2.1.8	The LCD backlight can be switched on or off (in 24 V and 230 V versions only). <ul style="list-style-type: none"> ▪ ON ▪ OFF
LCD deactivation time	2.1.9	The LCD of the Media 7 device can be switched off after the entered deactivation time (see 2.1.10, only when the OFF setting is selected). <ul style="list-style-type: none"> ▪ ON (default) ▪ OFF
Deactivation time	2.1.10	Enter the time after which the LCD of the Media 7 device is to be automatically switched off. <ul style="list-style-type: none"> ▪ 1 to 60 min (default: 1 min)

Annex A (configuration instructions)

Menu		Adjustment range/values/description
Zoomed view of tank filling	2.1.11	When this function is activated, press the cursor key ↑ in the filling level mode to change between the start screen and a zoomed view of the reading. This allows the reading on the display to be read even from a distance. <ul style="list-style-type: none"> ▪ No (default) ▪ Yes
LCD heating control	2.1.12	The 'ON' setting causes the display to be heated when the outdoor temperature is low. The power consumption of the device increases by 510 mA when the heating is activated. Upper switching temperature (deactivate): -12.5 °C Lower switching temperature (activate): -17.5 °C <ul style="list-style-type: none"> ▪ ON (default) ▪ OFF
User level timeout	2.1.13	Set the time after which the user level is to be reset if no settings are entered <ul style="list-style-type: none"> ▪ 0 to 60 min (default: 15 min)
Filling level mode	2.2	
Tank	2.2.1	Perform tank data settings (menu items 2.2.1.x) in TROVIS-VIEW software, ► EB 9510-2.
Memory space	2.2.1.1	Select one of ten available memory spaces. Each memory space contains the default tank data.
		<i>The following parameter numbers depend on the selected memory space and therefore vary.</i>
Tank identifier	2.2.1.x	Tank identifier reading
Tank type	2.2.1.x	Reading of the selected tank type
Shape of tank head	2.2.1.x	Reading of the selected shape of tank head
Tank truck	2.2.1.x	Tank truck reading (yes/no)
Permissible total weight	2.2.1.x	Reading of the permissible total weight (when tank truck setting = 'Yes')
Own weight	2.2.1.x	Own weight reading (when tank truck setting = 'Yes')
Diameter	2.2.1.x	Reading of set diameter
Length/height of tank	2.2.1.x	Reading of the set length/height of tank

Menu		Adjustment range/values/description
Length/height of measuring line	2.2.1.x	Reading of the set length/height of measuring line
Location of low-pressure pipe	2.2.1.x	Reading of the set location of low-pressure pipe
Volume at 20 mA	2.2.1.x	Reading of the volume at 20 mA (MCN/SCN)
Permissible filling limit	2.2.1.x	Reading of the set permissible filling limit
Further parameters exist in TROVIS-VIEW (see ► EB 9510-2)		
Medium	2.2.2	
Memory space	2.2.2.1	Select one of ten available memory spaces. The memory spaces 1 to 7 are ready configured with records for the following media: <ul style="list-style-type: none"> ▪ Ar/O₂/N₂/CO₂/CH₄/C₂H₄/LNG. The memory spaces 8 to 10 are marked with 'User' and can be edited as required. The parameters of all 10 memory spaces can be changed.
Medium identifier	2.2.2.x	Enter text (max. 11 characters) to identify the medium. If the medium identifier is changed, the name of the previously selected memory space is also changed with it. <ul style="list-style-type: none"> ▪ Enter characters as required
Unit	2.2.2.x	Unit for calculating the tank content [MCN], [SCN] and [UCW] and the filling level <ul style="list-style-type: none"> ▪ Selectable units: % · kg · Nm³ · L · ft³ · lbs
Operating filling limit	2.2.2.x	Enter operating filling limit (UCW) in % <ul style="list-style-type: none"> ▪ 0.0 to 95.0 % (default: 90.0 %)
Shrink factor	2.2.2.x	Enter tank's shrink factor. This value depends on the tank material, operating temperature, and the process medium. <ul style="list-style-type: none"> ▪ 0.95 to 1.00 (default)
Density calculation	2.2.2.x	Select whether the density is to be calculated automatically or manually. If 'Automatic' is selected, the density is calculated based on default data records. If 'Manual' is selected, the values for liquid and gas density can be changed. 'Automatic' can only be selected after a ready-configured medium is selected in the [Memory space 2.2.2.1] parameter. <ul style="list-style-type: none"> ▪ Manual ▪ Automatic

Annex A (configuration instructions)

Menu	Adjustment range/values/description
Gas column correction 2.2.2.x	<p>This parameter allows the correction of the gas density in the low-pressure pipe.</p> <ul style="list-style-type: none"> ▪ OFF: (the gas density of the low-pressure pipe is identical to the gas density in the tank) ▪ Manual: (values for the gas density of the low-pressure pipe are entered manually). ▪ Automatic: (the gas density of the low-pressure pipe is automatically calculated based on the values entered for the operating pressure and ambient temperature)
Medium for density correction 2.2.2.x	<p>Select a medium which is to be used for the density calculation. Records for calculation are saved for each medium that can be selected. If 'Unknown' is selected for this parameter, the standard gas density must also be entered afterwards. The following options are available:</p> <ul style="list-style-type: none"> ▪ Ar/O₂/N₂/CO₂/CH₄/C₂H₄/LNG/Unknown <p>The density is calculated based on the medium set for these parameters even if another medium has been selected for the [Memory space 2.2.2.1] parameter.</p>
Operating pressure 2.2.2.x	<p>Enter unit for the operating pressure</p> <p>The parameter is not available when the density calculation is set to 'Automatic' and the gas column correction is set to 'OFF'.</p> <ul style="list-style-type: none"> ▪ 1.0 to 61.0 bar <p><i>The range of values is restricted depending on the setting of [Medium for density correction 2.2.2.x] parameter.</i></p>
Ambient temperature 2.2.2.x	<p>Enter the ambient temperature in °C</p> <p>The parameter is not available when the density calculation is set to 'Automatic' and the gas column correction is set to 'OFF'.</p> <ul style="list-style-type: none"> ▪ -40 to +80.00 %
Calculate densities 2.2.2.x	<p>Executable function: the following density values are calculated based on the [Operating pressure 2.2.2.x], [Ambient temperature 2.2.2.x] and [Location of low-pressure pipe 2.2.2.x] (for tank) parameters:</p> <ul style="list-style-type: none"> ▪ Liquid density ▪ Gas density in tank ▪ Gas density in low-pressure pipe

Menu		Adjustment range/values/description
Liquid density	2.2.2.x	Enter the liquid density in kg/m ³ Precondition: [Calculate densities 2.2.2.x] parameter set to 'Manual' ▪ 0.0001 to 50000 kg/m ³
Gas density in tank	2.2.2.x	Enter the gas density in tank in kg/m ³ Precondition: [Calculate densities 2.2.2.x] parameter set to 'Manual' ▪ 0 to 30000 kg/m ³
Gas density in low-pressure pipe	2.2.2.x	Enter the gas density of the low-pressure pipe in kg/m ³ Precondition: [Calculate densities 2.2.2.x] and [Gas column correction 2.2.2.x] parameters set to 'Manual' ▪ 0 to 30000 kg/m ³
Standard gas density	2.2.2.x	Enter the standard gas density in kg/m ³ Precondition: [Calculate densities 2.2.2.x] parameter set to 'Manual' and [Medium for density correction 2.2.2.x] parameter is set to 'Unknown' ▪ 0 to 30000 kg/m ³
Further parameters exist in TROVIS-VIEW (see ► EB 9510-2)		
Differential pressure mode	2.3	
Differential pressure [Δp0]	2.3.1	Set the minimum differential pressure. The setting range depends on the entered unit (see parameter 2.3.4).
Differential pressure [Δp100]	2.3.2	Set the maximum differential pressure. The setting range depends on the entered unit (see parameter 2.3.4).
Permissible filling limit	2.3.3	Set the permissible filling limit in %.
Unit	2.3.4	Set the unit for minimum and maximum differential pressure. ▪ Selectable units: mbar · bar · kPa · psi · cmH ₂ O · mH ₂ O · inH ₂ O
Medium identifier	2.3.5	Enter a name (max. 11 characters) to identify the medium.
Operating pressure	2.3.6	Enter operating pressure ▪ 1 to 61 bar
Further parameters exist in TROVIS-VIEW (see ► EB 9510-2)		

Annex A (configuration instructions)

Menu		Adjustment range/values/description
Option modules	2.4	
Overview of option modules	2.4.1	
	2.4.1.1	Overview of option modules in four slots as graph, starts option module wizard
Slot 1	2.4.2	<i>The available parameters of inserted options modules are listed depending on the optional additional function.</i>
Slot 2	2.4.3	
Slot 3	2.4.4	
Slot 4	2.4.5	
AO: Analog output option		
Option module identification	2.4.x.1	Detection of optional additional function: AO: Analog output
Option module status	2.4.x.2	Reading of the current status of the option module <ul style="list-style-type: none"> ▪ No module inserted ▪ Module not permissible in this setup ▪ Module unknown ▪ Module active
Name	2.4.x.3	Enter a name (max. 15 characters) for identification.
Fault alarm output	2.4.x.4	Determines the signal for the fault alarm output: 'High' stands for >21 mA, 'Low' for <3.6 mA. <ul style="list-style-type: none"> ▪ High ▪ Low (default)
Error message E1	2.4.x.5	Determines whether an error message is issued in case of condensed state (E1) (see page 16-14). <ul style="list-style-type: none"> ▪ No ▪ Yes (default)
Error message E2	2.4.x.6	Determines whether an error message is issued in case of condensed state (E2) (see page 16-15). <ul style="list-style-type: none"> ▪ No (default) ▪ Yes
Error message E3	2.4.x.7	Determines whether an error message is issued in case of condensed state (E3) (see page 16-15). <ul style="list-style-type: none"> ▪ No (default) ▪ Yes

Menu		Adjustment range/values/description
Assignment of analog output	2.4.x.8	Assignment of a measured value for the analog output (in filling level mode) <ul style="list-style-type: none"> ▪ Filling level ▪ Tank pressure (pressure sensor), only when pressure sensor exists
Assignment of analog output	2.4.x.9	Assignment of a measured value for the analog output (in differential pressure mode) <ul style="list-style-type: none"> ▪ Differential pressure ▪ Tank pressure (pressure sensor), only when pressure sensor exists
Pressure at 20 mA	2.4.x.10	Set the pressure value at which 20 mA is to be issued at the analog output (setting only possible if a pressure sensor exists and the analog output is assigned to the tank pressure). <ul style="list-style-type: none"> ▪ 0 to 60 bar (based on 20 mA)
Signal of analog output	2.4.x.11	Reading of the applied signal in %
Start test	2.4.x.34	Executable function: two-wire test signal issued.
Test mode	2.4.x.35	Test mode is Active while the test is in progress (test duration: 30 s). <ul style="list-style-type: none"> ▪ Not active ▪ Active
Test signal of analog output	2.4.x.36	Test signal in % based on the 4 to 20 mA signal range. <ul style="list-style-type: none"> ▪ -10.00 to +110.00 %
Further parameters exist in TROVIS-VIEW (see ► EB 9510-2)		
AI: Analog input/AIA: Analog input active		
Option module identification	2.4.x.1	Detection of optional additional function: AI: Analog input
Option module status	2.4.x.2	Reading of the current status of the option module <ul style="list-style-type: none"> ▪ No module inserted ▪ Module not permissible in this setup ▪ Module unknown ▪ Module active
Name	2.4.x.3	Enter a name (max. 15 characters) for identification.

Annex A (configuration instructions)

Menu		Adjustment range/values/description
Signal source	2.4.x.12	Enter the signal source on which the 4 to 20 mA signal is based <ul style="list-style-type: none"> ▪ Unknown (default) ▪ Filling level ▪ Pressure ▪ Temperature
Measured value	2.4.x.14	Reading of the current measured value in the selected unit
Unit	2.4.x.15	Unit in which the measured value is to be indicated. <ul style="list-style-type: none"> ▪ Selectable units: % · kg · Nm³ · L · ft³ · lbs · mbar · bar · kPa · psi · mmH₂O · cmH₂O · mH₂O · inH₂O · °C · °F · K
Lower measuring range value	2.4.x.16	Determine the lower limit of the measuring range at 4 mA (depending on the selected unit)
Upper measuring range value	2.4.x.17	Determine the upper limit of the measuring range at 20 mA (depending on the selected unit)
Event: Broken cable	2.4.x.18	Activates or deactivates the event for a detected cable breakage at the input of the AI option module. The event is activated when the signal falls below the switching threshold of 0.2 mA. <ul style="list-style-type: none"> ▪ ON (default) ▪ OFF
Event: Residual current	2.4.x.19	Activates or deactivates the event for a detected residual current violation at the input of the AI option module. The event is activated when the signal falls below the switching threshold of 3.6 mA or exceeds 21.0 mA. <ul style="list-style-type: none"> ▪ ON (default) ▪ OFF
Limit 1	2.4.x.20	Activate/deactivate limit 1 <ul style="list-style-type: none"> ▪ ON (default) ▪ OFF
Mode	2.4.x.21	An upper limit can be determined with 'Max. contact' and a lower limit with 'Min. contact' for limit 1. <ul style="list-style-type: none"> ▪ Max. contact ▪ Min. contact

Menu		Adjustment range/values/description
Limit	2.4.x.22	Setting limit 1 <ul style="list-style-type: none"> The limit is set in the selected unit when the [Signal source 2.4.x.12] parameter is set to 'Pressure' or 'Temperature'.
Limit	2.4.x.23	Setting limit 1 <ul style="list-style-type: none"> The limit is set in % when the [Signal source 2.4.x.12] parameter is set to 'Unknown' or 'Filling level'.
Limit 2	2.4.x.24	Activate/deactivate limit 2 <ul style="list-style-type: none"> ON (default) OFF
Mode	2.4.x.25	An upper limit can be determined with 'Max. contact' and a lower limit with 'Min. contact' for limit 2. <ul style="list-style-type: none"> Max. contact Min. contact
Limit	2.4.x.26	Setting limit 2 <ul style="list-style-type: none"> The limit is set in the selected unit when the [Signal source 2.4.x.12] parameter is set to 'Pressure' or 'Temperature'.
Limit	2.4.x.27	Setting limit 2 <ul style="list-style-type: none"> The limit is set in % when the [Signal source 2.4.x.12] parameter is set to 'Unknown' or 'Filling level'.
Limit 3	2.4.x.28	Activate/deactivate limit 3 <ul style="list-style-type: none"> ON (default) OFF
Mode	2.4.x.29	An upper limit can be determined with 'Max. contact' and a lower limit with 'Min. contact' for limit 3. <ul style="list-style-type: none"> Max. contact Min. contact
Limit	2.4.x.30	Setting limit 3 <ul style="list-style-type: none"> The limit is set in the selected unit when the [Signal source 2.4.x.12] parameter is set to 'Pressure' or 'Temperature'.
Limit	2.4.x.31	Setting limit 3 <ul style="list-style-type: none"> The limit is set in % when the [Signal source 2.4.x.12] parameter is set to 'Unknown' or 'Filling level'.

Annex A (configuration instructions)

Menu		Adjustment range/values/description
4 to 20 mA measured value	2.4.x.32	Reading of the current (in mA) at the option module
Relative measured value	2.4.x.33	Reading of the current (in %) at the option module
Start test	2.4.x.34	Executable function: two-wire test signal issued.
Test mode	2.4.x.35	Test mode is <i>Active</i> while the test is in progress (test duration: 30 s). <ul style="list-style-type: none"> ▪ Not active ▪ Active
Analog input test signal	2.4.x.37	Test signals (depending on the selected unit) based on the 4 to 20 mA signal range.
Zero point	2.4.x.38	This parameter allows a zero calibration to be performed for the measured value of the option module's analog input. The zero calibration must always be performed before the span calibration. 'Set zero' sets zero to 0 %. The following values are displayed under the 'Set zero' function: <ol style="list-style-type: none"> 1. Measured value of the analog input in % 2. Currently adjusted zero in % 3. Measured value of the analog input in mA
Span	2.4.x.39	This parameter allows a span correction to be performed for the measured value of the option module's analog input. The zero calibration must always be performed before the span correction. 'Set span' sets the span to 0 %. The following values are displayed under the 'Set span' function: <ol style="list-style-type: none"> 1. Measured value of the analog input in % 2. Currently adjusted span in % 3. Measured value of the analog input in mA A span correction is not taken into account in the test mode.
Zero shift	2.4.x.40	Zero shift reading in %
Span offset	2.4.x.41	Span offset reading in %
Identification	2.5	
Firmware version	2.5.1	Reading of the current firmware version of the Media 7 device
Serial number of the entire device	2.5.2	Reading of the serial number of the Media 7 device

Menu		Adjustment range/values/description
Serial number of option 1	2.5.3	Reading of the serial number of the option module in slot 1
Serial number of option 2	2.5.4	Reading of the serial number of the option module in slot 2
Serial number of option 3	2.5.5	Reading of the serial number of the option module in slot 3
Serial number of option 4	2.5.6	Reading of the serial number of the option module in slot 4
HW version/supply voltage	2.5.7	Reading of the hardware version of the voltage supply
Explosion protection certification	2.5.8	<ul style="list-style-type: none"> ▪ No ▪ Yes
Oxygen approval	2.5.9	<ul style="list-style-type: none"> ▪ No ▪ Yes
Further parameters exist in TROVIS-VIEW (see ► EB 9510-2)		
Process data	3	
Filling level active	3.1	Reading of the current filling level in %
Differential pressure (relative)	3.2	Reading of the current differential pressure in %
Filling level	3.3	Reading of the current filling level in the selected unit
Pressure sensor	3.4	Reading of the tank pressure measured by the pressure sensor
Differential pressure [Δp]	3.5	Reading of the current differential pressure in the selected unit (differential pressure mode)
Differential pressure [Δp]	3.6	Reading of the current differential pressure in the selected unit (filling level mode)
Zero shift	3.7	Zero shift reading in mbar
Span offset	3.8	Span offset reading in mbar
MCN (total volume)	3.9	Reading of the maximum tank content in the selected unit
SCN (volume up to gauge pipe)	3.10	Reading of the tank content up to overflow/gauge pipe in the selected unit
UCW (operating filling limit)	3.11	Reading of the tank content up to the operating filling limit in the selected unit
Differential pressure [Δp_0]	3.12	Reading of the minimum differential pressure (differential pressure mode)
Differential pressure [Δp_{100}]	3.13	Reading of the maximum differential pressure (differential pressure mode)

Annex A (configuration instructions)

Menu		Adjustment range/values/description			
Differential pressure [Δp_0]	3.14	Reading of the minimum differential pressure (filling level mode)			
Differential pressure [Δp_{100}]	3.15	Reading of the maximum differential pressure (filling level mode)			
Temperature inside device	3.16	Current temperature reading in °C			
Heating	3.17	Reading ON/OFF			
Battery voltage	3.19	Battery voltage reading in V			
Tank identifier	3.25	Reading of the identifier of the currently selected tank			
Ambient temperature	3.29	Ambient temperature reading in °C			
Liquid density	3.30	Liquid density reading in kg/m ³			
Gas density in tank	3.31	Reading of the gas density in tank in kg/m ³			
Gas density in low-pressure pipe	3.32	Reading of the gas density in the low-pressure pipe in kg/m ³			
Diagnostics	4				
Status messages	4.1	<p>Status messages provide an overview on the current states of individual functions or components of the Media 7 device. A corresponding status icon is assigned to failures and error messages:</p> <ul style="list-style-type: none">  Failure (error class E1)  Out of specification (error class E2)  Maintenance required (error class E3)  No message 			
	Possible status				
Media condensed state	4.1.1	•	•	•	•
Condensed state (E1)	4.1.2	•			•
101: AMR magnet	4.1.3	•			•
102: AMR sensor	4.1.4	•			•
103: Memory (calibration)	4.1.5	•			•
104: Memory (data)	4.1.6	•			•
105: Factory calibration	4.1.7	•			•
106: Pressure sensor	4.1.8	•			•

Menu		Adjustment range/values/description			
107: Data processing	4.1.9	•			•
Condensed state (E2)	4.1.10		•		•
201: AMR range	4.1.11		•		•
202: Measuring span error	4.1.12		•		•
203: Characteristic error	4.1.13		•		•
204: AMR temperature	4.1.14		•		•
205: Min. temperature	4.1.15		•		•
	Possible status	⊗	⚠	⚡	☑
206: Max. temperature	4.1.16		•		•
207: Differential pressure drop	4.1.17		•		•
Condensed state (E3)	4.1.18		•		•
301: Power supply unit	4.1.19			•	•
302: Option not recognized	4.1.20			•	•
303: Option module combination invalid	4.1.21			•	•
Fault alarm output		4.2			
Fault alarm output	4.2.1	Determines the signal for the fault alarm output: 'High' stands for >21 mA, 'Low' for <3.6 mA. <ul style="list-style-type: none"> ▪ High (default setting) ▪ Low 			
Error message E1	4.2.2	Determines whether an error message is issued in case of condensed state (E1) (see page 16-14). <ul style="list-style-type: none"> ▪ No ▪ Yes 			
Error message E2	4.2.3	Determines whether an error message is issued in case of condensed state (E2) (see page 16-15). <ul style="list-style-type: none"> ▪ No ▪ Yes 			

Annex A (configuration instructions)

Menu		Adjustment range/values/description
Error message E3	4.2.4	Determines whether an error message is issued in case of condensed state (E3) (see page 16-15). <ul style="list-style-type: none">▪ No▪ Yes
Diagnostic data		4.3
Operation duration	4.3.1	Reading of the entire operating time of the device (dd:hh:mm:ss)
Temperature		4.4
Max. temperature inside device	4.4.1	Activate/deactivate the alarm for the maximum device temperature in the device. <ul style="list-style-type: none">▪ OFF (default)▪ On
Limit	4.4.2	Set an upper temperature limit within the specified range. If the current device temperature is above the adjusted limit, an error message is generated and displayed. The status changes to 'Out of specification'. <ul style="list-style-type: none">▪ 10 to 70 °C (default: 60 °C)
Min. temperature inside device	4.4.3	Activate/deactivate the alarm for the minimum device temperature in the device. <ul style="list-style-type: none">▪ OFF (default)▪ On
Limit	4.4.4	Set a lower temperature limit within the specified range. If the current device temperature is below the adjusted limit, an error message is generated and displayed. The status changes to 'Out of specification'. <ul style="list-style-type: none">▪ -40 to +10 °C (default: -15 °C)
Filling level events		4.5
Filling limit alarm (SCN)	4.5.1	Activate/deactivate the permissible filling level <ul style="list-style-type: none">▪ ON▪ OFF (default)
Pre-alarm	4.5.2	Activate/deactivate the pre-alarm when the filling level falls below the limit. <ul style="list-style-type: none">▪ ON (default)▪ OFF

Menu		Adjustment range/values/description
Limit	4.5.3	Set the limit in % (appears as marking 1 on the display). ▪ 0.0 to 100.0 % (default: 30 %)
Main alarm	4.5.4	Activate/deactivate the main alarm when the filling level falls below the limit. ▪ ON (default) ▪ OFF
Limit	4.5.5	Set the limit in % (appears as marking 2 on the display). ▪ 0.0 to 100.0 % (default: 15 %)
Differential pressure events	4.6	
Filling limit alarm (SCN)	4.6.1	Activate/deactivate the permissible filling level ▪ ON ▪ OFF (default)
Pre-alarm	4.6.2	Activate/deactivate the pre-alarm when the filling level falls below the limit. ▪ ON (default) ▪ OFF
Limit	4.6.3	Set the limit in % (appears as marking 1 on the display). ▪ 0.0 to 100.0 % (default: 30 %)
Main alarm	4.6.4	Activate/deactivate the main alarm when the filling level falls below the limit. ▪ ON (default) ▪ OFF
Limit	4.6.5	Set the limit in % (appears as marking 2 on the display). ▪ 0.0 to 100.0 % (default: 15 %)
Pressure sensor events	4.7	
Limit 1	4.7.1	Activate/deactivate limit 1 ▪ ON (default) ▪ OFF

Annex A (configuration instructions)

Menu		Adjustment range/values/description
Mode	4.7.2	An upper pressure limit can be determined with 'Max. contact' and a lower pressure limit with 'Min. contact'. <ul style="list-style-type: none">▪ Max. contact (default)▪ Min. contact
Limit	4.7.3	Set limit 1 in bar <ul style="list-style-type: none">▪ 0 to 60 bar (default: 40 bar)
Limit 2	4.7.4	Activate/deactivate limit 2 <ul style="list-style-type: none">▪ ON (default)▪ OFF
Mode	4.7.5	An upper pressure limit can be determined with 'Max. contact' and a lower pressure limit with 'Min. contact'. <ul style="list-style-type: none">▪ Max. contact (default)▪ Min. contact
Limit	4.7.6	Set limit 2 in bar <ul style="list-style-type: none">▪ 0 to 60 bar (default: 25 bar)
Limit 3	4.7.7	Activate/deactivate limit 3 <ul style="list-style-type: none">▪ ON (default)▪ OFF
Mode	4.7.8	An upper pressure limit can be determined with 'Max. contact' and a lower pressure limit with 'Min. contact'. <ul style="list-style-type: none">▪ Max. contact▪ Min. contact (default)
Limit	4.7.9	Set limit 3 in bar <ul style="list-style-type: none">▪ 0 to 60 bar (default: 5 bar)

17 Annex B

17.1 Accessories

17.1.1 Valve block

Three valves are combined in the valve block for Media 7. The valve block is bolted onto the bottom of the Media 7 dp cell (see Fig. 17-1).

The valve block offers the following benefits:

- Mounting of an operating pressure gauge possible.
- Fastened using two additional mounting holes.
- The connected measuring lines can be bypassed. This allows a zero calibration of the differential pressure to be performed regardless of the current filling level of the tank.
- The differential pressure meter can be easily removed by shutting off the measuring lines (e.g. to replace a defective device) without disturbing the running process.
- Lead-seal holes
- ➔ Details on the valve block: see accessories for the Media Series
▶ T 9555

17.1.2 Sun shield

Sun shield (material no. 100112667) to protect the differential pressure meter from direct sunlight.

17.1.3 Further accessories

A list of available accessories for the Media Series can be found in the Data Sheet
▶ T 9555.

17.2 After-sales service

Contact our after-sales service for support concerning service or repair work or when malfunctions or defects arise.

You can reach our after-sales service at aftersaleservice@samsongroup.com.

Addresses of SAMSON AG and its subsidiaries

The addresses of SAMSON AG, its subsidiaries, representatives and service facilities worldwide can be found on our website (www.samsongroup.com) or in all SAMSON product catalogs.

Required specifications

Please submit the following details:

- Order number and position number in the order
- Type, serial number, firmware version, device version

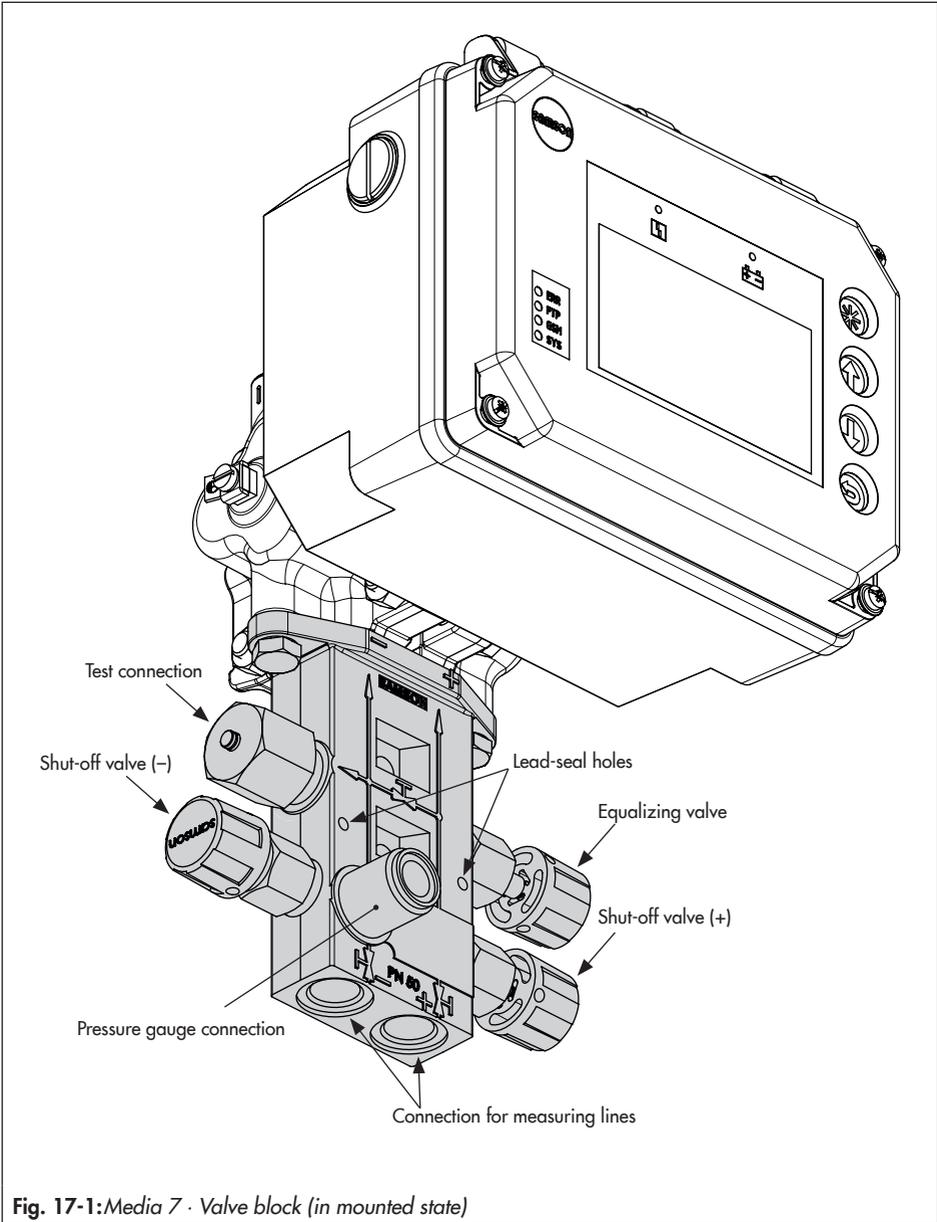


Fig. 17-1: Media 7 · Valve block (in mounted state)

EB 9510 EN



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