

SIEMENS

SITRANS P

Pressure transmitter SITRANS P300 (7MF8.23.. 7MF8.24.. 7MF8.25..)

Compact Operating Instructions


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7MF8.23.. 7MF8.24.. 7MF8.25..


Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

 DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.

 WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.

 CAUTION
indicates that minor personal injury can result if proper precautions are not taken.

NOTICE
indicates that property damage can result if proper precautions are not taken.


If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

 WARNING
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Siemens Aktiengesellschaft. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Introduction

1.1 Purpose of this documentation

These instructions are a brief summary of important features, functions and safety information, and contain all information required for safe use of the device. Read the instructions carefully prior to installation and commissioning. In order to use the device correctly, first review its principle of operation.

The instructions are aimed at persons who install and commission the device.

To realize optimum performance from the device, read the complete operating instructions.

1.2 Document history

This history establishes the correlation between the current documentation and the valid firmware of the device.

Currently released versions of these instructions:

Edition	Firmware identifier nameplate	System integration	Installation path for PDM
04/2024	HART: FW: 29.03.06 PA/FF: FW: 0301.01.13	PDM 6.0 ¹⁾ ; Dev. Rev. 3 DD Rev. 2	SITRANS P300
02/2018	HART: FW: 29.03.06 PA/FF: FW: 0300.01.08	PDM 6.0 ¹⁾ ; Dev. Rev. 3 DD Rev. 2	

¹⁾ up to SP05 Hotfix 5

1.3 Purpose

Overview

Depending on the version, a transmitter measures corrosive, non-corrosive and hazardous gases, vapors and liquids.

You can use the transmitter for the following types of measurement:

- Gauge pressure
- Absolute pressure

With appropriate parameter settings and the necessary add-on parts (e.g. flow orifices and remote seals), the pressure transmitter can also be used for the following measurements:

- Level
- Volume
- Mass

The output signal is a load-independent direct current of 4 to 20 mA which is linearly proportional to the input pressure.


The "Intrinsically-safe" version of the transmitter can be installed in hazardous areas (zone 1). The devices have an EC type examination certificate and comply with the appropriate harmonized European CENELEC directives.

Operate the device in accordance with the specifications in Section Technical data (Page 43).

For additional information, please refer to the operating instructions for the device.

1.4 Checking the consignment

1. Check the packaging and the delivered items for visible damages.
2. Report any claims for damages immediately to the shipping company.
3. Retain damaged parts for clarification.
4. Check the scope of delivery by comparing your order to the shipping documents for correctness and completeness.

 WARNING
Using a damaged or incomplete device
Risk of explosion in hazardous areas.
<ul style="list-style-type: none">• Do not use damaged or incomplete devices.

1.5 Cybersecurity information

Siemens provides products and solutions with industrial cybersecurity functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial cybersecurity concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial cybersecurity measures that may be implemented, please visit <https://www.siemens.com/cybersecurity-industry>.

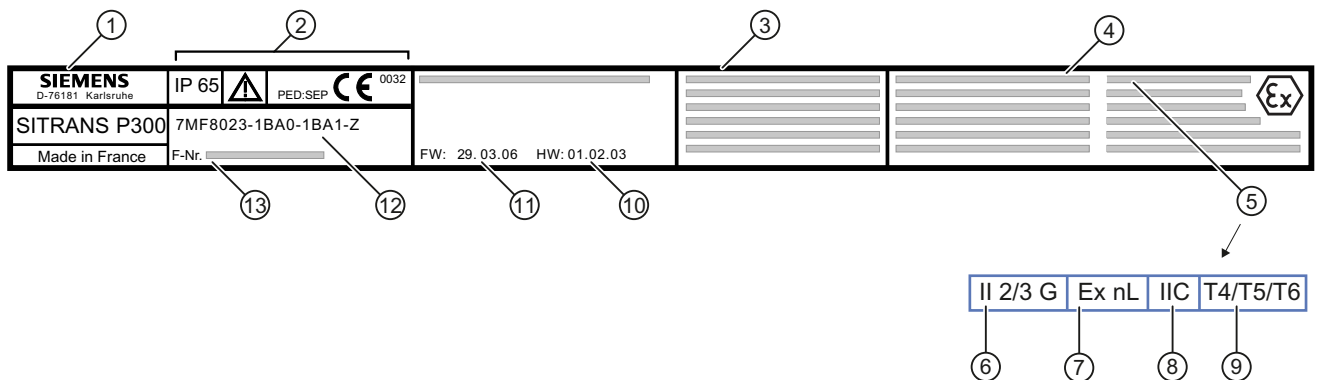
Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Cybersecurity RSS Feed under <https://new.siemens.com/cert>.

1.6 Nameplate layout

Overview

The nameplate bearing the Order No. and other important information, such as design details and technical data, is on the enclosure.



- | | | | |
|---|------------------------------------|---|---|
| ① | Product name/manufacturer | ⑧ | Group (gas, dust) |
| ② | Product information | ⑨ | Maximum surface temperature (temperature class) |
| ③ | Technical data | ⑩ | Hardware identifier |
| ④ | Certification information | ⑪ | Firmware identification |
| ⑤ | Characteristics for hazardous area | ⑫ | Order No. (machine-readable product code) |
| ⑥ | Category for operating area | ⑬ | Serial number |
| ⑦ | Type of protection | | |

Figure 1-1 Example of nameplate: Product and approval information

FW:	aa. bb. cc	Firmware for HART
	aa.	Device type
	bb.	Document revision
	cc	FW edition
FW:	aaaa. bb. cc	Firmware for PROFIBUS
	aaaa.	Profile revision (0300 = 3.00)

		bb.		Document revision
			cc	FW edition
HW:	xx.	yy.	zz	Hardware
	xx			Serial number
		yy.		Connection board product version
			zz	Compatibility mark

1.7 Transportation and storage

To guarantee sufficient protection during transport and storage, observe the following:

- Keep the original packaging for subsequent transportation.
- Devices/replacement parts should be returned in their original packaging.
- If the original packaging is no longer available, ensure that all shipments are properly packaged to provide sufficient protection during transport. Siemens cannot assume liability for any costs associated with transportation damages.

NOTICE

Insufficient protection during storage

The packaging only provides limited protection against moisture and infiltration.

- Provide additional packaging as necessary.

Special conditions for storage and transportation of the device are listed in Technical data (Page 43).

1.8 Notes on warranty

The contents of this manual shall not become part of or modify any prior or existing agreement, commitment or legal relationship. The sales contract contains all obligations on the part of Siemens as well as the complete and solely applicable warranty conditions. Any statements regarding device versions described in the manual do not create new warranties or modify the existing warranty.

The content reflects the technical status at the time of publishing. Siemens reserves the right to make technical changes in the course of further development.


Safety instructions

2.1 Prerequisites for safe use

This device left the factory in good working condition. In order to maintain this status and to ensure safe operation of the device, observe these instructions and all the specifications relevant to safety.

Observe the information and symbols on the device. Do not remove any information or symbols from the device. Always keep the information and symbols in a completely legible state.

2.1.1 Warning symbols on the device

Symbol	Explanation
	Consult operating instructions

2.1.2 Laws and directives

Observe the safety rules, provisions and laws applicable in your country during connection, assembly and operation. These include, for example:

- National Electrical Code (NEC - NFPA 70) (USA)
- Canadian Electrical Code (CEC Part I) (Canada)

Further provisions for hazardous area applications are for example:

- IEC 60079-14 (international)
- EN 60079-14 (EU and UK)

2.1.3 Conformity with European directives

The CE mark on the device is a sign of conformity with the following European directives:

Electromagnetic compatibility EMC 2014/30/EU	Directive of the European Parliament and of the Council on the harmonization of the laws of the Member States relating to electromagnetic compatibility
Atmosphère explosible ATEX 2014/34/EU	Directive of the European Parliament and the Council on the harmonization of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres


2.3 Requirements for special applications

Pressure Equipment Directive PED 2014/68/EU Directive of the European Parliament and of the Council on the harmonization of the laws of the Member States relating to the making available on the market of pressure equipment

RoHS Directive (Restriction substances) 2011/65/EU Directive of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment

The directives applied can be found in the EU declaration of conformity for the associated device.

2.2 Incorrect device modifications

 WARNING
Improper device modifications
Risk to personnel, system, and environment can result from modifications to the device, particularly in hazardous areas.
<ul style="list-style-type: none">• Only carry out modifications that are described in the instructions for the device. Failure to observe this requirement cancels the manufacturer's warranty and the product approvals. Do not operate the device after unauthorized modifications.

2.3 Requirements for special applications

Due to the large number of possible applications, each detail of the described device versions for each possible scenario during commissioning, operation, maintenance or operation in systems cannot be considered in the instructions. If you need additional information not covered by these instructions, contact your local Siemens office or company representative.

Note

Operation under special ambient conditions


We highly recommend that you contact your Siemens representative or our application department before you operate the device under special ambient conditions as can be encountered in nuclear power plants or when the device is used for research and development purposes.


2.4 Use in hazardous areas


Qualified personnel for hazardous area applications

Persons who install, connect, commission, operate, and service the device in a hazardous area must have the following specific qualifications:

- They are authorized, trained or instructed in operating and maintaining devices and systems according to the safety regulations for electrical circuits, high pressures, aggressive, and hazardous media.
- They are authorized, trained, or instructed in carrying out work on electrical circuits for hazardous systems.
- They are trained or instructed in maintenance and use of appropriate safety equipment according to the pertinent safety regulations.

 WARNING
<p>Use in hazardous area</p> <p>Risk of explosion.</p> <ul style="list-style-type: none"> • Only use equipment that is approved for use in the intended hazardous area and labeled accordingly. • Do not use devices that have been operated outside the conditions specified for hazardous areas. If you have used the device outside the conditions for hazardous areas, make all Ex markings unrecognizable on the nameplate.

 WARNING
<p>Loss of safety of device with type of protection "Intrinsic safety Ex i"</p> <p>If the device or its components have already been operated in non-intrinsically safe circuits or the electrical specifications have not been observed, the safety of the device is no longer ensured for use in hazardous areas. There is a risk of explosion.</p> <ul style="list-style-type: none"> • Connect the device with type of protection "Intrinsic safety" solely to an intrinsically safe circuit. • Observe the specifications for the electrical data on the certificate and/or in Technical data (Page 43).

 WARNING
<p>Risk of explosion due to electrostatic charge</p> <p>To prevent the build-up of an electrostatic charge in a hazardous area, the key cover must be closed during operation and the screws tightened.</p> <p>The key cover may be opened temporarily at any time for the purposes of operating the pressure transmitter, even during plant operation; the screws should then be tightened again.</p>

 **WARNING**

Electrostatic charging – all the parts outside the process in contact with the surroundings

There is a risk of explosion in potentially explosive areas if electrostatic charges develop, for example, when plastic surfaces, capillary coatings or painted surfaces are cleaned with a dry cloth.

- Prevent electrostatic charging in potentially explosive areas.

 **WARNING**


Brush discharge – all the parts within the process that come in contact with the media


There is a risk of explosion in potentially explosive areas if electrostatic charges develop, for example, in high charging processes (such as can occur in the pneumatic transportation of powder or in an electrostatic coating process).


- Avoid electrostatic charging in potentially explosive areas.

Installing/mounting

3.1 Basic safety instructions

 WARNING
Wetted parts unsuitable for the process media Risk of injury or damage to device. Hot, toxic and corrosive media could be released if the wetted parts are unsuitable for the process medium. <ul style="list-style-type: none">• Ensure that the material of the device parts wetted by the process medium is suitable for the medium. Refer to the information in Technical data (Page 43).


 WARNING
Incorrect material for the diaphragm in Zone 0 Risk of explosion in the hazardous area. If operated with intrinsically safe supply devices of category "ib" or devices of the flameproof enclosure version "Ex d" and simultaneous use in Zone 0, pressure transmitter explosion protection depends on the tightness of the diaphragm. <ul style="list-style-type: none">• Ensure that the material used for the diaphragm is suitable for the process medium. Refer to the information in the section "Technical data (Page 43)".


 WARNING
Unsuitable connecting parts Risk of injury or poisoning. In case of improper mounting, hot, toxic, and corrosive process media could be released at the connections. <ul style="list-style-type: none">• Ensure that connecting parts (such as flange gaskets and bolts) are suitable for connection and process media.


Note


Material compatibility


Siemens can provide you with support concerning selection of parts wetted by process media. However, you are responsible for the selection of parts. Siemens accepts no liability for faults or failures resulting from incompatible materials.


 WARNING
Exceeded maximum permissible operating pressure
Risk of injury or poisoning.
The maximum permissible operating pressure depends on the device version, pressure limit and temperature rating. The device can be damaged if the operating pressure is exceeded. Hot, toxic and corrosive process media could be released.
Ensure that maximum permissible operating pressure of the device is not exceeded. Refer to the information on the nameplate and/or in Technical data (Page 43).


 WARNING
Exceeding the maximum ambient and medium temperature
Risk of explosion in hazardous areas.
Device damage.
<ul style="list-style-type: none">• Make sure that the maximum permissible ambient and medium temperature of the device is not exceeded. Refer to the information in section Technical data (Page 43)


 WARNING
Open cable entry or incorrect cable gland
Risk of explosion in hazardous areas.
<ul style="list-style-type: none">• Close the cable entries for the electrical connections. Only use cable glands or plugs which are approved for the associated type of protection.

 WARNING
Incorrect conduit system
Risk of explosion in hazardous areas as result of open cable inlet or incorrect conduit system.
<ul style="list-style-type: none">• In the case of a conduit system, mount a spark barrier at a defined distance from the device input. Observe national regulations and the requirements stated in the relevant approvals.


 WARNING
Incorrect mounting at Zone 0
Risk of explosion in hazardous areas.
<ul style="list-style-type: none">• Ensure sufficient tightness at the process connection.• Observe the standard IEC/EN 60079-14.

 WARNING
Loss of explosion protection Risk of explosion in hazardous areas if the device is open or not properly closed. <ul style="list-style-type: none">• Close the device as described in Connecting the device (Page 28).

 CAUTION
Hot surfaces resulting from hot process media Risk of burns resulting from surface temperatures above 65 °C (149 °F). <ul style="list-style-type: none">• Take appropriate protective measures, for example contact protection.• Make sure that protective measures do not cause the maximum permissible ambient temperature to be exceeded. Refer to the information in Technical data (Page 43).

 CAUTION
External stresses and loads Damage to device by severe external stresses and loads (e.g. thermal expansion or pipe tension). Process media can be released. <ul style="list-style-type: none">• Prevent severe external stresses and loads from acting on the device.

3.1.1 Installation location requirements


 WARNING
Insufficient air supply The device may overheat if there is an insufficient supply of air. <ul style="list-style-type: none">• Install the device so that there is sufficient air supply in the room.• Observe the maximum permissible ambient temperature. Refer to the information in the section Technical data (Page 43).

NOTICE
Aggressive atmospheres Damage to device through penetration of aggressive vapors. <ul style="list-style-type: none">• Ensure that the device is suitable for the application.

NOTICE
Direct sunlight Increased measuring errors. <ul style="list-style-type: none">• Protect the device from direct sunlight. Make sure that the maximum ambient temperature is not exceeded. Refer to the information in the section Technical data (Page 43).


3.1.2 Proper mounting

NOTICE
Incorrect mounting The device can be damaged, destroyed, or its functionality impaired through improper mounting. <ul style="list-style-type: none">• Before installing ensure there is no visible damage to the device.• Make sure that process connectors are clean, and suitable gaskets and glands are used.• Mount the device using suitable tools. Refer to the information in Technical data (Page 43).

 WARNING
Loss of type of protection Danger of explosion. Damage to device if the enclosure is open or not properly closed. The type of protection specified on the nameplate or in section Technical data (Page 43) is no longer guaranteed. <ul style="list-style-type: none">• Make sure that the device is securely closed.

3.2 Uninstalling

NOTICE
Incorrect mounting The device can be damaged, destroyed, or its functionality impaired through improper mounting. <ul style="list-style-type: none">• Before installing ensure there is no visible damage to the device.• Make sure that process connectors are clean, and suitable gaskets and glands are used.• Mount the device using suitable tools. Refer to the information in Technical data (Page 43).

<p> WARNING</p> <p>Incorrect disassembly</p> <p>The following risks may result from incorrect disassembly:</p> <ul style="list-style-type: none">- Injury through electric shock- Risk through emerging media when connected to the process- Risk of explosion in hazardous area <p>In order to disassemble correctly, observe the following:</p> <ul style="list-style-type: none">• Before starting work, make sure that you have switched off all physical variables such as pressure, temperature, electricity etc. or that they have a harmless value.• If the device contains hazardous media, it must be emptied prior to disassembly. Make sure that no environmentally hazardous media are released.• Secure the remaining connections so that no damage can result if the process is started unintentionally.
--

3.3 Installation (except level)

3.3.1 Installation mounting (except for level)

Requirements

Note

Compare the desired operating data with the data on the nameplate.
Please also refer to the information on the remote seal if this is fitted.

Note

Protect the pressure transmitter from:

- Direct heat radiation
 - Rapid temperature fluctuations
 - Heavy contamination
 - Mechanical damage
 - Direct sunlight
-

Note

The housing may only be opened for maintenance, local operation or to make electrical connections.

3.3 Installation (except level)

The installation location is to be as follows:

- Easily accessible
- As close as possible to the measuring point
- Vibration-free
- Within the permitted ambient temperature values

Installation configuration

The pressure transmitter may in principle be configured above or below the pressure tapping point. The recommended configuration depends on the medium.

Installation configuration for gases

Install the pressure transmitter above the pressure tapping point.

Lay the pressure tubing with a constant gradient to the pressure tapping point, so that any condensate produced can drain in the main line and thereby avoid corruption of the measured values.

Installation configuration for vapor and liquid

Install the pressure transmitter below the pressure tapping point.

Lay the pressure tubing with a constant gradient to the pressure tapping point so that any gas pockets can escape in the main line.

3.3.2 Installation (except level)

Before you mount the device

- Compare the operating data with the data on the nameplate of the pressure transmitter.
- Observe the minimum and maximum permissible ambient and medium temperature limits also under the influence of convection and heat radiation.
- Note the effect of the ambient temperature on the measuring accuracy in the section Technical data (Page 43).
- For remote seal mounting, observe the notes in the section "Mounting with remote seal" of the operating instructions.

Mounting location

Verify that the mounting location meets the following conditions:

- Accessible
- Close to the measuring point
- Shock-free and vibration-free
- Load-free process connections
- Within the permitted ambient temperature values

Protect the pressure transmitter from:

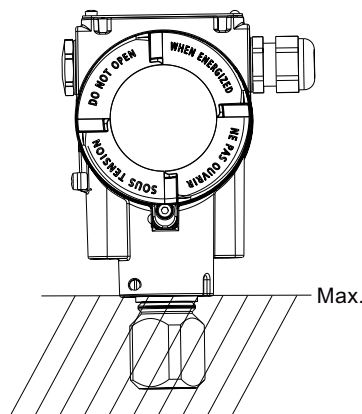
- Direct heat radiation
- Sudden temperature fluctuations
- Heavy contamination
- Mechanical damage
- Direct sunlight

Procedure

1. Select the arrangement of the pressure transmitter depending on the aggregate state of the medium.

Gas	Vapor or liquid
Above the pressure sampling point	Below the pressure sampling point
Lay the pressure line with a constant gradient to the pressure sampling point, so that any condensation produced can drain in the main line and thereby avoid corruption of the measured values.	Lay the pressure line with a constant gradient to the pressure sampling point so that any gas pockets can escape in the main line.

2. Attach the pressure transmitter to the process connection.
Use an appropriate tool (e.g. open-ended wrench with width across flats 36). Otherwise, the measuring cell may be damaged.
3. Turn only on the key area above the process connection.
Caution: If you turn the pressure transmitter on the housing, the measuring cell may be damaged.
4. For insulated systems, ensure that you insulate the device as far as possible to the lower edge of the enclosure.
In this way, you avoid a defect in the device or the loss of explosion protection for Ex devices. You can find the permissible temperature values in the section Technical data (Page 43).



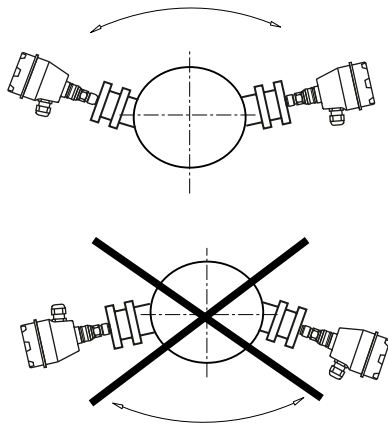
5. To guarantee secure and vibration-free installation of the pressure transmitter, fasten it to a mounting bracket (Page 20).

Level

You can find details on how to mount the device with level in the section Installing (level) (Page 22).

3.3.3 Mounting hygienic version

To prevent dead spaces and sludge formation in your application, mount the pressure transmitter, for example, as follows:



- Ensure that the length of the dead space at the end of the process connection is smaller than its diameter.
- To ensure optimal cleaning of the process plant, install the process connection without offset (flush-mounted on inside) in the plant.
You can find additional information in the EHEDG Guidelines No. 10 and No. 37.

3.4 "Level" installation

3.4.1 Information for installing level variant

Requirements

Note

Compare the desired operating data with the data on the nameplate.

Please also refer to the information on the remote seal if this is fitted.

Note

Protect the transmitter from:

- Direct heat
 - Rapid temperature changes
 - Severe soiling
 - Mechanical damage
 - Direct sunlight
-

Note

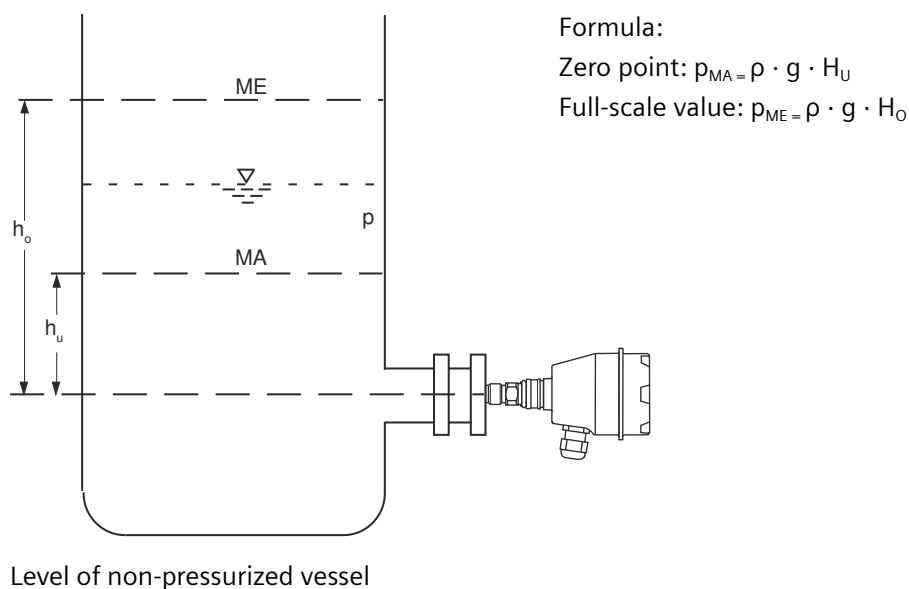
The enclosure may only be opened for maintenance, local operation or to make electrical connections.

The installation location is to be as follows:

- Easily accessible
- As close as possible to the measuring point
- Vibration-free
- Within the permitted ambient temperature values

Installation configuration

The transmitter can only be used in non-pressurized vessels for level.

Installation height

MA	Zero point	Δp_{MA}	Limit point to be adjusted
ME	Limit point	Δp_{ME}	Limit point to be adjusted
p	Pressure	ρ	Density of the measured medium in the container
h_U	Start-of-scale value	g	Acceleration due to gravity
h_O	Full-scale value		

Note

Select the height of the container flange for recording of the transmitter (*measuring point*) such that the lowest level to be measured is always over the flange or at its upper edge.

3.4.2 Installing (level)

Before you mount the device

- Compare the operating data with the data on the nameplate of the pressure transmitter.
- Observe the minimum and maximum permissible ambient and medium temperature limits also under the influence of convection and heat radiation.
- Note the effect of the ambient temperature on the measuring accuracy in the section Technical data (Page 43).
- For remote seal mounting, observe the notes in the section "Mounting with remote seal" of the operating instructions.

Mounting location

Verify that the mounting location meets the following conditions:

- Accessible
- Close to the measuring point
- Shock-free and vibration-free
- Load-free process connections
- Within the permitted ambient temperature values

Protect the pressure transmitter from:

- Direct heat radiation
- Rapid temperature fluctuations
- Heavy contamination
- Mechanical damage
- Direct sunlight

Note

Select the height of the mounting flange such that the pressure transmitter is always mounted below the lowest fill height to be measured.


Procedure


1. Attach the seal to the container's mating flange.
Ensure that the seal is centrally positioned and that it does not restrict the movement of the flange's seal diaphragm in any way. Otherwise, the seal of the process connection is not guaranteed to be tight.
2. Screw on the pressure transmitter's flange.
3. Observe the installation position.


Connecting


4.1 Basic safety instructions


4.1.1 Unsuitable cables, cable glands and/or plugs


 WARNING
Unsuitable cables, cable glands and/or plugs Risk of explosion in hazardous areas. <ul style="list-style-type: none">• Use only cable glands/plugs that comply with the requirements for the relevant type of protection.• Tighten the cable glands in accordance with the torques specified in Technical data (Page 43).• Close unused cable inlets for the electrical connections.• When replacing cable glands, only use cable glands of the same type.• After installation, check that the cables are seated firmly.

 WARNING
Unsuitable cables and/or cable glands Danger of explosion in hazardous areas if you connect cables and/or cable glands which do not match one another or do not comply with the technical requirements. <ul style="list-style-type: none">• Only use cables and cable glands complying with the requirements specified in the section Technical data (Page 43).• Tighten the cable glands in accordance with the specified torques.• When replacing cable glands use only cable glands of the same type.• After installation check that the cables are seated firmly.


 WARNING
Improper power supply Risk of explosion in hazardous areas as result of incorrect power supply. <ul style="list-style-type: none">• Connect the device in accordance with the specified power supply and signal circuits. The relevant specifications can be found in the certificates, in Technical data (Page 43) or on the nameplate.


 WARNING
Lack of equipotential bonding Risk of explosion through compensating currents or ignition currents through lack of equipotential bonding. <ul style="list-style-type: none">• Ensure that the device is potentially equalized• The cable cross-section of the equipotential bonding cable must be greater than or equal to the connecting cable of the electronics

 WARNING
Unprotected cable ends Risk of explosion through unprotected cable ends in hazardous areas. <ul style="list-style-type: none">• Protect unused cable ends in accordance with IEC/EN 60079-14.

 WARNING
Improper laying of shielded cables Risk of explosion through compensating currents between hazardous area and the non-hazardous area. <ul style="list-style-type: none">• Shielded cables that cross into hazardous areas should be grounded only at one end.• If grounding is required at both ends, use an equipotential bonding conductor.

4.1.2 Connecting device in energized state in hazardous areas

 WARNING
Connecting or disconnecting device in energized state Risk of explosion in hazardous areas. <ul style="list-style-type: none">• Connect or disconnect devices in hazardous areas only in a de-energized state.• Install a suitable switch-off device. Exceptions: <ul style="list-style-type: none">• Devices having the type of protection "Intrinsic safety Ex i" may also be connected in energized state in hazardous areas.

 WARNING
Incorrect selection of type of protection Risk of explosion in areas subject to explosion hazard. This device is approved for several types of protection. <ol style="list-style-type: none">1. Decide in favor of one type of protection.2. Connect the device in accordance with the selected type of protection.3. In order to avoid incorrect use at a later point, make the types of protection that are not used permanently unrecognizable on the nameplate.

NOTICE
Ambient temperature too high Damage to cable sheath. <ul style="list-style-type: none">• At an ambient temperature ≥ 60 °C (140 °F), use heat-resistant cables suitable for an ambient temperature at least 20 °C (36 °F) higher.

NOTICE
Incorrect measured values with incorrect grounding The device must not be grounded via the "+" or "-" connection. It may otherwise malfunction and be permanently damaged. <ul style="list-style-type: none">• If necessary, ground the device using the earthing connection.

Note**Electromagnetic compatibility (EMC)**

You can use this device in industrial environments, households and small businesses.

For metal enclosures there is an increased electromagnetic compatibility compared to high-frequency radiation. This protection can be increased by grounding the enclosure.

See also

Connecting the device (Page 28)

Note

Improvement of interference immunity

- Lay signal cables separate from cables with voltages > 60 V.
 - Use cables with twisted wires.
 - Keep device and cables at a distance from strong electromagnetic fields.
 - Take account of the conditions for communication specified in the Technical data (Page 43).
 - Use shielded cables to guarantee the full specification according to HART/PA/FF/Modbus/EIA-485/Profibus DP.
-

4.2 Connecting the device

Opening the device

1. Unscrew the cover of the electrical cable compartment.
2. Unscrew the cable gland cover and remove the plastic seal.

Connecting the device

Note

The following values can be set for the load:

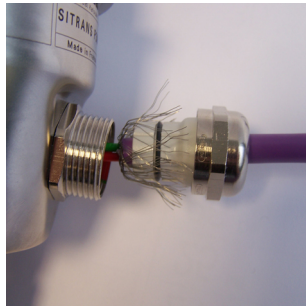
- 230 to 1100 Ω for the HART communicator
 - 230 to 500 Ω for the HART modem
-

1. Strip approximately 15 cm from the outer sheath of the cable.



2. Insert the wires of the connecting cable through the cable gland and lead them through the guide channel. The guide channel connects the cable gland to the connecting terminals.
3. If you have a plastic cable gland, connect the shield to the ground terminal ②. The ground terminal is electrically connected to the enclosure.

4. If you have a metal cable gland, ground the shield to the cable gland ground terminal ③ as follows:
 - Leave approx. 2 cm of extra shield.
 - Turn the shield over the insulation. See Fig.



- Firmly press in the plastic seal. The O-ring will in turn press the shield against the enclosure.
5. Screw on the cable gland cover with a 23 mm open end wrench until strain relief is ensured.



6. Strip the wires.

7. Connect the wires to the terminals ① "+" and "-".
Ensure correct polarity! If necessary, ground the device using the
8. "-" connection by connecting the "-" connection to the ground terminal ②.

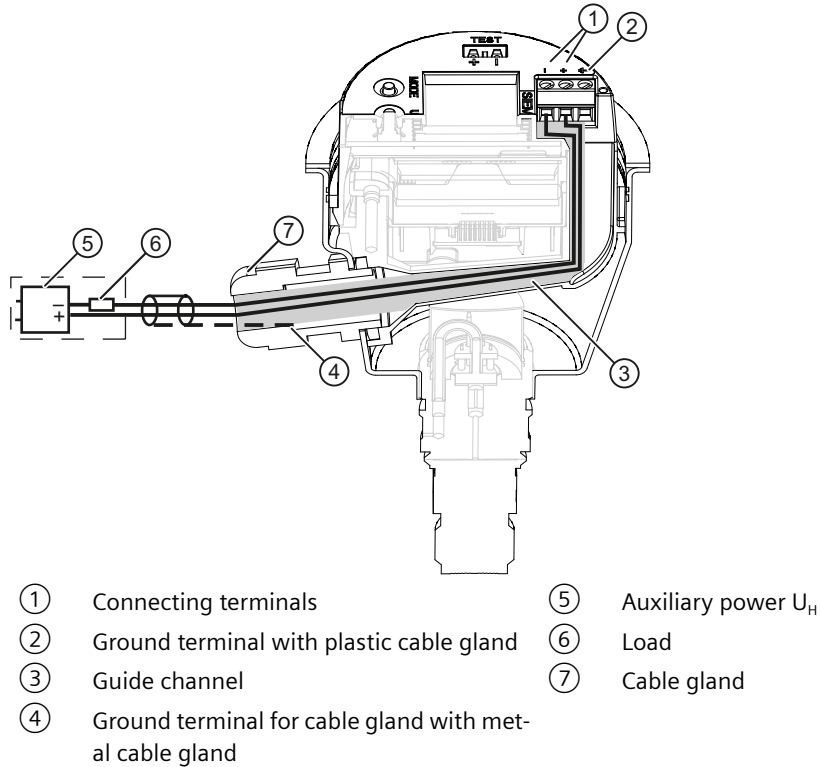



Figure 4-1 Electrical connection, power supply


Closing the device


1. Screw on the cover of the electrical cable compartment.
2. Check the tightness of the cable gland in accordance with the degree of protection.


Commissioning

5.1 Basic safety instructions

 WARNING
<p>Improper commissioning in hazardous areas</p> <p>Device failure or risk of explosion in hazardous areas.</p> <ul style="list-style-type: none"> • Do not commission the device until it has been mounted completely and connected in accordance with the information in Technical data (Page 43). • Before commissioning take the effect on other devices in the system into account.

 DANGER
<p>Toxic gases and liquids</p> <p>Danger of poisoning when venting the device: if toxic process media are measured, toxic gases and liquids can be released.</p> <ul style="list-style-type: none"> • Before venting ensure that there are no toxic gases or liquids in the device, or take the appropriate safety measures.

 WARNING
<p>Opening device in energized state</p> <p>Risk of explosion in hazardous areas</p> <ul style="list-style-type: none"> • Only open the device in a de-energized state. • Check prior to commissioning that the cover, cover locks, and cable inlets are assembled in accordance with the directives. <p>Exception: Devices having the type of protection "Intrinsic safety Ex i" may also be opened in energized state in hazardous areas.</p>

 WARNING
<p>Hot surfaces</p> <p>Risk of burns resulting from hot surfaces.</p> <ul style="list-style-type: none"> • Take corresponding protective measures, for example by wearing protective gloves.

5.2 Introduction of commissioning

The operating data must correspond to the values specified on the nameplate.

The parameters for damping, characteristic curve, lower range value/upper range value and fault current must agree with the settings of the measuring point.

You can find more detailed information on operation and configuration in the operating instructions.

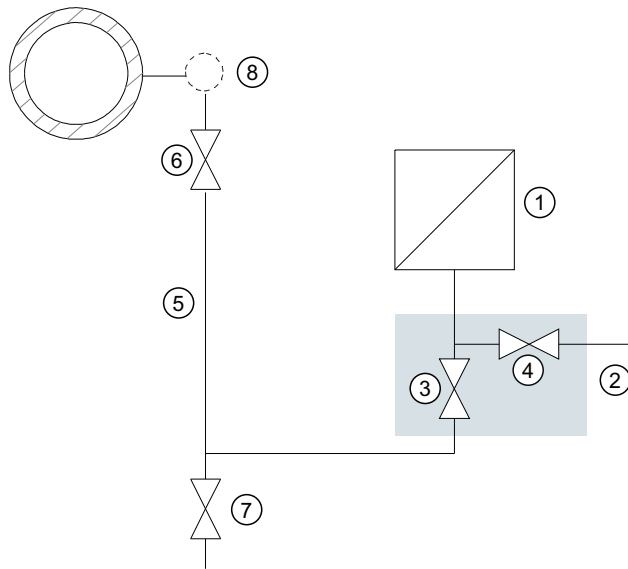
The following commissioning cases are typical examples. Configurations different from those listed here may be useful depending on the system configuration.

5.3 Commissioning with steam or liquid

Requirement

All valves are closed.

Procedure



- ① Pressure transmitter
- ② Shut-off valve
- ③ Shut-off valve to process
- ④ Shut-off valve for test connection or for bleed screw
- ⑤ Pressure line
- ⑥ Shut-off valve
- ⑦ Drain valve
- ⑧ Compensation vessel (steam only)

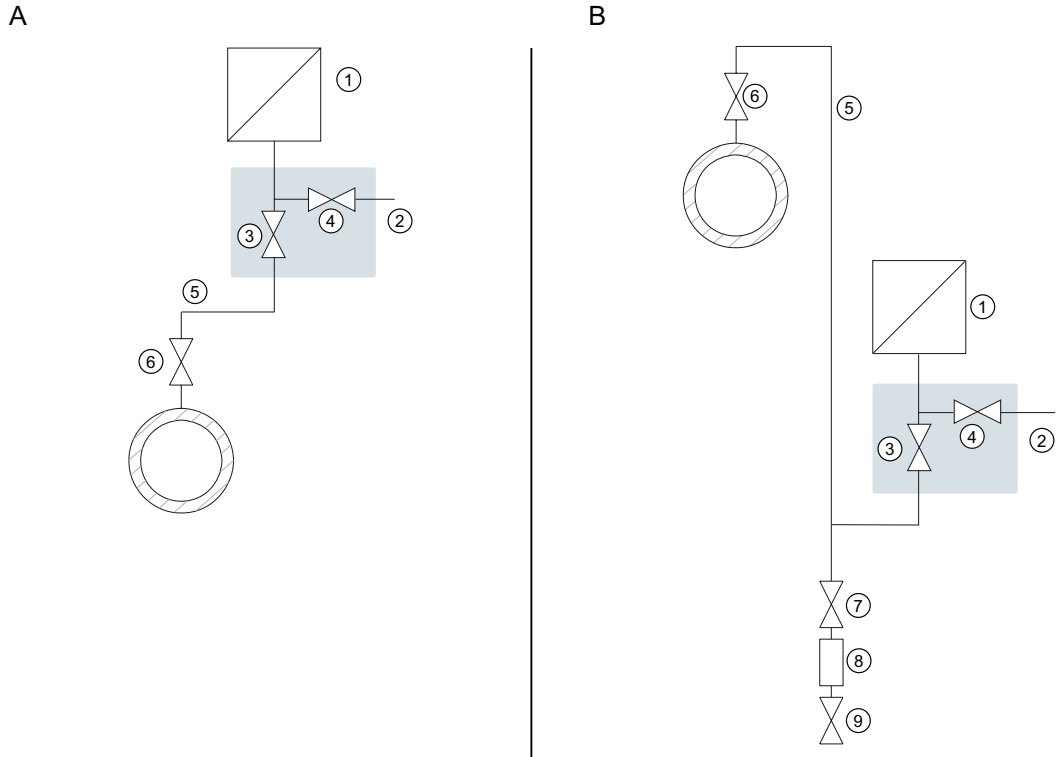
1. Open the shut-off valve for the test connection ④.
2. Via the test connection of the shutoff valve ②, apply the pressure corresponding to the lower range value to the pressure transmitter.
3. Ensure that the lower range value corresponds to the desired value. Otherwise, correct the value.
4. Close the shut-off valve for the test connection ④.
5. Open the shut-off valve ⑥ at the pressure tapping point.
6. Open the shut-off valve for the process ③.

5.4 Commissioning in gaseous environments

Requirement

All valves are closed.

Procedure



- | | |
|---|--|
| <p>A Pressure transmitter above the pressure sampling point</p> <ul style="list-style-type: none"> ① Pressure transmitter ② Shut-off valve ③ Shut-off valve to process ④ Shut-off valve for test connection or for bleed screw ⑤ Pressure line | <p>B Pressure transmitter below the pressure sampling point</p> <ul style="list-style-type: none"> ⑥ Shut-off valve ⑦ Shut-off valve (optional) ⑧ Condensate vessel (optional) ⑨ Blowout valve |
|---|--|

1. Open the shut-off valve for the test connection ④.
2. Via the test connection of the shutoff valve ②, apply the pressure corresponding to the lower range value to the pressure transmitter.
3. Ensure that the lower range value corresponds to the desired value. Otherwise, correct the value.
4. Close the shut-off valve for the test connection ④.
5. Open the shut-off valve ⑥ at the pressure tapping point.
6. Open the shut-off valve for the process ③.

Maintenance and service


6.1 Basic safety instructions

 **WARNING**

Impermissible repair of explosion protected devices

Risk of explosion in hazardous areas

- Repair must be carried out by Siemens authorized personnel only.

 **WARNING**

Impermissible accessories and spare parts

Risk of explosion in areas subject to explosion hazard.

- Only use original accessories or original spare parts.
- Observe all relevant installation and safety instructions described in the instructions for the device or enclosed with the accessory or spare part.

 **WARNING**

Maintenance during continued operation in a hazardous area

There is a risk of explosion when carrying out repairs and maintenance on the device in a hazardous area.

- Isolate the device from power.
- or -
- Ensure that the atmosphere is explosion-free (hot work permit).


 **WARNING**


Commissioning and operation with error message


If an error message displays, correct operation is no longer guaranteed.


- Check the severity of the error.
- Correct the error.
- If the error still exists:
 - Take the device out of operation.
 - Do not restart the device.


The same risk continues to apply when error messages are switched off or disabled.

 WARNING
Hot, toxic, or corrosive process media Risk of injury during maintenance work. When working on the process connection, hot, toxic, or corrosive process media could be released. <ul style="list-style-type: none">• As long as the device is under pressure, do not loosen process connections and do not remove any parts that are pressurized.• Before opening or removing the device ensure that process media cannot be released.

 WARNING
Improper connection after maintenance Risk of explosion in areas subject to explosion hazard. <ul style="list-style-type: none">• Connect the device correctly after maintenance.• Close the device after maintenance work. Refer to Connecting (Page 25).


 WARNING
Use of a computer in a hazardous area If the interface to the computer is used in the hazardous area, there is a risk of explosion. <ul style="list-style-type: none">• Ensure that the atmosphere is explosion-free (hot work permit).

 CAUTION
Releasing button lock Improper modification of parameters could influence process safety. <ul style="list-style-type: none">• Make sure that only authorized personnel may cancel the button locking of devices for safety-related applications.

 WARNING
Hot surfaces Risk of burns resulting from hot surfaces. <ul style="list-style-type: none">• Take corresponding protective measures, for example by wearing protective gloves.

6.2 Maintenance and repair work

6.2.1 Defining the maintenance interval

 WARNING
No maintenance interval has been defined
Device failure, device damage, and risk of injury.
<ul style="list-style-type: none">• Define a maintenance interval for recurring tests depending on the use of the device and your own experience.• The maintenance interval will vary from site to site depending on corrosion resistance.

6.2.2 Checking the seals

Inspect the seals at regular intervals

Note**Incorrect seal changes**

Incorrect measured values will be displayed. Changing the seals in a process flange of a differential pressure measuring cell can alter the lower range value.

- Changing seals in devices with differential pressure measuring cells may only be carried out by personnel authorized by Siemens.
-

Note**Using the wrong seals**

Using the wrong seals with flush-mounted process connections can cause measuring errors and/or damage the diaphragm.

- Always use seals which comply with the process connection standards or are recommended by Siemens.
-

1. Clean the enclosure and seals.
2. Check the enclosure and the seals for cracks and damage.
3. If necessary, lubricate the seals or replace them.

6.2.3 Checking the gaskets

Inspect the seals at regular intervals

Note**Using the wrong seals**

Using the wrong seals with flush-mounted process connections can cause measuring errors and/or damage the diaphragm.

- Always use seals which comply with the process connection standards or are recommended by Siemens.
-

1. Clean the enclosure and seals.
2. Check the enclosure and seals for cracks and damage.
3. Grease the seals if necessary.
- or -
4. Replace the seals.

6.2.4 Display in case of a fault

Check the start of scale value of the device from time to time.

Differentiate between the following in case of a fault:

- The internal self test has detected a fault, e.g. sensor break, hardware fault/Firmware fault.
Displays:
 - Display: "ERROR" display and ticker with an error text
 - Analog output: Factory setting: Failure current 3.6 or 22.8 mAOr depending on the parameterization
 - HART: detailed error breakdown for display in the HART communicator or SIMATIC PDM
- Grave hardware faults, the processor is not functioning.
Displays:
 - Display: no defined display
 - Analog output: failure current < 3.6 mA

In the event of a defect, you can replace the application electronics by following the warning notes and the provided operating instructions.

6.3 Cleaning

NOTICE

Penetration of moisture into the device

Damage to device.

- Make sure when carrying out cleaning and maintenance work that no moisture penetrates the inside of the device.

6.3.1 Cleaning the device and the remote seal

- Clean the outside of the enclosure parts, the display window and the remote seal using a cloth moistened with water or a mild detergent.
- Do not use any aggressive cleaners or solvents like acetone. Plastic components or the painted surface could get damaged. The inscriptions could become unreadable.

WARNING

Electrostatic charge

Risk of explosion in hazardous areas if electrostatic charges develop, for example, when cleaning plastic surfaces with a dry cloth.

- Prevent electrostatic charging in hazardous areas.

6.3.2 Servicing the remote seal measuring system

The remote seal measuring system usually does not need servicing.

If the mediums are contaminated, viscous or crystallized, it could be necessary to clean the diaphragm from time to time. Use only a suitable solvent to remove the deposits from the diaphragm. Do not use corrosive cleaning agents. Prevent the diaphragm from getting damaged due to sharp-edged tools.

NOTICE

Improper cleaning of diaphragm

Damage to device. The diaphragm can be damaged.

- Do not use sharp or hard objects to clean the diaphragm.

6.3.3 CIP and SIP cleaning

Requirements

You have a hygienic version of SITRANS P300 that is EHEDG and 3-A compliant with the following properties:

- NEOBEE oil (FDA grade)
- Process connection (EHEDG and 3-A compliant)
- Parts made of stainless steel (1.4404/316L) and/or Hastelloy C276 (2.4819) touching the process medium

CIP and SIP cleaning

The SITRANS P300 in hygienic design is suitable for the cleaning processes CIP (Clean In Place) and SIP (Sterilisation In Place).

- Use suitable seals for the process connections.
- Note that the temperature fluctuations during the SIP cleaning process can result in deviations of the measured values.
- Note the permitted temperature ranges for using the device.

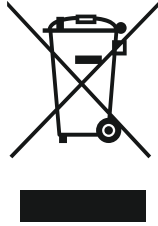
6.4 Return procedure

To return a product to Siemens, see Return to Siemens (www.siemens.com/returns-to-siemens).

Contact your Siemens representative to clarify if a product is repairable, and how to return it. They can also help with quick repair processing, a repair cost estimate, or a repair report/ cause of failure report.

NOTICE
Decontamination
The product may have to be decontaminated before it is returned. Your Siemens contact person will let you know for which products this is required.

6.5 Disposal



Devices described in this manual should be recycled. They may not be disposed of in the municipal waste disposal services according to the Directive 2012/19/EC on waste electronic and electrical equipment (WEEE).

Devices can be returned to the supplier within the EC and UK, or to a locally approved disposal service for eco-friendly recycling. Observe the specific regulations valid in your country.

Further information about devices containing batteries can be found at: Information on battery/product return (WEEE) (<https://support.industry.siemens.com/cs/document/109479891/>)

Note

Special disposal required

The device includes components that require special disposal.

- Dispose of the device properly and environmentally through a local waste disposal contractor.
-

Technical data

7.1 Input

Gauge pressure input						
	HART			PROFIBUS PA or Foundation Fieldbus		
Measured variable	Gauge pressure					
Measuring span (continuously adjustable) or measuring range, max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. permissible test pressure (in accordance with DIN 16086) (for oxygen measurement, max. 120 bar)	Measuring span	Maximum operating pressure MAWP (PS)	Maximum test pressure	Measuring range	Maximum permissible operating pressure	Maximum test pressure
	8.3 ... 250 mbar (0.12 ... 3.6 psi)	4 bar (58 psi)	6 bar (87 psi)	8.3 ... 250 mbar (0.12 ... 3.6 psi)	4 bar (58 psi)	6 bar (87 psi)
	0.01 ... 1 bar g (0.15 ... 14.5 psi g)	4 bar g (58 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	4 bar g (58 psi g)	6 bar g (87 psi g)
	0.04 ... 4 bar g (0.58 ... 58 psi g)	7 bar g (102 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	7 bar g (102 psi g)	10 bar g (145 psi g)
	0.16 ... 16 bar g (2.3 ... 232 psi g)	21 bar g (305 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	21 bar g (305 psi g)	32 bar g (464 psi g)
	0.63 ... 63 bar g (9.1 ... 914 psi g)	67 bar g (972 psi g)	100 bar g (1450 psi g)	63 bar g (914 psi g)	67 bar g (972 psi g)	100 bar g (1450 psi g)
	1.6 ... 160 bar g (23.2 ... 2321 psi g)	167 bar g (2422 psi g)	250 bar g (3526 psi g)	160 bar g (2321 psi g)	167 bar g (2422 psi g)	250 bar g (3626 psi g)
	4.0 ... 400 bar g (58 ... 5802 psi g)	400 bar g (5802 psi g)	600 bar g (8400 psi g)	400 bar g (5802 psi g)	400 bar g (5802 psi g)	600 bar g (8702 psi g)
	Depending on the process connection, the span may differ from these values			Depending on the process connection, the measuring range may differ from these values		

7.1 Input

Absolute pressure input						
Measured variable	HART			PROFIBUS PA or Foundation Fieldbus		
	Absolute pressure					
Measuring span (continuously adjustable) or measuring range, max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. test pressure (in accordance with DIN 16086)	Span	Maximum operating pressure MAWP (PS)	Maximum test pressure	Measuring range	Maximum operating pressure	Maximum test pressure
	8 ... 250 mbar a (3 ... 100 inH ₂ O)	1.5 bar a (22 psi a)	6 bar a (87 psi a)	250 mbar a (3.6 psi a)	1.5 bar a (22 psi a)	6 bar a (87 psi a)
	43 ... 1300 mbar a (17 ... 525 inH ₂ O)	2.6 bar a (38 psi a)	10 bar a (145 psi a)	1.30 bar a (19 psi a)	2.6 bar a (38 psi a)	10 bar a (145 psi a)
	0.16 ... 5 bar a (2.3 ... 73 psi a)	10 bar a (145 psi a)	30 bar a (435 psi a)	5 bar a (73 psi a)	10 bar a (145 psi a)	30 bar a (435 psi a)
	1 ... 30 bar a (14.5 ... 435 psi a)	45 bar a (653 psi a)	100 bar a (1450 psi a)	30 bar a (435 psi a)	45 bar a (653 psi a)	100 bar a (1450 psi a)
	5.3 ... 160 bar a (77 ... 2321 psi a)	240 bar a (3480 psi a)	800 bar a (11603 psi a)	160 bar a (2321 psi a)	240 bar a (3480 psi a)	800 bar a (11603 psi a)

Gauge pressure input, with flush-mounted diaphragm						
Measured variable	HART			PROFIBUS PA or Foundation Fieldbus		
	Gauge pressure					
Span (continuously adjustable) or measuring range, max. operating pressure and max. test pressure	Span	Maximum operating pressure MAWP (PS)	Maximum test pressure	Measuring range	Maximum operating pressure	Maximum test pressure
	0.01 ... 1 bar g (0.15 ... 14.5 psi g)	4 bar g (58 psi g)	6 bar g (87 psi g)	1 bar g (14.5 psi g)	4 bar g (58 psi g)	6 bar g (87 psi g)
	0.04 ... 4 bar g (0.58 ... 58 psi g)	7 bar g (102 psi g)	10 bar g (145 psi g)	4 bar g (58 psi g)	7 bar g (102 psi g)	10 bar g (145 psi g)
	0.16 ... 16 bar g (2.3 ... 232 psi g)	21 bar g (305 psi g)	32 bar g (464 psi g)	16 bar g (232 psi g)	21 bar g (305 psi g)	32 bar g (464 psi g)
	0.63 ... 63 bar g (9.1 ... 914 psi g)	67 bar g (972 psi g)	100 bar g (1450 psi g)	63 bar g (914 psi g)	67 bar g (972 psi g)	100 bar g (1450 psi g)
Depending on the process connection, the span may deviate from these values.						

Absolute pressure input, with flush-mounted diaphragm						
Measured variable	HART			PROFIBUS PA or Foundation Fieldbus		
	Absolute pressure					
Measuring span (continuously adjustable) or measuring range, max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. test pressure (in accordance with DIN 16086)	Span	Maximum operating pressure MAWP (PS)	Maximum test pressure	Measuring range	Maximum operating pressure	Maximum test pressure
	43 ... 1300 mbar a (17 ... 522 inH ₂ O)	2.6 bar a (38 psi a)	10 bar a (145 psi a)	1300 mbar a (522 inH ₂ O)	2.6 bar a (38 psi a)	10 bar a (145 psi a)
	0.16 ... 5 bar a (2.3 ... 73 psi a)	10 bar a (145 psi a)	30 bar a (435 psi a)	5 bar a (73 psi a)	10 bar a (145 psi a)	30 bar a (435 psi a)
	1 ... 30 bar a (14.5 ... 435 psi a)	45 bar a (653 psi a)	100 bar a (1450 psi a)	30 bar a (435 psi a)	45 bar a (653 psi a)	100 bar a (1450 psi a)
Depending on the process connection, the span may differ from these values				Depending on the process connection, the measuring range may differ from these values		

7.2 Output

Output		
	HART	PROFIBUS PA or Foundation Fieldbus
Output signal	4 ... 20 mA	Digital PROFIBUS-PA or Foundation Fieldbus signal

7.3 Conditions of use

Conditions of use	
Installation conditions	
Ambient temperature	
Note	Observe the temperature class in areas subject to explosion hazard.

7.4 Construction

Conditions of use	
Measuring cell with silicone oil	-40 ... +85 °C (-40 ... +185 °F)
Measuring cell with inert liquid (not with flush-mounted diaphragm) ¹⁾	-20 ... +85 °C (-4 ... +185 °F)
Measuring cell with Neobee oil (FDA-compliant, flush-mounted diaphragm) ¹⁾	-10 ... +85 °C (14 ... 185 °F)
Display	-30 ... +85 °C (-22 ... +185 °F)
Storage temperature	-50 ... +85 °C (-58 ... +185 °F) (for Neobee: -20 ... + 85 °C (-4 ... +185 °F)) (for high-temperature oil: -50 ... +85 °C (-58 ... +185 °F))
• Climate class	
Condensation	Permitted
• Degree of protection in accordance with EN 60 529	IP65, IP68, enclosure cleaning, resistant to alkalis, steam up to 150° C
• Degree of protection in accordance with NEMA 250	NEMA 4X, enclosure cleaning, resistant to alkalis, steam up to 150 °C
• Electromagnetic Compatibility	
Emission and resistance to interference	As per EN 61 326 and NAMUR NE 21
Medium conditions	
• Process temperature	
Measuring cell with silicone oil	-40 ... +100 °C (-40 ... +212 °F)
Measuring cell with silicone oil (flush-mounted diaphragm) ¹⁾	-40 ... +150 °C (-40 ... +302 °F)
Measuring cell with Neobee oil (FDA-compliant, flush-mounted diaphragm) ¹⁾	-10 ... +150 °C (14 ... 302 °F)
Measuring cell with silicone oil and cooling extension (flush-mounted diaphragm) ¹⁾	-40 ... +200 °C (-40 ... +392 °F)
Measuring cell with inert liquid	-20 ... +100 °C (-4 ... +212 °F)
Measuring cell with high-temperature oil	-10 ... +250 °C (14 ... 482 °F)

¹⁾ Observe the temperature limits in the process connection standards (e.g. DIN 32676 and DIN 11851) for the maximum process medium temperature for flush-mounted process connections.


7.4 Construction

Design (standard version)	
Weight (without options)	Approx. 800 g (1.8 lb)
Enclosure material	Stainless steel, mat. no. 1.4301/304
Wetted parts materials	
• Connection pins	Stainless steel, mat. no. 1.4404/316L Hastelloy C276, mat. No. 2.4819
• Oval flange	Stainless steel, mat. no. 1.4404/316L

Design (standard version)	
• Seal diaphragm	Stainless steel, mat. no. 1.4404/316L Hastelloy C276, mat. no. 2.4819
• Measurement cell filling	<ul style="list-style-type: none"> • Silicone oil • Inert filling liquid
Process connection	<ul style="list-style-type: none"> • Connection pins G½B in accordance with DIN EN 837-1 • Internal thread ½-14 NPT • Oval flange PN 160 (MAWP (PS) 2320 psi) with fastening screw thread: <ul style="list-style-type: none"> – 7/16-20 UNF as per IEC 61518 – M10 as per DIN 19213 • Male thread M20 x 1.5 and ½-14 NPT
Electrical connection	Cable inlet using the following glands: <ul style="list-style-type: none"> • M20 x 1.5 (plastic) • M20 x 1.5 (metal with shield support)
Design with flush-mounted diaphragm	
Weight (without options)	Approx. 1 ... 13 kg (2.2 ... 29 lb)
Enclosure material	Stainless steel, mat. no. 1.4301/304
Wetted parts material	
• Process connection	Stainless steel, mat. no. 1.4404/316L
• Seal diaphragm	Stainless steel, mat. no. 1.4404/316L Hastelloy C276, mat. no. 2.4819
Measuring cell filling	<ul style="list-style-type: none"> • Silicone oil • Inert filling liquid • FDA-compliant oil (Neobee)
Process connection	<ul style="list-style-type: none"> • Flanges in accordance with EN and ASME • F&B and Pharma flange • Bioconnect/Biocontrol • PMC style
Electrical connection	Cable inlet via the following glands: <ul style="list-style-type: none"> • M20 x 1.5 (plastic) • M20 x 1.5 (metal with shield support)
Wetted parts surface quality	R_a values $\leq 0.8 \mu\text{m}$ (32 $\mu\text{-inch}$)/welded seams $R_a \leq 1.6 \mu\text{m}$ (64 $\mu\text{-inch}$) (process connections in accordance with 3A; R_a values $\leq 0.8 \mu\text{m}$ (32 $\mu\text{-inch}$)/ welded seams $R_a \leq 0.8 \mu\text{m}$ (32 $\mu\text{-inch}$))


7.5 Display, keyboard and auxiliary power

Display and user interface	
Keys	3 for on-site programming on the device itself
Display	<ul style="list-style-type: none"> With or without integrated display (optional) Cover with inspection window (optional)

Auxiliary power U_H		
	HART	PROFIBUS PA or Foundation Fieldbus
Terminal voltage at transmitter	<ul style="list-style-type: none"> 10.5 V ... 42 V DC In the case of intrinsically safe operation 10.5 V ... 30 V DC 	–
Ripple	$U_{SS} \leq 0,2 \text{ V}$ (47 ... 125 Hz)	–
Noise	$U_{eff} \leq 1.2 \text{ V}$ (0.5 ... 10 Hz)	–
Auxiliary power	–	Bus-powered
Separate supply voltage	–	Not necessary
Bus voltage		
<ul style="list-style-type: none"> Without  	–	9 ... 32 V
<ul style="list-style-type: none"> For intrinsically safe operation 	–	9 ... 24 V
Current consumption		
<ul style="list-style-type: none"> Max. basic current 	–	12.5 mA
<ul style="list-style-type: none"> Starting current \leq basic current 	–	Yes
<ul style="list-style-type: none"> Max. current in event of fault 	–	15.5 mA
Error shut-down electronics (FDE) fitted	–	Yes

7.6 Certificates and approvals

Certificates and approvals		
	HART	PROFIBUS PA or Foundation Fieldbus
Classification according to Pressure Equipment Directive (PED 2014/68/EU)	<ul style="list-style-type: none"> For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice) 	
Water, waste water	NSF-61 / WRAS	
Explosion protection		
<ul style="list-style-type: none"> Intrinsic safety "i" 	PTB 05 ATEX 2048	

Certificates and approvals		
	HART	PROFIBUS PA or Foundation Fieldbus
Designation	 II 1/2 G Ex ia IIC T6 ... T4 Ga/Gb	
Permissible ambient temperature	-40 ... +85°C (-40 ... +185°F) temperature class T4 -40 ... +70°C (-40 ... +158°F) temperature class T5 -40 ... +60°C (-40 ... +140°F) temperature class T6	
Connections	To certified intrinsically safe circuits with the following maximum values: U _i = 30 V, I _i = 100 mA P _i = 750 mW, R _i = 300 Ω	FISCO supply unit U _i = 17.5 V, I _i = 380 mA P _i = 5.32 W
Effective inner capacitance:	C _i = 6 nF	C _i = 1.1 nF
Effective inner inductance:	L _i = 0.4 mH	L _i = 7 μH
<ul style="list-style-type: none"> FM explosion protection for USA and Canada (cFM_{US}) 		
Designation (DIP) or (IS); (NI)	Certificate of Compliance 3025099 CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III	
Designation (DIP) or (IS)	Certificate of Compliance 3025099C CL I, DIV 1, GP ABCD T4 ... T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC 4 ... T6; CL I, DIV 2, GP ABCD T4 ... T6; CL II, DIV 2, GP FG; CL III	
<ul style="list-style-type: none"> Dust ignition protection for Zone 20/21/22 		
Designation	II 1D Ex ia IIIC T ₂₀₀ 122°C Da II 1/2 D Ex ia IIIC T ₂₀₀ 122°C Da/Db II 2 D Ex ib IIIC T ₂₀₀ 122°C Db	
Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) (for windows made of mineral glass only -20 ... +85 °C (-4 ... +185 °F)) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) (for windows made of mineral glass only -20 ... +70 °C (-4 ... +158 °F)) temperature class T5 -40 ... +60 °C (-40 ... +140 °F) (for windows made of mineral glass only -20 ... +60 °C (-4 ... +140 °F)) temperature class T6	
Connection	To certificated intrinsically safe circuits with maximum values: U _i = 30 V, I _i = 100 mA, P _i = 750 mW	To certified intrinsically safe circuits with the following maximum values: U _i = 24 V, I _i = 380 mA, P _i = 5.32 mW
Effective inner capacitance	C _i = 6 nF	C _i = 5 nF
Effective inner inductance	L _i = 0.4 μH	L _i = 10 μH
<ul style="list-style-type: none"> Type of protection Ex ic / ec (Zone 2) 		
	PTB 05 ATEX 2048	

7.6 Certificates and approvals

Certificates and approvals		
	HART	PROFIBUS PA or Foundation Fieldbus
Designation	II 3 G Ex ic IIC T6 ... T4 Gc II 3 G Ex ec IIC T6 ... T4 Gc	
Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) (for windows made of mineral glass only -20 ... +85 °C (-4 ... +185 °F)) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) (for windows made of mineral glass only -20 ... +70 °C (-4 ... +158 °F)) temperature class T5 -40 ... +60 °C (-40 ... +140 °F) (for windows made of mineral glass only -20 ... +60 °C (-4 ... +140 °F)) temperature class T6	
Ex nA connection	To certified intrinsically safe circuits with the following maximum values: Um = 45 V	To certified intrinsically safe circuits with the following maximum values: Um = 32 V
Ex ic/nL connection	To certified intrinsically safe circuits with the following maximum values: Ui = 45 V	To certified intrinsically safe circuits with the following maximum values: Ui = 32 V
Effective inner capacitance	Ci = 6 nF	Ci = 5 nF
Effective inner inductance	Li = 0.4 mH	Li = 20 µH

Appendix A

A.1 Dimension drawings

A.1.1 SITRANS P300 gauge pressure / absolute pressure

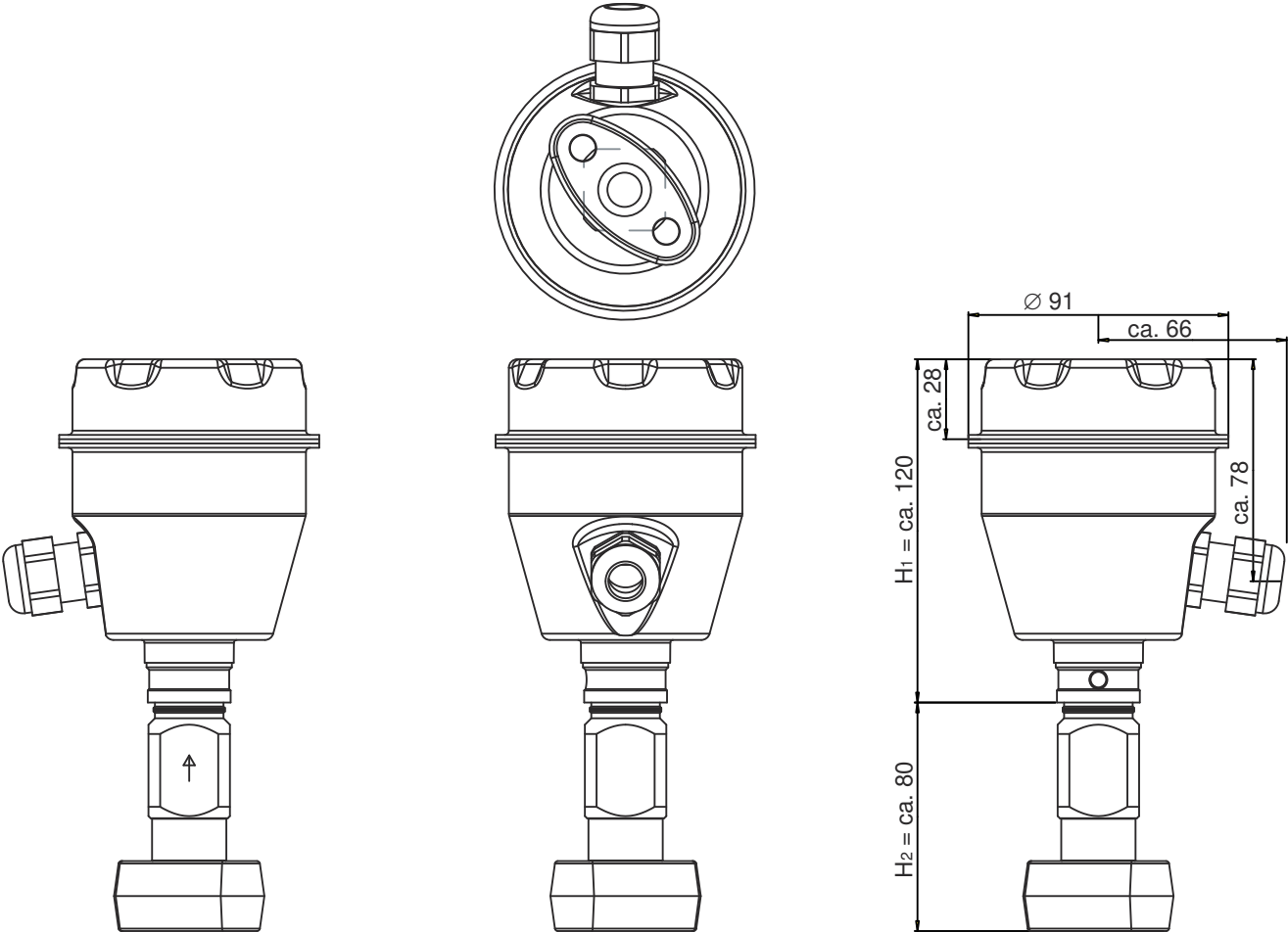


Figure A-1 SITRANS P300 with oval flange

A.1.2 SITRANS P300 gauge pressure / absolute pressure (flush-mounted)

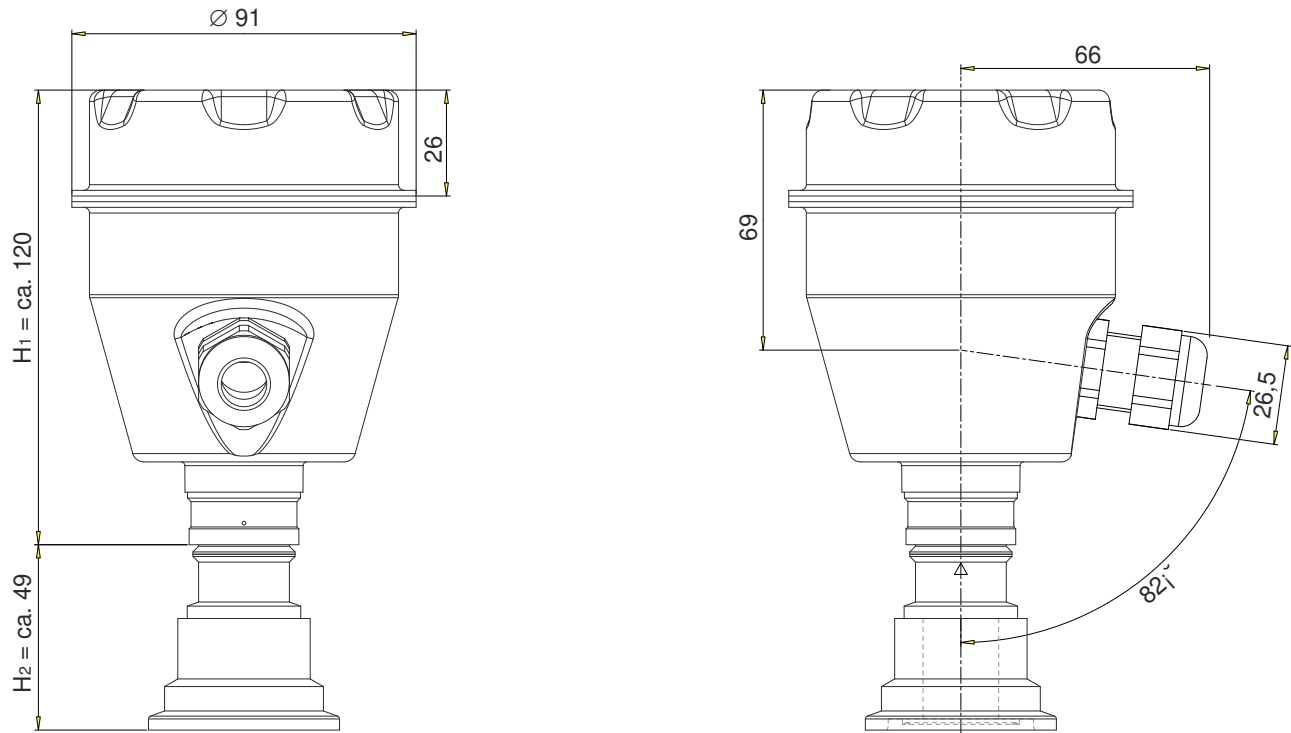


Figure A-2 SITRANS P300 (flush-mounted)

The diagram shows a SITRANS P300 with an example of a flange. In this drawing the height is subdivided into H_1 and H_2 .

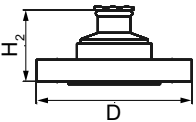
H_1 Height of the SITRANS P300 up to a defined cross-section

H_2 Height of the flange up to this defined cross-section

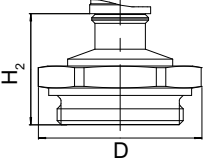
Height H_2 only is indicated in the dimensions of the flanges.

A.1.3 Connections as per EN and ASME

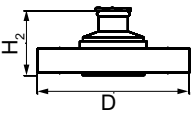
Flange as per EN

EN 1092-1				
	DN	PN	ØD	H ₂
	25	40	115 mm (4.5")	Approx. 52 mm (2")
	25	100	140 mm (5.5")	
	40	40	150 mm (5.9")	
	40	100	170 mm (6.7")	
	50	16	165 mm (6.5")	
	50	40	165 mm (6.5")	
	80	16	200 mm (7.9")	
	80	40	200 mm (7.9")	

Threaded connections

G3/4", G1" and G2" In accordance with DIN 3852				
	DN	PN	ØD	H ₂
	¾"	63	37 mm (1.5")	Approx. 45 mm (1.8")
	1"	63	48 mm (1.9")	Approx. 47 mm (1.9")
	2"	63	78 mm (3.1")	Approx. 52 mm (2")

Flanges as per ASME

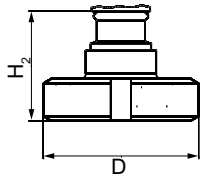
ASME B 16.5				
	DN	CLASS	ØD	H ₂
	1"	150	110 mm (4.3")	Approx. 52 mm (2")
	1"	300	125 mm (4.9")	
	1½"	150	130 mm (5.1")	
	1½"	300	155 mm (6.1")	
	2"	150	150 mm (5.9")	
	2"	300	165 mm (6.5")	
	3"	150	190 mm (7.5")	
	3"	300	210 mm (8.1")	
	4"	150	230 mm (9.1")	
	4"	300	255 mm (10.0")	

A.1.4 F&B and pharma flange

Connections as per DIN

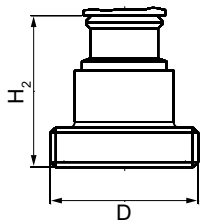
DIN 11851

DN	PN	ØD	H ₂
50	25	92 mm (3.6")	Approx. 52 mm (2")
80	25	127 mm (5.0")	



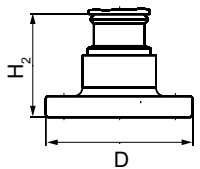
DIN 11864-1 Form A - sterile threaded sockets

DN	PN	ØD	H ₂
50	25	78 mm (2")	Approx. 52 mm (2")
65	25	95 mm (3.7")	
80	25	110 mm (4.3")	
100	25	130 mm (5.1")	



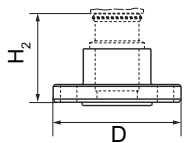
DIN 11864-2 Form A - sterile collar flange

DN	PN	ØD	H ₂
50	16	94 mm (3.7")	Approx. 52 mm (2")
65	16	113 mm (4.4")	
80	16	133 mm (5.2")	
100	16	159 mm (6.3")	

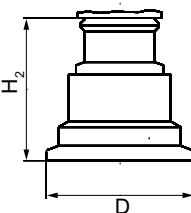


DIN 11864-2 Form A - sterile groove flange

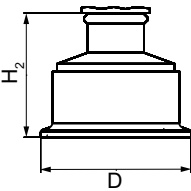
DN	PN	ØD	H ₂
50	16	94 mm (3.7")	Approx. 52 mm (2")
65	16	113 mm (4.4")	
80	16	133 mm (5.2")	
100	16	159 mm (6.3")	



DIN 11864-3 Form A - sterile collar sockets

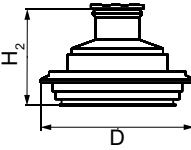
	DN	PN	ØD	H ₂
	50	25	77.5 mm (3.1")	Approx. 52 mm (2")
	65	25	91 mm (3.6")	
	80	16	106 mm (4.2")	
	100	16	130 mm (5.1")	

Tri-clamp according to DIN 32676 or ISO2852

	DN	PN	ØD	H ₂
	50	16	64 mm (2.5")	Approx. 52 mm (2")
	65	16	91 mm (3.6")	
	2"	16	64 mm (2.5")	
	3"	16	91 mm (3.6")	

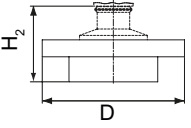
Other connections

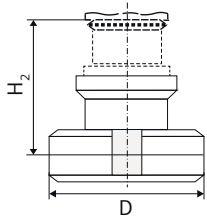
Varivent® connector

	DN	PN	ØD	H ₂
	40-125	40	84 mm (3.3")	Approx. 52 mm (2")

Approvals EHEDG 3A

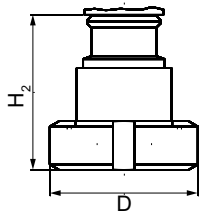
Connection in accordance with DRD

	DN	PN	ØD	H ₂
	65	40	105 mm (4.1")	Approx. 52 mm (2")

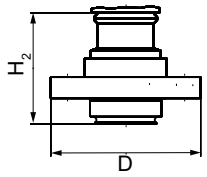
Sanitary process gland according to NEUMO BioConnect				
	DN	PN	ØD	H ₂
	50	16	82 mm (3.2")	Approx. 52 mm (2")
	65	16	105 mm (4.1")	
	80	16	115 mm (4.5")	
	100	16	145 mm (5.7")	
	2"	16	82 mm (3.2")	
	2½"	16	105 mm (4.1")	
	3"	16	105 mm (4.1")	
Approvals	EHEDG 3A			

A.1.5 BioConnect/BioControl

BioConnect™ connectors

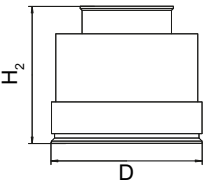
BioConnect™ gland				
	DN	PN	ØD	H ₂
	50	16	82 mm (3.2")	Approx. 52 mm (2")
	65	16	105 mm (4.1")	
	80	16	115 mm (4.5")	
	100	16	145 mm (5.7")	
	2"	16	82 mm (3.2")	
	2½"	16	105 mm (4.1")	
	3"	16	105 mm (4.1")	
	4"	16	145 mm (5.7")	
	3-A and EHEDG compliant			

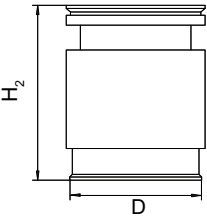
Other connections

BioControl™ connector				
	DN	PN	ØD	H ₂
	50	16	90 mm (3.5")	Approx. 52 mm (2")
	65	16	120 mm (4.7")	
	80	16	140 mm (5.5")	

A.1.6 PMC Style

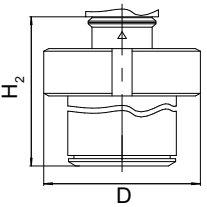
Connections for the paper industry

PMC Style Standard				
	DN	PN	ØD	H ₂
	-	-	40.9 mm (1.6")	Approx. 36.8 mm (1.4")
	M44x1.25 cap nut			

PMC-Style Minibolt				
	DN	PN	ØD	H ₂
	-	-	26.3 mm (1.0")	Approx. 33.1 mm (1.3")

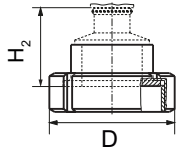
A.1.7 Special connections

Tank connection

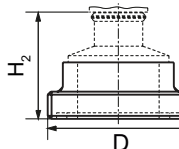
TG52/50 and TG52/150				
	DN	PN	ØD	H ₂
	TG52/50			
	25	40	63 mm (2.5")	Approx. 63 mm (2.5")
	TG52/150			
	25	40	63 mm (2.5")	Approx. 170 mm (6.7")

SMS connectors

SMS sockets with union nut

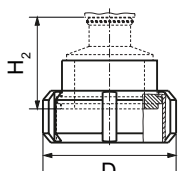
	DN	PN	ØD	H ₂
	2"	25	84 mm (3.3")	Approx. 52 mm (2.1")
	2½"	25	100 mm (3.9")	
	3"	25	114 mm (4.5")	

SMS threaded sockets

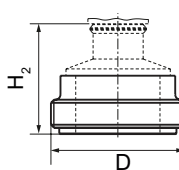
	DN	PN	ØD	H ₂
	2"	25	70 x 1/6 mm (2.8")	Approx. 52 mm (2.1")
	2½"	25	85 x 1/6 mm (3.3")	
	3"	25	98 x 1/6 mm (3.9")	

IDF connectors

IDF sockets with union nut

	DN	PN	ØD	H ₂
	2"	25	77 mm (3.0")	Approx. 52 mm (2.1")
	2½"	25	91 mm (3.6")	
	3"	25	106 mm (4.2")	

IDF threaded sockets

	DN	PN	ØD	H ₂
	2"	25	64 mm (2.5")	Approx. 52 mm (2.1")
	2½"	25	77.5 mm (3.1")	
	3"	25	91 mm (3.6")	

A.2 Product documentation

Process instrumentation product documentation is available in the following formats:

- Certificates (<http://www.siemens.com/processinstrumentation/certificates>)
- Downloads (firmware, EDDs, software) (<http://www.siemens.com/processinstrumentation/downloads>)
- Catalog and catalog sheets (<http://www.siemens.com/processinstrumentation/catalogs>)
- Manuals (<http://www.siemens.com/processinstrumentation/documentation>)
You have the option to show, open, save, or configure the manual.
 - "Display": Open the manual in HTML5 format
 - "Configure": Register and configure the documentation specific to your plant
 - "Download": Open or save the manual in PDF format
 - "Download as html5, only PC": Open or save the manual in the HTML5 view on your PC

You can also find manuals with the Mobile app at Industry Online Support (<https://support.industry.siemens.com/cs/ww/de/sc/2067>). Download the app to your mobile device and scan the device QR code.

Product documentation by serial number

Using the PIA Life Cycle Portal, you can access the serial number-specific product information including technical specifications, spare parts, calibration data, or factory certificates.

Entering a serial number

1. Open the PIA Life Cycle Portal (<https://www.pia-portal.automation.siemens.com>).
2. Select the desired language.
3. Enter the serial number of your device. The product documentation relevant for your device is displayed and can be downloaded.

To display factory certificates, if available, log in to the PIA Life Cycle Portal using your login or register.

Scanning a QR code

1. Scan the QR code on your device with a mobile device.
2. Click "PIA Portal".

To display factory certificates, if available, log in to the PIA Life Cycle Portal using your login or register.

A.3 Technical support

Technical support

If this documentation does not completely answer your technical questions, you can enter a Support Request (<http://www.siemens.com/automation/support-request>).

For help creating a support request, view this video here (www.siemens.com/opensr).

Additional information on our technical support can be found at Technical Support (<http://www.siemens.com/automation/csi/service>).

Service & support on the Internet

In addition to our technical support, Siemens offers comprehensive online services at service & support (<http://www.siemens.com/automation/serviceandsupport>).

Contact

If you have further questions about the device, contact your local Siemens representative at Personal Contact (<http://www.automation.siemens.com/partner>).

To find the contact for your product, go to "all products and branches" and select "Products & Services > Industrial automation > Process instrumentation".

Contact address for business unit:

Siemens AG
Digital Industries
Process Automation
Östliche Rheinbrückenstr. 50
76187 Karlsruhe, Germany

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