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Compact Operating Instructions • 02/2014 SIPART PS2 with and without HART

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SIPART PS2 (6DR5...)

Electropneumatic positioners

SIPART PS2 with and without HART

Compact Operating Instructions

Edition 02/2014

Answers for industry.

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SIEMENS

SIPART
Electropneumatic positioners
SIPART PS2 (6DR5...)
Compact Operating Instructions

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.

1 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. It is your responsibility to 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 mechanically assemble the device, connect it electrically, and start it up.

To achieve optimum usage of the device, read the detailed version of the manual.

See also

Process instrumentation catalog (http://www.siemens.com/processinstrumentation/catalogs)

SIPART PS2 product information (http://www.siemens.com/sipartps2)

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1.2 History

The following table shows the most important changes in the documentation compared to the previous edition.

Edition	Comment
03/2011	First edition
01/2013	Revision of the warning information as well as sections "Technical data (Page 34)", "Connecting (Page 12)" and "Commissioning (Page 23)".
02/2014	Chapter "Technical data (Page 34)"

1.3 Purpose

The electropneumatic positioner is used for the continuous control of process valves with pneumatic drives in the following industries.

- Chemicals
- Oil and gas
- Energy production
- Food and beverages
- Pulp and paper
- Water/waste water
- Pharmaceutical industry
- Offshore plants

Operate the device according to the specifications in Chapter "Technical data (Page 34)".

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

1.4 Checking the consignment

1. Check the packaging and the device for visible damage caused by inappropriate handling during shipping.
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

Danger of explosion in hazardous areas.

- Do not use damaged or incomplete devices.

1.5 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.

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⚠ CAUTION
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 34).

1.6 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.

2 Safety instructions

2.1 Requirement 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	Meaning
	Consult operating instructions
	Hot surface
	Isolate the device from power using a circuit-breaker
	Protect the device from shocks (otherwise the specified degree of protection is not guaranteed)
	Protective insulation; device in protection class II

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2.1.2 Laws and directives

Observe the test certification, 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) (Canada)

Further provisions for hazardous area applications are for example:

- IEC 60079-14 (international)
- EN 60079-14 (EC)

2.1.3 Conformity with European directives

The CE marking on the device shows conformity with the regulations of the following European guidelines:

Electromagnetic Compatibility EMC 2004/108/EC	Directive of the European Parliament and of the Council on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC.
Atmosphère explosible ATEX 94/9/EC	Directive of the European Parliament and the Council on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres.

The applied standards can be found in the EC conformity declaration of the device.

2.2 Improper device modifications

WARNING

Improper device modifications

Danger to personnel, system and environment can result from modifications to the device, particularly in hazardous areas.

- 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.

2.3 Use in areas subject to explosion hazard

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

Unsuitable device for the hazardous area

Danger of explosion.

- Only use equipment that is approved for use in the intended hazardous area and labelled accordingly.

See also

Technical data (Page 34)

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WARNING

Loss of safety of device with type of protection "Intrinsic safety Ex i"

If the device has 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 danger of explosion.

- 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 in Chapter "Technical data (Page 34)".

3 Installing/mounting

3.1 Basic safety instructions

WARNING

High operating force with pneumatic drives

Risk of injury when working on control valves due to the high operating force of the pneumatic drive.

- Please observe the corresponding safety instructions for the pneumatic actuator in use.

WARNING

Lever for position detection

Danger of crushing and shearing with mounting kits which use a lever for position detection. During commissioning and ongoing operation, severing or squeezing of limbs could occur as a result of the lever. Risk of injury when working on control valves due to the high operating force of the pneumatic drive.

- Do not reach into the range of motion of the lever following mounting of the positioner and mounting kit.

WARNING

Impermissible accessories and spare parts

Danger 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

It is possible to damage the cover gasket

If the cover gasket is not positioned correctly in the groove of the base plate, it could be damaged when the cover is mounted and screwed tight.

- Therefore make sure that the gasket is seated correctly.

WARNING

Open cable inlet or incorrect cable gland

Danger of explosion in hazardous areas.

- Close the cable inlets for the electrical connections. Only use cable glands or plugs which are approved for the relevant type of protection.

See also

Technical data (Page 34)

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⚠ WARNING

Exceeded maximum ambient or process media temperature

Danger of explosion in hazardous areas.

Device damage.

- Make sure that the maximum permissible ambient and process media temperatures of the device are not exceeded. Refer to the information in Chapter "Technical data (Page 34)".

⚠ CAUTION

Unsuitable compressed air

Device damage. As a general rule, the positioner must only be operated with dry and clean compressed air.

- Use the customary water separators and filters. An additional dryer is required in extreme cases.
- Use dryers, especially if you operate the positioner at low ambient temperatures.

⚠ WARNING

Mechanical impact energy

Protect the 6DR5...0-.G...-.... version of the positioner from mechanical impact energy greater than 1 joule; this ensures adherence to the IP66 degree of protection.

NOTICE

Impact energy and torque

For versions 6DR5a.b-.Gc..-...., where a = 0, 2, 5, 6; b = 0, 1; c = G, N, M, P, Q, the following is applicable:

The device must be protected against power surges of over one joule.

For versions 6DR5a.b-.Gc..-...., where a = 0, 2, 5, 6; b = 0; c = G, N, M, P, Q, the following is applicable:

The maximum torque on the thread of the cable gland should not exceed 67 Nm.

3.1.1 Proper mounting

NOTICE

Incorrect mounting

The device can be damaged, destroyed, or its functionality impaired through improper mounting.

- 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 Chapter "Constructional design (Page 35)", for example installation torques requirements.

⚠ CAUTION

Loss of degree of protection

Damage to device if the enclosure is open or not properly closed. The degree of protection specified on the nameplate or in Chapter "Technical data (Page 34)" is no longer guaranteed.

- Make sure that the device is securely closed.

3.2 Mounting the linear actuator

For linear actuators, use the "linear actuator" mounting kit 6DR4004-8V or the integrated attachment.

You require different installation parts depending on the selected actuator type. The mounting kit is suitable for a stroke of 3 to 35 mm. For a larger stroke range, you require a separately ordered lever 6DR4004-8L. Refer to the detailed operating instructions for further information on mounting.

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3.3 Mounting the part-turn actuator

You require an actuator-specific VDI/VDE 3845 mount to install the positioner on a part-turn actuator. You receive the mount and screws from the actuator manufacturer. Ensure that the mount has a sheet metal thickness of > 4 mm and reinforcements. You also need the mounting kit 6DR4004-8D or the stainless steel coupling TGX: 16300-1556. Refer to the detailed operating instructions for further information on mounting.

3.4 Using the positioner in a humid environment

Introduction

This information contains important notes for the installation and operation of the positioner in a wet environment with frequent and heavy rains and/or continuous tropical dew. The IP66 degree of protection is no longer adequate in this environment, especially when there is a risk of water freezing.

Favorable and unfavorable mounting positions

Avoid the unfavorable mounting positions:

- To prevent fluids seeping through during normal operation of the device, e.g. through exhaust air openings.
- Otherwise the display becomes poorly legible.

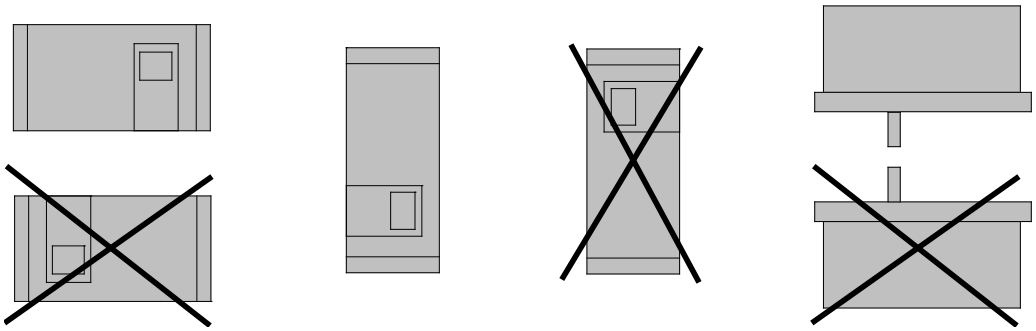


Figure 3-1 Favorable and unfavorable mounting positions

Additional measures to prevent liquids from seeping through

Take additional measures to prevent liquids from seeping through if the conditions force you to operate the positioner in an unfavorable mounting position.

Additional measures required to prevent liquids from seeping through depend on the selected mounting position. You may also require:

- Gland with sealing ring, e.g. FESTO: CK - 1 / 4-PK-6
- Approximately 20 to 30 cm plastic hose, e.g. FESTO: PUN - 8 x 1.25 SW
- Cable tie; the number and the length depend on the local conditions.

Procedure

1. Install the casing such that rain water or condensate running along the pipes can be drained before the terminal strip of the positioner.
2. Check the seals of electrical connections for perfect fitting.
3. Check the seal in the enclosure cover for damage and contaminations. Clean and/or replace if required.
4. Install the positioner such that the sintered bronze attenuator at the bottom side of the enclosure points downwards in the vertical mounting position. If this is not possible, replace the attenuator with a suitable gland with a plastic hose.

Procedure for installing the plastic hose on the gland

1. Unscrew the sintered bronze attenuator from the exhaust air opening at the bottom side of the enclosure.
2. Screw in the aforementioned gland into the exhaust air opening.
3. Install the aforementioned plastic hose into the gland and check whether it fits firmly.

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4. Fasten the plastic hose with a cable tie onto the control valve such that the opening points downwards.
5. Ensure that the plastic hose does not have any kinks and the exhaust air flows out without any hindrance.

3.5 Positioners subjected to fast acceleration or strong vibration

3.5.1 Introduction locking the setting

The electropneumatic positioner has an gear latch for the friction clutch and for the transmission ratio selector.

Strong acceleration forces act on control valves that are subjected to heavy mechanical loads, e.g. breakaway valves, strongly shaking or vibrating valves, as well as in case of "vapor shocks". These forces may be much higher than the specified data. This may cause the friction clutch to move in extreme cases.

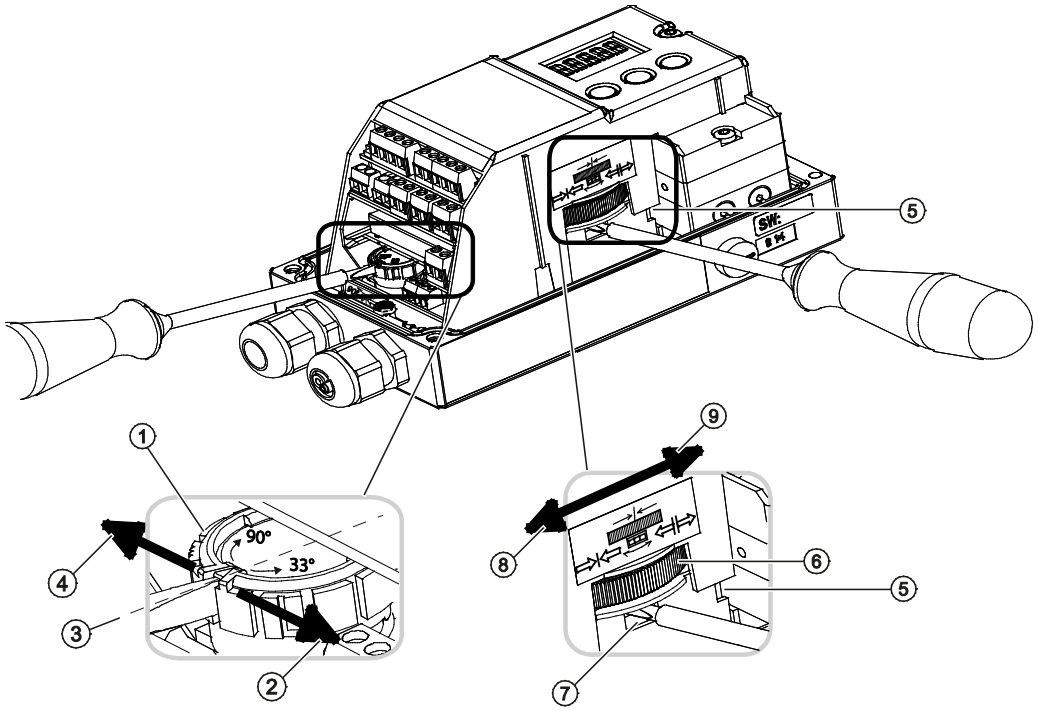
The positioner is equipped with an gear latch for the friction clutch to counter these extreme cases. The setting of the transmission ratio selector can also be locked.

The locking procedure is illustrated and described below.

3.5.2 Procedure locking the setting

Overview diagram

NOTICE
Wrong registration of the rotary or part-turn movement A different setting of the transmission ratio selector and the gear latch results in a hysteresis in position registration. The hysteresis in position registration can result in unstable control behavior of the higher level control loop. • Make sure the transmission ratio selector ⑤ and the gear latch ① are set to the same value, either to 33° or to 90°.



① Gear latch
② Locking transmission ratio to 33°
③ Neutral position
④ Locking transmission ratio to 90°
⑤ Transmission ratio selector
⑥ Friction clutch
⑦ Friction clutch latch
⑧ Locking friction clutch
⑨ Release friction clutch

Figure 3-2 Locking friction clutch and transmission ratio

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Requirements

- The positioner is mounted.
- You know whether the transmission ratio is to be set to 33° or 90°.
- The positioner has been commissioned successfully, i.e. initialization was completed with "FINISH".

Procedure

NOTICE
The following is applicable for the "flameproof enclosure" version: • A friction clutch is provided on the outside of the positioner axis. Change the work area using this friction clutch. • Do not open the flameproof enclosure of the positioner in explosion-prone atmospheres.

Fix the setting acquired by initialization as follows:

1. Make sure the gear latch ① is in neutral position ③. The neutral position is between 33° and 90°.
2. Make sure the transmission ratio selector ⑤ is in the correct position.
3. Fix the transmission ratio with the gear latch ①. Turn the gear latch ① with a standard approx. 4 mm wide screwdriver until the gear latch ① locks. Turning right locks the transmission ratio to 33°②. Turning left locks the transmission ratio to 90°④. The transmission ratio is locked.

   Note

   Changing the setting of the transmission ratio selector

   The setting of the transmission ratio selector ⑤ can only be changed effectively if the gear latch ① is in the neutral position ③.

4. To fix the friction clutch ⑥ insert a standard approx. 4 mm wide screwdriver in the friction clutch gear latch ⑦.
5. Use the screwdriver to turn the friction clutch gear latch ⑦ counterclockwise until it engages. The friction clutch ⑥ is locked.

3.6 External position detection

⚠ WARNING
External position detection system Versions with flameproof enclosures may not be operated with an external position detection system.

The aforementioned measures are not adequate in some applications. For example, continuous and strong vibrations, high or too low ambient temperatures and nuclear radiation.

The position detection system and the control unit are mounted separately for these applications. A universal component is available for this purpose. It is suitable for part-turn and linear actuators. You will require the following:

- An external position detection system with the order number C73451-A430-D78 comprising a positioner enclosure with an integrated friction clutch, potentiometer as well as different blanking plugs and seals.
- Or a contactless explosion-proof non contacting system (e.g.6DR4004-6N).
- A positioner
- A three-pole cable to connect components.
- An EMC filter module with the order number C73451-A430–D23 is provided in a set along with cable clamps and M20 cable glands.

The EMC filter module is always used for the control unit whenever an external position detection system is used instead of the internal position sensor. An external position detection system is, for example, a potentiometer with a 10 kΩ resistance or a non contacting system.

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3.7 Installing option modules

A number of option modules are provided for the positioner. Different option modules are available depending on the version of the device. Only the available option modules are listed below.

For additional information and the corresponding safety notes to be observed when installing the option modules, refer to the detailed operating instructions for your respective device version.

Option modules in standard and intrinsically safe versions

The following option modules are available:

- ly module
- Alarm module
- SIA module
- Limit value contact module
- EMC filter module

Option modules in "flameproof enclosure" version

The following option modules are available:

- ly module
- Alarm module

4 Connecting

4.1 Basic safety instructions

⚠ WARNING

Improper power supply

Danger of explosion in hazardous areas as result of incorrect power supply, e.g. using direct current instead of alternating current.

- Connect the device in accordance with the specified power supply and signal circuits. The relevant specifications can be found in the certificates, in Chapter "Technical data (Page 34)" or on the nameplate.

⚠ WARNING

Unsafe extra-low voltage

Danger of explosion in hazardous areas due to voltage flashover.

- Connect the device to an extra-low voltage with safe isolation (SELV).

⚠ WARNING

Connecting device in energized state

Danger of explosion in hazardous areas.

- Connect devices in hazardous areas only in a de-energized state.

Exceptions:

- Circuits of limited energy may also be connected in the energized state in hazardous areas.
- Exceptions for type of protection "Non-sparking nA" (Zone 2) are regulated in the relevant certificate

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⚠ WARNING

Lack of equipotential bonding

Danger of explosion through compensating currents or ignition currents through lack of equipotential bonding.

- Ensure that the device is potentially equalized.

Exception: It may be permissible to omit connection of the equipotential bonding for devices with type of protection "Intrinsic safety Ex i".

⚠ WARNING

Unprotected cable ends

Danger of explosion through unprotected cable ends in hazardous areas.

- Protect unused cable ends in accordance with IEC/EN 60079-14.

⚠ WARNING

Improper laying of shielded cables

Danger of explosion through compensating currents between hazardous area and the non-hazardous area.

- Only ground shielded cables that run into the hazardous area at one end.
- If grounding is required at both ends, use an equipotential bonding conductor.

⚠ WARNING

Unsuitable cables and/or cable glands

Danger of explosion in hazardous areas.

- Only use suitable cables and cable glands complying with the requirements specified in Chapter "Technical data (Page 34)".
- Tighten the cable glands in accordance with the torques specified in Chapter "Technical data (Page 35)".
- When replacing cable glands use only cable glands of the same type.
- After installation check that the cables are seated firmly.

⚠ WARNING

Incorrect selection of type of protection

Danger of explosion in areas subject to explosion hazard.

This device is approved for several types of protection.

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

Condensation in the device

Damage to device through formation of condensation if the temperature difference between transportation or storage and the mounting location exceeds 20 °C (68°F).

- Before taking the device into operation let the device adapt for several hours in the new environment.

NOTICE

Ambient temperature too high

Damage to cable sheath.

- At an ambient temperature ≥ 60 °C (140 °F), use heat-resistant cables suitable for an ambient temperature at least 20 °C (68 °F) higher.

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Two-wire mode

NOTICE
Connection of voltage source to current input Device damage if a voltage source is connected to the current input I_w (terminals 6 and 7). • Never connect the current input I_w to a voltage source, otherwise the positioner may be destroyed. • Always use a voltage source with a maximum output current of I = 20 mA.

Note

Improvement of interference immunity

- Lay signal cables separate from cables with voltages > 60 V.
- Use cables with twisted wires.
- Avoid getting too close to large electrical process cells.
- Use shielded cables to guarantee the full specification according to HART.
- Take account of the conditions specified in the technical data for HART communication.

4.1.1 Additional safety notes for PA and FF

If the bus shield is fully effective, the interference immunity and the interference emission conform to the specifications. The following measures ensure that the bus shield is fully effective:

- The shields have been connected to the metallic connections of the positioner.
- The shields have been laid up to the terminal boxes, the distributor and the transceiver.

Note

Dissipation of glitch impulses/equipotential bonding

In order to dissipate glitch impulses, the positioner must be connected to an equipotential bonding cable (earth potential) using a low resistance. The positioner in the Makrolon enclosure is therefore equipped with an additional cable. Connect the this cable to the shield of the bus cable and the equipotential bonding cable using a cable clamp.

Devices in the stainless steel or aluminum enclosure have a corresponding terminal on the outer side of the enclosure. This terminal must also be connected to the equipotential bonding cable.

For applications in hazardous areas, ensure an adequately suitable equipotential bonding between the hazardous and non-hazardous areas.

The positioner is equipped with an additional input (terminal 81 [+] and terminal 82 [-]) to approach the safety position. After activating this function, this input must be continuously supplied with +24 V in order to retain the normal control function.

If this auxiliary voltage fails or is switched, the exhaust air valve is forced-opened and the actuator moves to the defined safety position so that the actuator cannot be moved using the buttons on the device and the master.

Communication with the master is still possible. The "Jumper" on the basic electronics is used to activate this function. It can be accessed after removing the module cover, and must be switched from the right position (delivery state) to the left position.

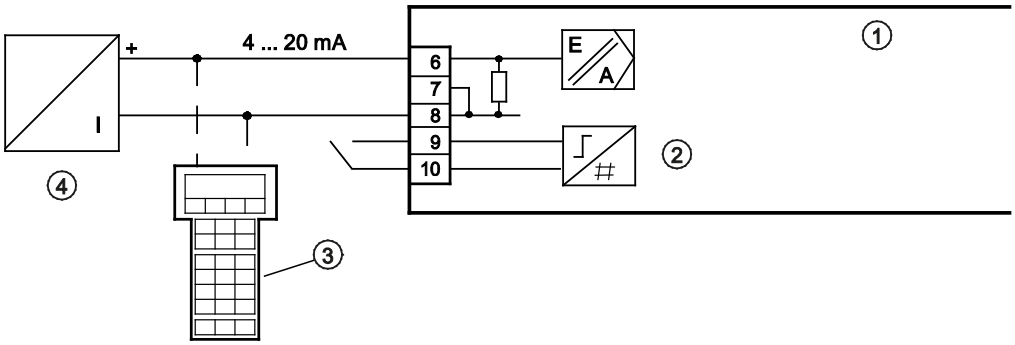
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4.2 Electric connection

4.2.1 Device without explosion protection/Device with Ex d type of protection

4.2.1.1 Basic device (without and with HART)

Connection diagram for order numbers 6DR50..-0N...; 6DR50.5-0E...; 6DR51..-0N...; 6DR51.5-0E...



① Basic electronics

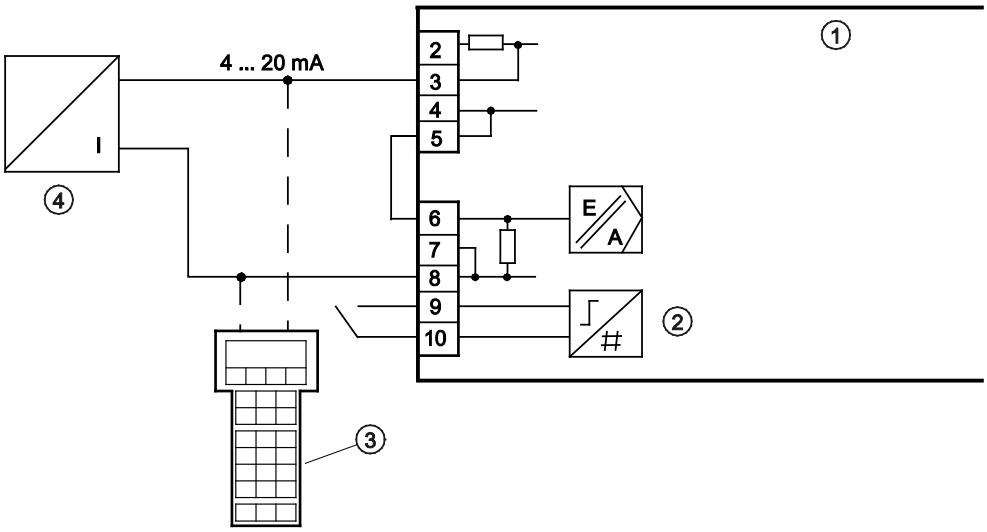
② Binary input 1

③ HART communicator for 6DR51..-0N... and 6DR51.5-0E... only

④ Signal source

Figure 4-1 Device version 2-wire (without Ex/with Ex d)

Connection diagram for order numbers 6DR52..-0N...; 6DR52.5-0E...; 6DR53..-0N...; 6DR53.5-0E...



① Basic electronics

② Binary input 1

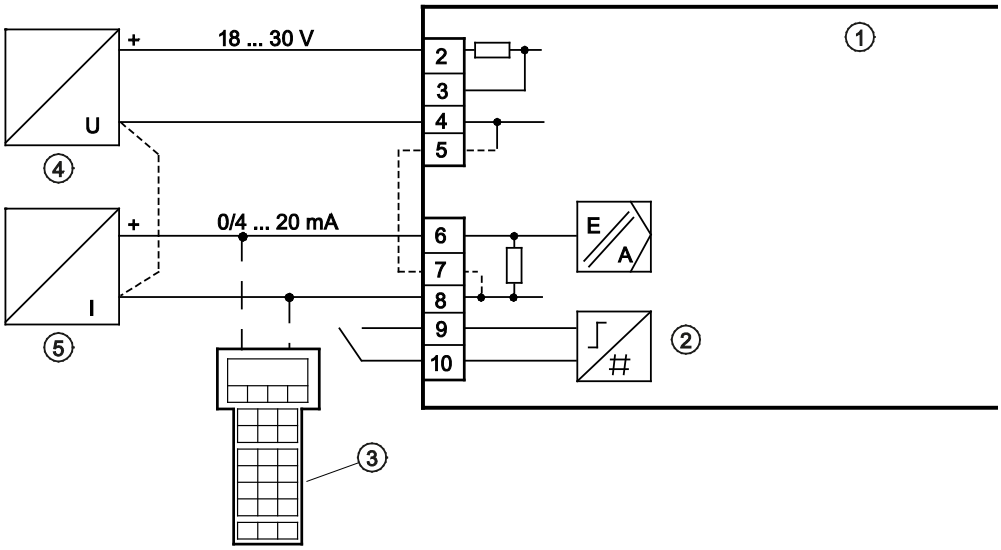
③ HART communicator for 6DR52..-0N... and 6DR52.5-0E... only

④ Signal source

Figure 4-2 Device version 2-/3-/4-wire, with connection type 2-wire (without Ex/with Ex d)

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Connection diagram for order numbers 6DR52..-0N...; 6DR52.5-0E...; 6DR53..-0N...; 6DR53.5-0E...



① Basic electronics
② Binary input 1
③ HART communicator for 6DR52..-0N... and 6DR52.5-0E... only
---- Dotted connection lines: only for three-wire connection
④ Power source
⑤ Signal source

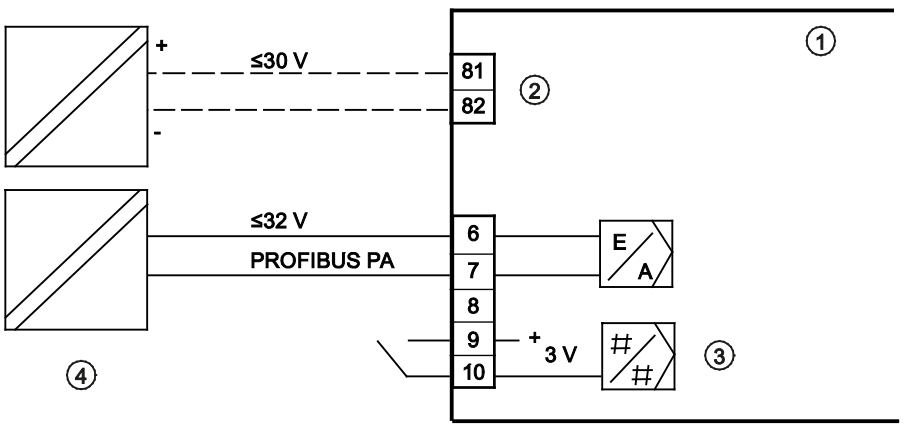
Figure 4-3 Device version 2-/3-/4-wire, with connection type 3-/4-wire (without Ex/with Ex d)

4.2.1.2 Split range

For further information about "Split-range" operation, refer to the detailed operating instructions for your respective device version.

4.2.1.3 Basic device (PA)

Connection diagram for order numbers 6DR55..-0N...; 6DR55.5-0E...



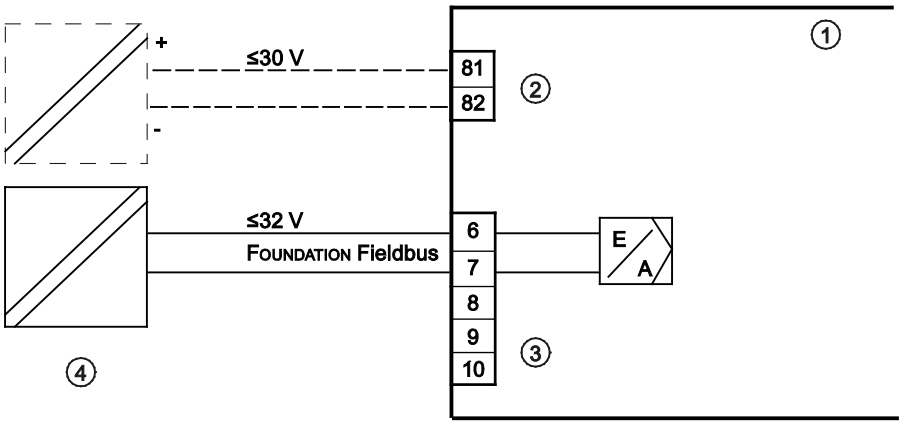
① Basic electronics
② Input: Safety shutdown
③ Binary input 1
④ Power source

Figure 4-4 Device version 2-wire PROFIBUS PA (without Ex/with Ex d)

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4.2.1.4 Basic device (FF)

Connection diagram for order numbers 6DR56..-0N...; 6DR56.5-0E...



① Basic electronics
② Input: Safety shutdown
③ Simulation enable
④ Power source

Figure 4-5 Device version 2-wire FOUNDATION Fieldbus (without Ex/with Ex d)

4.2.2 Device with Ex i/Ex n/Ex t type of protection

WARNING

With intrinsically device version (Ex i)

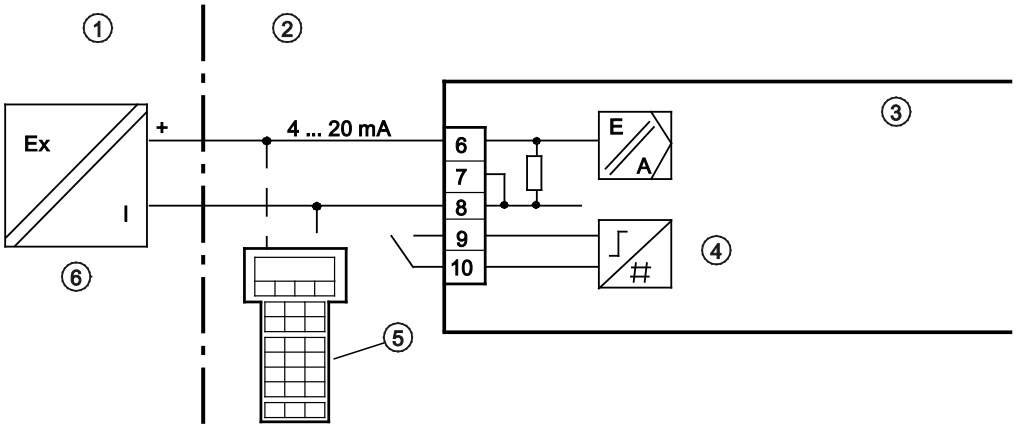
Risk of explosion in hazardous areas.

For intrinsically safe device versions only the certified circuits may be connected as auxiliary power supply, control and signal circuits.

- Make sure that the power source of the used circuits is marked as intrinsically safe.

4.2.2.1 Basic device (with and without HART)

Connection diagram for order numbers 6DR50..-0E/D/F/G/K...; 6DR51..-0E/D/F/G/K...

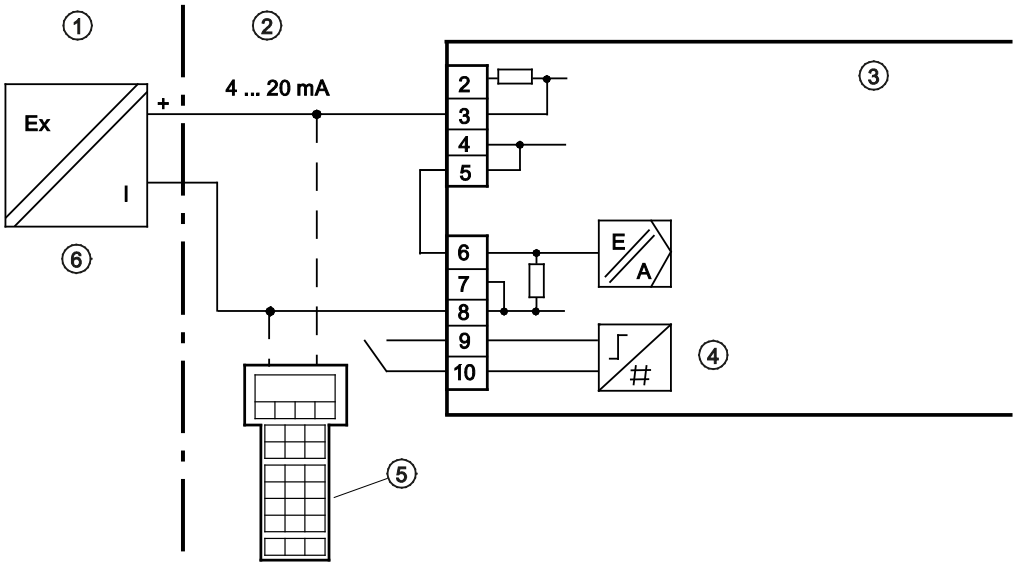


① Non-hazardous area
② Potentially explosive atmosphere
③ Basic electronics
④ Binary input 1
⑤ HART communicator for 6DR51..-0E/D/F/G/K... only
⑥ Signal source

Figure 4-6 2-wire device version (Ex i/Ex n/Ex t)

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Connection diagram for order numbers 6DR52..-0E/D/F/G/K...; 6DR53..-0E/D/F/G/K...

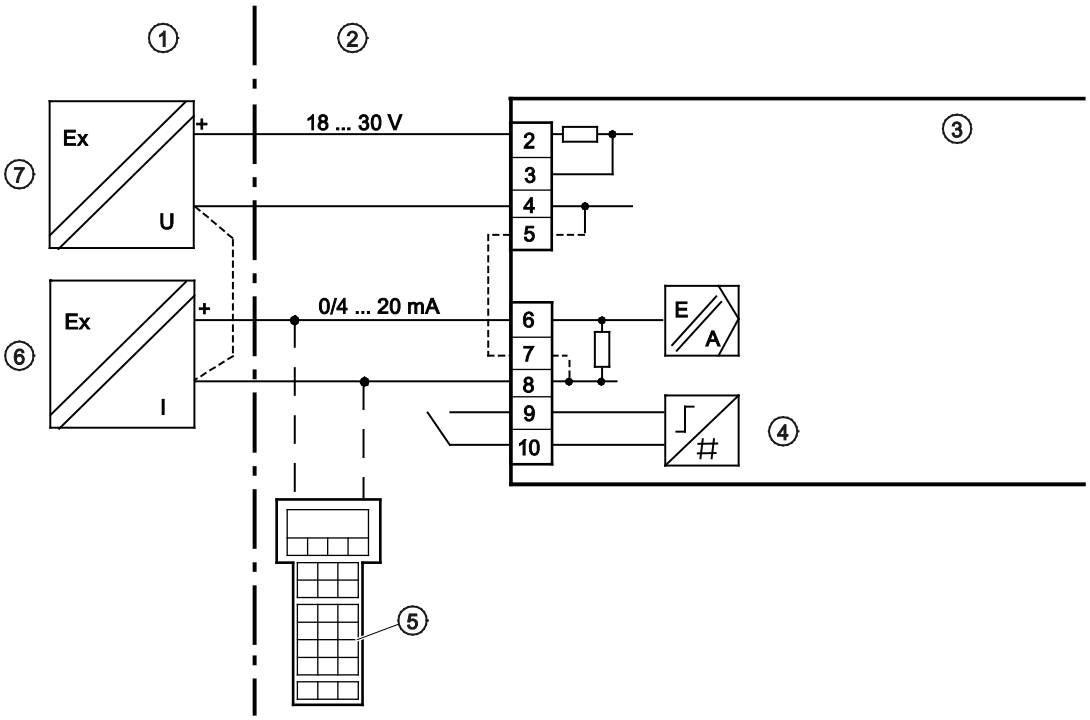


① Non-hazardous area
② Potentially explosive atmosphere
③ Basic electronics
④ Binary input 1
⑤ HART communicator for 6DR52..-0E/D/F/G/K... only
⑥ Signal source

Figure 4-7 2-/3-/4-wire device version, with 2-wire connection type (Ex i/Ex n/Ex t)

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Connection diagram for order numbers 6DR52..-0E/D/F/G/K...; 6DR53..-0E/D/F/G/K...



① Non-hazardous area
② Potentially explosive atmosphere
③ Basic electronics
④ Binary input 1
---- Dotted connection lines: only for three-wire connection
⑤ HART communicator for 6DR52..-0E/D/F/G/K... only
⑥ Signal source
⑦ Power source

Figure 4-8 2-/3-/4-wire device version, with 3-/4-wire connection type (Ex i/Ex n/Ex t)

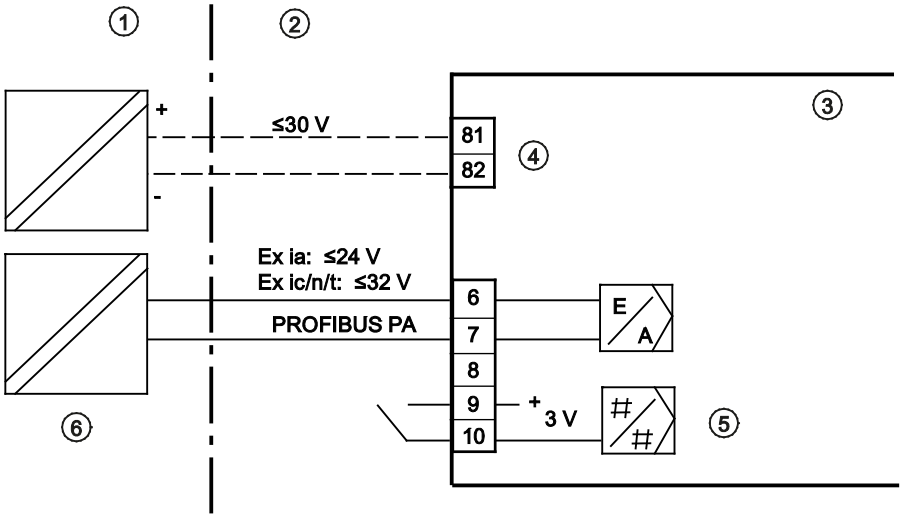
4.2.2.2 Split range

For further information about "Split-range" operation, refer to the detailed operating instructions for your respective device version.

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4.2.2.3 Basic device (PA)

Connection diagram for order number 6DR55..-0E/D/F/G/K...

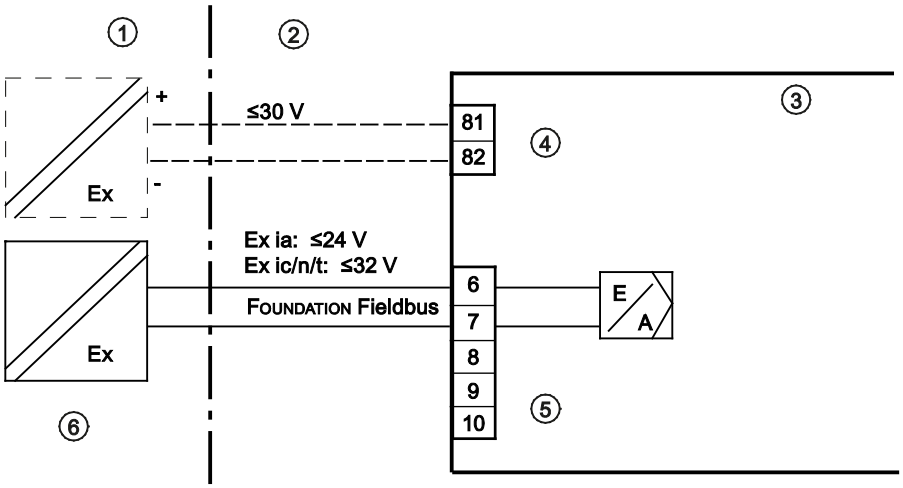


① Non-hazardous area
② Potentially explosive atmosphere
③ Basic electronics
④ Input: Safety shutdown
⑤ Binary input 1
⑥ Power source

Figure 4-9 Device version 2-wire with PROFIBUS PA (Ex i/Ex n/Ex t)

4.2.2.4 Basic device (FF)

Connection diagram for order number 6DR56..-0E/D/F/G/K...



① Non-hazardous area
② Potentially explosive atmosphere
③ Basic electronics
④ Input: Safety shutdown
⑤ Simulation enable
⑥ Power source

Figure 4-10 Device version 2-wire with FOUNDATION Fieldbus (Ex i/Ex n/Ex t)

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4.3 Pneumatic connection

WARNING

Pneumatic auxiliary power

Owing to safety reasons, the pneumatic auxiliary power supply must be fed after installation only if the positioner is switched to the "P-manual mode" when an electrical signal is available, refer to the as-delivered condition.

Note

Specifications regarding air quality

Observe the specifications regarding the air quality, see section "Technical specifications > Pneumatic data (Page 34)".

- If required, connect the pressure gauge block for supply air and actuating pressure.
- Connection via female thread G¼ or ¼" NPT:
  - Y1: actuating pressure 1 for single and double-acting actuators
  - Y2: actuating pressure 2 for double-acting actuators
  - Exhaust air outlet with a sound absorber at the bottom of the device. Remove the sound absorber if required.
  - PZ: Supply air 1.4 to 7 bar
- For double-acting actuators, connect actuating pressures Y1 or Y2 depending on the desired safety position. Safety position in case of electrical auxiliary power supply failure:
  - Y1: Single-acting, depressurized
  - Y1: Double-acting, maximum actuating pressure
  - Y2: double-acting, depressurized

Note

Leakage

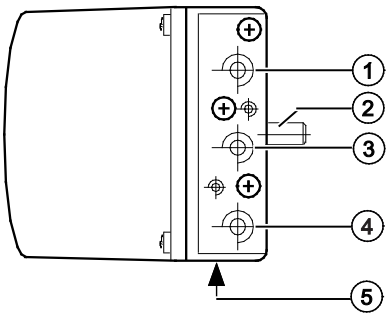
Besides continuous air consumption, the positioner may try to compensate the position deviation due to leakage. This will lead to premature wear in the entire control unit.

- After installing the pneumatic connections, check the tightness of the entire control valve.

4.3.1 Pneumatic connection on the standard controller

Structure

The pneumatic connections are provided on the right side of the positioner.



① Actuating pressure Y1 for single and double-acting actuators
② Positioner axis
③ Supply air PZ
④ Actuating pressure Y2 for double-acting actuators
⑤ Exhaust air outlet with a sound absorber

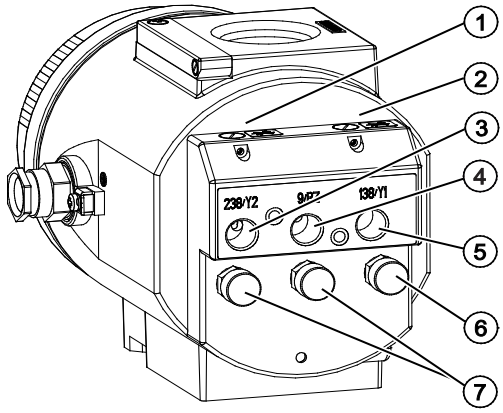
Figure 4-11 Pneumatic connection on the standard controller

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4.3.2 Pneumatic connection in the flameproof enclosure

Structure

The pneumatic connections are provided on the right side of the positioner.



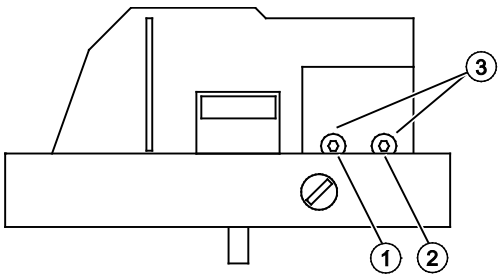
① Restrictor Y2 *)
② Restrictor Y1
③ Actuating pressure Y2 *)
④ Supply air P_Z
⑤ Actuating pressure Y1
⑥ Exhaust air outlet
⑦ Enclosure ventilation (2x)

*) for double-acting actuators

Figure 4-12 Pneumatic connection in the flameproof enclosure

4.4 Restrictors

- Reduce the air output to achieve actuating times of T > 1.5 s for small actuators. Use restrictors Y1 ① and Y2 ② for this purpose.
- When turned clockwise, they reduce the air output and finally shut it off.
- In order to set the restrictors, we recommend closing them and then opening slowly.
- In case of double-acting valves, ensure that both restrictors have approximately the same setting.



① Restrictor Y1
② Restrictor Y2, only in the version for double-acting actuators
③ Hexagon socket-head screw 2.5 mm

Figure 4-13 Restrictors

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5 Commissioning

5.1 Basic safety instructions

⚠ WARNING

Improper commissioning in hazardous areas

Device failure or danger of explosion in hazardous areas.

- Do not commission the device until it has been mounted completely and connected in accordance with the information in Chapter "Technical data (Page 34)".
- Before commissioning take the effect on other devices in the system into account.

⚠ WARNING

Loss of explosion protection

Danger of explosion in hazardous areas if the device is open or not properly closed.

- Close the device as described in Chapter "Installing/mounting (Page 7)".

⚠ WARNING

Opening device in energized state

Danger of explosion in areas subject to explosion hazard.

- 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.

Exception: Devices having the type of protection "Intrinsic safety Ex i" may also be opened in energized state in hazardous areas.

⚠ WARNING

Water in compressed air line

Device damage and possibly loss of type of protection. The factory setting for the purging air selector is "IN". In the "IN" position, water from the compressed air line may enter the device from the pneumatics during initial commissioning.

- Before commissioning, make sure that no water is present in the compressed air line.

If you cannot be sure that there is no water in the compressed air line:

- Set the purging air selector to "OUT". In this way, you prevent water from the compressed air line from penetrating the device.
- Only set the purging air selector to "IN" again when all water has been discharged from the compressed air line.

⚠ CAUTION

Loss of degree of protection

Damage to device if the enclosure is open or not properly closed. The degree of protection specified on the nameplate or in Chapter "Technical data (Page 34)" is no longer guaranteed.

- Make sure that the device is securely closed.

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WARNING

Commissioning and operation with pending error

If an error message appears, correct operation in the process is no longer guaranteed.

- Check the gravity of the error.
- Correct the error.
- If the error still exists:
  - Take the device out of operation.
  - Prevent renewed commissioning.

5.1.1 Safety notes for operation with natural gas

See detailed operating instructions for information and safety notes on operation with natural gas as an actuator medium.

5.2 Overview

Note

- During the initialization process, the operating pressure must be at least one bar more than that required to close or open the valve. However, the operating pressure should not be greater than the maximum permissible operating pressure for the actuator.
- The transmission ratio selector can be set only when the positioner is open. Therefore, check this setting before closing the enclosure.

General information about commissioning

After installing the positioner on a pneumatic actuator, you must supply electric and pneumatic auxiliary power to it.

The positioner is in the "P manual mode" before initialization. At the same time, "NOINI" blinks in the lower line of the display.

Adjust the positioner as per the respective actuator with the help of the initialization process and by setting the parameters. If required, use the "PRST" parameter to cancel the adjustment of the positioner on the actuator. The positioner is again in the "P manual mode" after this process.

Types of initialization

You can initialize the positioner as follows:

- Automatic initialization:
  during automatic initialization, the positioner determines the following one after the other:
  - The direction of action
  - The actuator travel and angle of rotation
  - Movement times of the actuator

The positioner also adjusts the control parameters as per the dynamic response of the actuator.

- Manual initialization:
  the actuator travel and the angle of rotation of the actuator are set manually. The remaining parameters are automatically determined. This function is useful for actuators with soft end stops.
- Copying the initialization data when replacing a positioner:
  the initialization data of a positioner can be read and copied into another positioner. A defective device can thus be replaced without interrupting an ongoing process through initialization.

You have to define a few parameters for the positioner before initialization. Owing to the preset values, you cannot adjust further parameters for initialization.

You can use a suitably configured and activated binary input to protect the configured settings against accidental adjustment.

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5.3 Sequence of automatic initialization

See detailed operating instructions for information on sequence of automatic initialization.

5.4 Parameter

Introduction

Parameters 1 to 5 are the same for all versions of positioner. These parameters are used to adjust the positioner to the actuator. Normally the parameter setup is sufficient to be able to operate the positioner on an actuator.

If you want to get to know the positioner in detail, gradually try out the effects of the remaining parameters by systematic testing

Note

Factory-set parameter values are printed in bold in the following table.

Overview

Parameter	Function	Parameter values	Unit
1.YFCT	Type of position actuator		
		turn (part-turn actuator)	
		WAY (linear actuator)	
		LWAY (linear actuator without sine correction)	
		ncSt (part-turn actuator with NCS)	
		-ncSt (part-turn actuator with NCS, inverse direction of action)	
		ncSL (linear actuator with NCS)	
		ncSLL (linear actuator with NCS and lever)	
2.YAGL	Nominal angle of rotation of the feedback message [1]		
		33°	Degrees
		90°	
3.YWAY[2]	Range of stroke (optional setting) [3]		
		OFF	mm
		5 | 10 | 15 | 20 (Short lever 33°)	
		25 | 30 | 35 (Short lever 90°)	
		40 | 50 | 60 | 70 | 90 | 110 | 130 (Long lever 90°)	
4.INITA	Initialization (automatic)	**NOINI** | no / ###.# | Strt	
5.INITM	Initialization (manual)	**NOINI** | no / ###.# | Strt	

1) Set the transmission ratio selector accordingly.

2) The parameter only appears for "WAY" and for "ncSLL".

3) When used the value must correspond with the set range of stroke on the actuator.

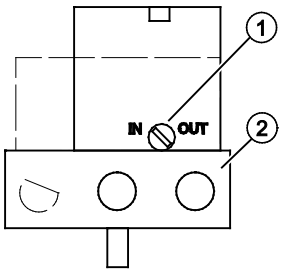
Carriers must be scaled to the actuator's stroke value,or if this is not scaled they then must be set to the next largest scaled value.

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5.5 Purge air switching

When the enclosure is open, the purge air switch above the pneumatic terminal strip on the pneumatic block can be accessed.

- In the IN position, the enclosure is flushed from inside with a small volume of clean and dry instrument air.
- In the OUT position, the purge air is directly directed towards outside.



① Purging air selector
② Pneumatic connections Y1, PZ and Y2

Figure 5-1 Purge air switch on the pneumatic block; view of the positioner on the pneumatic connection side when the cover is open

The factory setting is the "IN" position.

5.6 Commissioning linear actuators

5.6.1 Preparing linear actuators for commissioning

Requirements

You have already installed the positioner using the suitable mounting kit.

Setting the transmission ratio selector

Note

Commissioning

The setting of the transmission ratio selector is extremely important to commission the positioner.

Stroke [mm]	Lever	Position of the transmission ratio selector	
		In [°]	Position
5 ... 20	Short	33	Down
15 ... 35	Short	90	Up
30 ... 130	Long	90	Up

1. Move the carrier pin on the lever. Select the scale position equal to the nominal stroke or a next-higher position.
2. Tighten the carrier pin using the M6 hexagon nut.

Connecting the positioner

1. Connect a suitable current or voltage source. The positioner is now in the "P manual mode". The current potentiometer voltage (P) in percent is shown in the upper line of the display, e.g.: "P12.3", and "NOINI" blinks in the lower line:



2. Connect the actuator and the positioner to the pneumatic lines.
3. Supply the pneumatic auxiliary power to the positioner.

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Setting the actuator

1. Check whether the mechanical unit can be moved freely in the entire actuating range. Move the drive to the respective end position for this purpose using the △ or▽ button.

Note

End position

By simultaneously pressing the △ and ▽ buttons, you reach the end position faster.

2. Now move the actuator to the horizontal position of the lever.
3. A value between "P48.0" and "P52.0" is shown on the display.
4. If a value beyond this value range is shown on the display, you must move the friction clutch. Move the friction clutch until a value between "P48.0" and "P52.0" is achieved. The closer this value is to "P50.0", the more accurately the positioner determines the stroke travel.

Note

The following is applicable for the flameproof enclosure version:

The inner friction clutch is fixed. Therefore, only move the outer friction clutch.

5.6.2 Automatic initialization of linear actuators

Requirements

The following conditions must be fulfilled before activating the automatic initialization:

1. The actuator spindle can be moved completely.
2. The actuator spindle is at a central position after moving.

Initializing the linear actuator automatically

Note

Interrupting initialization

An ongoing initialization can be interrupted at any time. To do this, press . The settings configured until then are retained. All parameters are reset to factory settings only if you have explicitly activated the preset settings in the "PRST" parameter.

1. Switch to the "Configuration" mode. To do this, press the button for at least 5 seconds. The display shows the following:



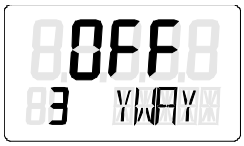
2. Call the "2.YAGL" parameter. To do this, briefly press the button. The following is shown on the display depending on the setting:

3. Check whether the value displayed in the "2.YAGL" parameter matches the setting of the transmission ratio selector. If required, change the setting of the transmission ratio selector to 33° or 90°.
4. Set the "3.YWAY" parameter to determine the total stroke in mm. The setting of parameter 3 is optional. The display shows the determined total stroke only at the end of the initialization phase.

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- Briefly press the button if you do not require any information about the total stroke in mm. You are then directed to parameter 4.
- Call the "3.YWAY" parameter. To do this, briefly press the button. The display shows the following:



Note

Set the "3.YWAY" parameter

Proceed as follows to set parameter 3:

1. On the scale of the lever, read the value marked by the carrier pin.
2. Set the parameter with the buttons or to the read value.

5. Call the "4.INITA" parameter. To do this, briefly press the button. The display shows the following:



6. Start the initialization process. To do this, press the button for at least 5 seconds until the display shows the following:



The positioner runs through five initialization steps during the automatic initialization process. Displays for the initialization steps from "RUN 1" to "RUN 5" are shown in the lower line on the display. The initialization process depends on the actuator used, and takes up to 15 minutes.

7. The following display indicates that the automatic initialization is complete:



Aborting the automatic initialization process

1. Press the button. The display shows the following:



The positioner is in the "Configuration" mode.

2. Exit the "Configuration" mode. To do this, press the button for at least 5 seconds.
The software status is displayed.

After releasing the button, the positioner is in "P manual mode". The positioner is not initialized.

5.6.3 Manual initialization of linear actuators

See detailed operating instructions for information on manual initialization of linear actuators.

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5.7 Commissioning part-turn actuators

5.7.1 Preparing part-turn actuators for commissioning

Note

Setting of the adjustment angle

The usual adjustment angle for part-turn actuators is 90°.

- Set the transmission ratio selector in the positioner to 90°.

Condition

The following conditions must be fulfilled before activating the initialization:

1. You have installed the positioner for the part-turn actuators using the suitable mounting kit.
2. You have connected the actuator and the positioner to the pneumatic lines.
3. Pneumatic auxiliary power is supplied to the positioner.
4. The positioner has been connected to a suitable current or voltage source.

Setting the actuator

1. The positioner is in the "P manual mode". The current potentiometer voltage P in percent is shown on the upper line in the display. "NOINI" blinks in the lower line of the display. Examples of corresponding displays are given below:



2. Check whether the mechanical unit can be moved freely in the entire actuating range. Move the drive to the respective end position for this purpose using the △ or▽ button.

   Note

   End position

   By simultaneously pressing the △ and ▽ buttons, you reach the end position faster.

3. After checking, move the actuator to a central position. This accelerates the initialization process.

5.7.2 Automatic initialization of part-turn actuators

Requirements

The following conditions must be fulfilled before activating the automatic initialization:

1. The actuating range of the actuator can be passed through completely.
2. The actuator shaft is at a central position.

Initializing the part-turn actuator automatically

Note

Interrupting initialization

An ongoing initialization can be interrupted at any time. To do this, press ⎋. The settings configured until then are retained. All parameters are reset to factory settings only if you have explicitly activated the preset settings in the "PRST" parameter.

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1. Switch to the "Configuration" mode. To do this, press the button for at least 5 seconds until the display shows the following:



2. Use the button to change from linear actuator to part-turn actuator until the display shows the following:



3. Call the "2.YAGL" parameter. To do this, briefly press the button. This parameter has already been set to 90° automatically. The display shows the following:



4. Call the "4.INITA" parameter. To do this, briefly press the button. The display shows the following:



5. Start the initialization process. To do this, press the button for at least 5 seconds until the display shows the following:



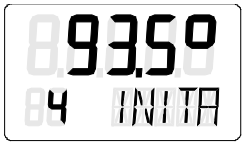
   The positioner runs through five initialization steps during the automatic initialization process. Displays for the initialization steps from "RUN1" to "RUN5" are shown in the lower line on the display. The initialization process depends on the actuator used, and takes up to 15 minutes.

6. The following display indicates that the automatic initialization is complete. The total angle of rotation of the actuator is shown on the upper line on the display:



Aborting the automatic initialization process

1. Press the button. The display shows the following:



   The positioner is in the "Configuration" mode.

2. Exit the "Configuration" mode. To do this, press the button for at least 5 seconds.

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The software status is displayed.

After releasing the button, the positioner is in "P manual mode". The part-turn actuator is not initialized.

5.7.3 Manual initialization of part-turn actuators

See detailed operating instructions for information on manual initialization of part-turn actuators.

6 Service and maintenance

6.1 Basic safety instructions

WARNING

Impermissible repair of the device

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

WARNING

Impermissible accessories and spare parts

Danger 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

Improper connection after maintenance

Danger of explosion in areas subject to explosion hazard.

- Connect the device correctly after maintenance.
- Close the device after maintenance work.

Refer to Chapter "Electric connection (Page 15)".

NOTICE

Penetration of moisture into the device

Device damage.

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

CAUTION

Releasing key lock

Improper modification of parameters could influence process safety.

- Make sure that only authorized personnel may cancel the key locking of devices for safety-related applications.

WARNING

Electrostatic charge

Danger of explosion in hazardous areas if electrostatic charges develop e.g. when cleaning plastic enclosures with a dry cloth.

- Prevent electrostatic charging in hazardous areas.

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⚠ WARNING
Dust layers above 5 mm Danger of explosion in hazardous areas. Device may overheat du to dust build up. • Remove any dust layers in excess of 5 mm.

Cleaning the enclosure

- Clean the outside of the enclosure and the display window using a cloth moistened with water or a mild detergent.
- Do not use aggressive cleaning agents or solvents. Plastic components or painted surfaces could be damaged.

6.2 Cleaning of the screens

The positioner is maintenance-free to a large extent. Screens are installed in the pneumatic connections of the positioners to protect them from rough dirt particles. If there are dirt particles in the pneumatic auxiliary power supply, they damage the screens and hamper the function of the positioner. Clean the screens as described in the following two chapters.

6.2.1 Positioner in macrolon enclosure

⚠ DANGER
Risk of explosion due to electrostatic charge Electrostatic charges develop when cleaning the positioner in the macrolon enclosure with a dry cloth, for example. It is imperative you avoid electrostatic charges in the hazardous environment.

Removal and cleaning of the screens

1. Disconnect the pneumatic auxiliary power supply.
2. Remove the lines.
3. Unscrew the cover.
4. Unscrew the three self-tapping screws on the pneumatic terminal strip.
5. Remove the screens and O-rings behind the terminal strip.
6. Clean the screens, e.g. using compressed air.

Installation of the screens

⚠ CAUTION
Damage to the enclosure • The enclosure is damaged due to screwing in the self-tapping screws improperly. • Ensure that the available thread pitches are used. • Turn the screws anticlockwise until they engage noticeably in the thread pitch. • Tighten the self-tapping screws only after they have engaged.

1. Insert the screens into the recesses of the macrolon enclosure.
2. Place the O-rings on the screens.
3. Fit the pneumatic terminal strip on both studs so that it fits flushly.
4. Screw-on the three self-tapping screws.
5. Place the cover and tighten it.
6. Reconnect the pipelines and feed the pneumatic power supply.

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6.2.2 Positioner in stainless steel, aluminum and flameproof aluminum enclosure

Removal, cleaning and installation of the screens

1. Disconnect the pneumatic auxiliary power supply.
2. Remove the pipelines.
3. Remove the metal screen from the bores carefully.
4. Clean the metal screens, e.g. using compressed air.
5. Insert the screens.
6. Connect the pipelines again.
7. Feed the pneumatic auxiliary power supply.

6.3 Repair/Upgrading

Send defective devices to the repairs department, together with information on the malfunction and the cause of the malfunction. When ordering replacement devices, please provide the serial number of the original device. You can find the serial number on the nameplate.

6.4 Return procedure

Enclose the bill of lading, return document and decontamination certificate in a clear plastic pouch and attach it firmly to the outside of the packaging. Any devices/replacement parts which are returned without a decontamination declaration will be cleaned at your expense before further processing. For further details refer to the operating instructions.

See also

Return document (http://www.siemens.com/processinstrumentation/returngoodsnote)

Decontamination declaration (http://www.siemens.com/sc/declarationofdecontamination)

6.5 Disposal



Devices identified by this symbol may not be disposed of in the municipal waste disposal services under observance of the Directive 2002/96/EC on waste electronic and electrical equipment (WEEE).

They can be returned to the supplier within the EC or to a locally approved disposal service. Observe the specific regulations valid in your country.

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7 Technical data

7.1 All device versions

7.1.1 Operating conditions

Rated conditions	
Ambient temperature	In hazardous areas, observe the maximum permissible ambient temperature corresponding to the temperature class.
• Permissible ambient temperature for operation	-30 ... +80 °C (-22 ... +176°F)
Degree of protection [1]	IP66 to EN 60529/NEMA 4X
Mounting position	Any; in wet environment, pneumatic connections and outlet opening not upward
Vibration resistance	
• Harmonic oscillations (sine) according to EN 60068-2-6/10.2008	3.5 mm (0.14"), 2 ... 27 Hz, 3 cycles/axle
	98.1 m/s² (321.84 ft/s²), 27 ... 300 Hz, 3 cycles/axle
• Bumping (half-sine) according to EN 60068-2-27/02.2010	150 m/s² (492 ft/s²), 6 ms, 1000 shocks/axle
• Noise (digitally controlled) according to EN 60068-2-64/04.2009	10 ... 200 Hz; 1 $(m/s^2)^2/Hz$ (3.28 $(ft/s^2)^2/Hz$)
	200 ... 500 Hz; 0.3 $(m/s^2)^2/Hz$ (0.98 $(ft/s^2)^2/Hz$)
	4 hours/axle
• Recommended range of continuous operation of the entire control valve	≤ 30 m/s² (98.4 ft/s²) without resonance peak
Climate class	According to DIN EN 60721-3-4
• Storage	1K5, but -40 ... +80°C (1K5, but -40 ... +176°F)
• Transport	2K4, but -40 ... +80°C (2K4, but -40 ... +176°F)
• Operation [2]	4K3, but -30 to +80 °C (4K3, but -22 to +176 °F) [3]

1) Max. impact energy 1 Joule for enclosure with inspection window 6DR5..0 and 6DR5..1.

2) At ≤ -10 °C (≤ 14 °F), the display refresh rate is limited. In the case of use with I_y module, only T4 is permissible.

3) -20 to +80 °C (-4 to +176 °F) for 6DR55..-0G ..., 6DR56..-0G ..., 6DR55..-0D ... and 6DR56..-0D...

7.1.2 Pneumatic data

Pneumatic data	
Auxiliary power (air supply)	Compressed air, carbon dioxide (CO2), nitrogen (N), noble gases or cleaned natural gas
• Pressure	1,4 ... 7 bar (20.3 ... 101.5 psi)
Air quality to ISO 8573-1	
• Solid particulate size and density	Class 2
• Pressure dew point	Class 2 (min. 20 K (36°F) below ambient temperature)
• Oil content	Class 2
Unrestricted flow (DIN 1945)	
• Inlet air valve (ventilate actuator) [1]	
2 bar (29 psi)	4.1 Nm³/h (18.1 USgpm)
4 bar (58 psi)	7.1 Nm³/h (31.3 USgpm)
6 bar (87 psi)	9.8 Nm³/h (43.1 USgpm)

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Pneumatic data	
• Air exhaust valve (depressurize drive) [1]	
2 bar (29 psi)	8.2 Nm³/h (36.1 USgpm)
4 bar (58 psi)	13.7 Nm³/h (60.3 USgpm)
6 bar (87 psi)	19.2 Nm³/h (84.5 USgpm)
Valve leakage	< $6 \cdot 10^{-4}$ Nm³/h (0.0026 USgpm)
Throttle ratio	Adjustable up to ∞: 1
Auxiliary power consumption in the controlled state	< $3{,}6 \cdot 10^{-2}$ Nm³/h (0.158 USgpm)

[1] When using device version Ex d (6DR5..5-...), values are reduced by approximately 20%.

7.1.3 Constructional design

7.1.4 Controller

Controller	
Control unit	
• Five-point controller	Adaptive
• Dead zone	
dEbA = auto	Adaptive or can be preset
dEbA = 0.1 ... 10 %	Adaptive or can be preset
Analog-to-digital converter	
• Scanning time	10 ms
• Resolution	≤ 0.05 %
• Transmission error	≤ 0.2 %
• Temperature influence	≤ 0.1 %/10 K (≤ 0.1 %/18 °F)
Cycle time	
• 20 mA/HART device	20 ms
• PA device	60 ms
• FF device	60 ms (min. loop time)

7.2 Natural gas as actuator medium

See detailed operating instructions for technical data for natural gas as actuator medium.

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7.3 SIPART PS2 with and without HART

7.3.1 Electrical data

	Basic device without explosion protection	Basic device with explosion protection Ex d	Basic device with explosion protection Ex "ia"	Basic device with explosion protection Ex "ic", "nA", "t"
Current input I_W				
• Rated signal range		0/4 ... 20 mA		
• Test voltage		DC 840 V, 1 s		
• Binary input BE1 (terminals 9/10; galvanically connected to basic device)		Suitable only for floating contact; max. contact load < 5 µA with 3 V		
2-wire connection (terminals 6/8) 6DR50.. and 6DR53.. Without HART 6DR51.. and 6DR52.. With HART				
Current to maintain the auxiliary power supply		≥ 3,6 mA		
Required load voltage U_B (corresponds to Ω at 20 mA)				
• Without HART (6DR50..)				
Typical	6.36 V (= 318 Ω)	6.36 V (= 318 Ω)	7.8 V (= 390 Ω)	7.8 V (= 390 Ω)
Max.	6.48 V (= 324 Ω)	6.48 V (= 324 Ω)	8.3 V (= 415 Ω)	8.3 V (= 415 Ω)
• Without HART (6DR53..)				
Typical	7.9 V (= 395 Ω)	-	-	-
Max.	8.4 V (= 420 Ω)	-	-	-
• With HART (6DR51..)				
Typical	6.6 V (= 330 Ω)	6.6 V (= 330 Ω)	-	-
Max.	6.72 V (= 336 Ω)	6.72 V (= 336 Ω)	-	-
• With HART (6DR52..)				
Typical	-	8.4 V (= 420 Ω)	8.4 V (= 420 Ω)	8.4 V (= 420 Ω)
Max.	-	8.8 V (= 440 Ω)	8.8 V (= 440 Ω)	8.8 V (= 440 Ω)
• Static destruction limit	± 40 mA	± 40 mA	-	-
Effective inner capacitance C_i	-	-		
• Without HART	-	-	22 nF	"ic": 22 nF
• With HART	-	-	7 nF	"ic": 7 nF
Effective inner inductance L_i	-	-		
• Without HART	-	-	0.12 mH	"ic": 0.12 mH
• With HART	-	-	0.24 mH	"ic": 0.24 mH
For connecting to circuits with the following peak values	-	-	U_n = DC 30 V I_i = 100 mA P_i = 1 W	"ic": U_i = 30 V I_i = 100 mA "nA"/"t": U_n ≤ 30 V I_n ≤ 100 mA

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	Basic device without explosion protection	Basic device with explosion protection Ex d	Basic device with explosion protection Ex "ia"	Basic device with explosion protection Ex "ic", "nA", "t"
3-/4-wire connection (terminals 2/4 and 6/8) 6DR52.. With HART, explosion-protected 6DR53.. Without HART, not explosion-protected				
Load voltage at 20 mA	≤ 0.2 V (= 10 Ω)	≤ 0.2 V (= 10 Ω)	≤ 1 V (= 50 Ω)	≤ 1 V (= 50 Ω)
Auxiliary power supply U_H	DC 18 ... 35 V	DC 18 ... 35 V	DC 18 ... 30 V	DC 18 ... 30 V
• Current consumption I_H		$(V_H - 7.5\ V)/2.4\ k\Omega$ [mA]		
For connecting to circuits with the following peak values	-	-	U_n = 30 V I_i = 100 mA P_i = 1 W	"ic": U_i = 30 V I_i = 100 mA "nA"/"t": U_n ≤ 30 V I_n ≤ 100 mA
Effective inner capacitance C_i	-	-	22 nF	22 nF
Effective inner inductance L_i	-	-	0.12 mH	0.12 mH
Galvanic isolation	Between U_H and I_W	Between U_H and I_W	Between U_H and I_W (2 intrinsically safe circuits)	Between U_H and I_W

7.3.2 Design

	Basic device without explosion protection	Basic device with explosion protection Ex d	Basic device with explosion protection Ex "ia"	Basic device with explosion protection Ex "ic", "nA", "t"
Connections, electrical				
• Screw terminals		2.5 AWG28-12		
• Cable gland	M20x1.5 or ½-14 NPT	Ex d certified M20x1.5; ½-14 NPT or M25x1.5	M20x1.5 or ½-14 NPT	M20x1.5 or ½-14 NPT
Connections, pneumatic		Female thread G¼ or ¼-18 NPT		

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7.4 SIPART PS2 with PROFIBUS PA/with FOUNDATION Fieldbus

7.4.1 Electrical data

	Basic device without explosion protection	Basic device with explosion protection Ex d	Basic device with explosion protection Ex "ia"	Basic device with explosion protection Ex "ic", "nA", "t"
Auxiliary power supply bus circuit		Bus-powered		
Bus voltage	9 ... 32 V	9 ... 32 V	9 ... 24 V	9 ... 32 V
For connecting to circuits with the following peak values				
• Bus connector with FISCO supply unit	-	-	U_i = 17.5 V DC I_i = 380 mA P_i = 5.32 W	"ic": U_i = 17.5 VDC I_i = 570 mA "nA"/"t": U_n ≤ DC 32 V
• Bus connector with barrier			U_i = DC 24 V I_i = 250 mA P_i = 1.2 W	"ic": U_i = DC 32 V "nA"/"t": U_n ≤ DC 32 V
Effective inner capacitance C_i	-	-	Negligible	Negligible
Effective inner inductance L_i	-	-	8 µH	"ic": 8 µH
Current consumption		11.5 mA ± 10 %		
Additional fault current		0 mA		

Safety shutdown can be activated using "Jumper" (terminals 81 and 82)		Electrically isolated from bus circuit and binary input		
• Input resistance		> 20 kΩ		
• Signal status "0" (shutdown active)		0 ... 4.5 V or no switch		
• Signal status "1" (shutdown inactive)		13 ... 30 V		
• For connecting to power source with the following peak values	-	-	U_i = DC 30 V Ii = 100 mA P_i = 1 W	"nA": U_n ≤ DC 30 V I_n ≤ 100 mA "ic": U_i = DC 30 V I_i = 100 mA
• Effective internal capacitance and inductance	-	-	Negligible	Negligible

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	Basic device without explosion protection	Basic device with explosion protection Ex d	Basic device with explosion protection Ex "ia"	Basic device with explosion protection Ex "ic", "nA", "t"
Binary input BE1 (terminals 9 and 10) electrically connected to the bus circuit	Jumpered or connection to switch contact. Suitable only for floating contact; max. contact load < 5 µA with 3 V			

Galvanic isolation	
• For basic device without Ex protection and for basic device with Ex d	Galvanic isolation between the basic device and the input for safety shutdown and the outputs of option modules.
• For basic device Ex "ia"	The basic device, the input for safety shutdown, and the outputs of option modules are individual intrinsically safe circuits.
• For basic device Ex "ic", "nA", "t"	Galvanic isolation between the basic device and the input for safety shutdown and the outputs of option modules.
Test voltage	DC 840 V, 1 s

7.4.2 Design

	Basic device without explosion protection	Basic device with explosion protection Ex d	Basic device with explosion protection Ex "ia"	Basic device with explosion protection Ex "ic", "nA", "t"
Connections, electrical				
• Screw terminals	2.5 AWG28-12			
• Cable gland	M20x1.5 or ½-14 NPT	Ex d certified M20x1.5; ½-14 NPT or M25x1.5	M20x1.5 or ½-14 NPT	M20x1.5 or ½-14 NPT
Connections, pneumatic	Female thread G¼ or ¼-18 NPT			

7.4.3 PROFIBUS PA communication

Communication	Layers 1 + 2 as per PROFIBUS PA, transmission technique as per IEC 1158-2; slave function layer 7 (protocol layer) as per PROFIBUS DP, standard EN 50170 with the extended PROFIBUS functionality (all data is acyclic, manipulated variable, feedbacks and statuses are additionally cyclic)
C2 connections	Four connections with the master class 2 are supported; automatic connection termination 60 s after interruption in communication
Device profile	PROFIBUS PA profile B, version 3.0; over 150 objects
Response time for a master telegram	Typically, 10 ms
Device address	126 (in the as-delivered condition)
PC parameter assignment software	SIMATIC PDM; supports all device objects. The software is not included in the scope of delivery.

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7.4.4 FOUNDATION Fieldbus communication

Communication group and class	According to the technical specification of the Fieldbus Foundation for H1 communication
Function blocks	Group 3, Class 31PS (Publisher Subscriber) 1 resource block (RB2) 1 analog output function block (AO) 1 PID function block (PID) 1 transducer block (standard advanced positioner valve)
Execution times of the blocks	AO: 60 ms PID: 80 ms
Physical layer profile	123, 511
FF registration	Tested with ITK 5.0
Device address	22 (when delivered)

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7.5 Option modules

7.5.1 Alarm module

	Without Ex protection/ with Ex protection Ex d	With Ex protection Ex "ia"	With Ex protection Ex "ic", "nA", "t"
Alarm module	6DR4004-8A	6DR4004-6A	6DR4004-6A
3 binary output circuits • Alarm output A1: Terminals 41 and 42 • Alarm output A2: Terminals 51 and 52 • Fault message output: Terminals 31 and 32			
• Auxiliary voltage U_H	≤ 35 V	-	-
• Signal status			
High (not addressed)	Conductive, R = 1 kΩ, +3/-1 % *)	≥ 2.1 mA	≥ 2.1 mA
Low *) (addressed)	Deactivated, I_R < 60 µA	≤ 1.2 mA	≤ 1.2 mA
*) The status is also Low if the basic device is faulty or without a auxiliary power.	*) When using in the flameproof housing, the current consumption must be restricted to 10 mA per output.	Switching thresholds for supply as per EN 60947-5-6: U_H = 8.2 V, R_i = 1 kΩ	Switching thresholds for supply as per EN 60947-5-6: U_H = 8.2 V, R_i = 1 kΩ
• For connecting to circuits with the following peak values	-	U_i = 15 VDC I_i = 25 mA P_i = 64 mW	"ic": U_i = 15 VDC I_i = 25 mA "nA"/"t": U_n ≤ 15 VDC
Effective internal capacitance	-	C_i = 5.2 nF	C_i = 5.2 nF
Effective internal inductance	-	L_i = negligibly small	L_i = negligibly small
1 binary input circuit • Binary input BE2: Terminals 11 and 12, terminals 21 and 22 (jumper)			
• Galvanically connected with the basic device			
Signal status 0		Floating contact, open	
Signal status 1		Floating contact, closed	
Contact load		3 V, 5 µA	
• Electrically isolated from the basic device			
Signal status 0		≤ 4.5 V or open	
Signal status 1		≥ 13 V	
Internal resistance		≥ 25 kΩ	
• Static destruction limit	± 35 V	-	-
• Connecting to circuits with the following peak values	-	U_i = DC 25.2 V	"ic": U_i = DC 25.2 V "n"/"t": U_n ≤ DC 25.5 V
Effective internal capacitance	-	C_i = negligibly small	C_i = negligibly small
Effective internal inductance	-	L_i = negligibly small	L_i = negligibly small
Galvanic isolation	The three outputs, the BE2 input and the basic device are galvanically isolated from each other.		
Test voltage	DC 840 V, 1 s		

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7.5.2 Iy module

	Without Ex protection/ with Ex protection Ex d	With Ex protection Ex ia (only in temperature class T4)	With Ex protection Ex "ic", "nA", "t"
I_y module Direct current output for position feedback	6DR4004-8J	6DR4004-6J	6DR4004-6J
1 current output, terminals 61 and 62			
		2-wire connection	
Rated signal range		4 ... 20 mA, short-circuit proof	
Dynamic range		3.6 ... 20.5 mA	
Auxiliary voltage U_H	+12 ... +35 V	+12 ... +30 V	+12 ... +30 V
External load R_B [kΩ]		≤ (U_H [V] - 12 V)/i [mA]	
Transmission error		≤ 0.3%	
Temperature influence		≤ 0.1%/10 K (≤ 0.1%/18 °F)	
Resolution		≤ 0.1%	
Residual ripple		≤ 1 %	
For connecting to circuits with the following peak values		U_i = DC 30 V I_i = 100 mA P_i = 1 W	"ic": U_i = DC 30 V I_i = 100 mA "nA"/"t": U_n ≤ DC 30 V I_n ≤ 100 mA P_n ≤ 1 W
Effective internal capacitance	-	C_i = 11 nF	C_i = 11 nF
Effective internal inductance	-	L_i = negligibly small	L_i = negligibly small
Galvanic isolation		Safe galvanic isolation from alarm option and basic device	
Test voltage		DC 840 V, 1 s	

7.5.3 SIA module

	Without Ex protection	With Ex protection Ex "ia"	With Ex protection Ex "ic", "nA", "t"
SIA module Limit encoder with slotted initiators and fault message output	6DR4004-8G	6DR4004-6G	6DR4004-6G
2 slotted initiators • Binary output (limit transmitter) A1: Terminals 41 and 42 • Binary output (limit transmitter) A2: Terminals 51 and 52			
		2-wire connection	
• Connection		2 wire technology in accordance with EN 60947-5-6 (NAMUR), for switching amplifiers connected on load side	
• Signal state Low (triggered)		< 1.2 mA	
• 2 slotted initiators		Type SJ2-SN	
• Function		NC contact (NC, normally closed)	
• Connecting to circuits with the following peak values	Nominal voltage 8 V; current consumption: ≥ 3 mA (limit not activated), ≤ 1 mA (limit activated)	U_i = DC 15 V I_i = 25 mA P_i = 64 mW	"ic": U_i = DC 15 V I_i = 25 mA "nA": U_n ≤ DC 15 V P_n ≤ 64 mW

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	Without Ex protection	With Ex protection Ex "ia"	With Ex protection Ex "ic", "nA", "t"
Effective internal capacitance	-	C_i = 41 nF	C_i = 41 nF
Effective internal inductance	-	L_i = 100 µH	L_i = 100 µH
1 fault message output • Binary output: Terminals 31 and 32			
• Connection	At switching amplifier in accordance with EN 60947-5-6: (NAMUR), U_H = 8.2 V, R_i = 1 kΩ).		
• Signal state High (not triggered)	R = 1.1 kΩ	> 2.1 mA	> 2.1 mA
• Signal state Low (triggered)	R = 10 kΩ	< 1.2 mA	< 1.2 mA
• Auxiliary power supply U_H	U_H ≤ DC 35 V I ≤ 20 mA	-	-
• Connecting to circuits with the following peak values	-	U_i = DC 15 V I_i = 25 mA P_i = 64 mW	"ic": U_i = DC 15 V I_i = 25 mA "nA": U_n ≤ DC 15 V P_n ≤ 64 mW
Effective internal capacitance	-	C_i = 5.2 nF	C_i = 5.2 nF
Effective internal inductance	-	L_i = negligibly small	L_i = negligibly small
Galvanic isolation	The 3 outputs are galvanically isolated from the basic device.		
Test voltage	DC 840 V, 1 s		

7.5.4 Limit value contact module

	Without Ex protection	With Ex protection Ex ia	With Ex protection Ex "ic", "nA", "t"
Mechanical limit switch module	6DR4004-8K	6DR4004-6K	6DR4004-6K
Limit encoder with mechanical switching contacts			
2 limit contacts • 1 binary output: Terminals 41 and 42 • 2 binary output: Terminals 51 and 52			
• Max. switching current AC/DC	4 A	-	-
• For connecting to circuits with the following peak values	-	U_i = DC 30 V I_i = 100 mA P_i = 750 mW	"ic": U_i = 30 V DC I_i = 100 mA "nA": Un ≤ 15 V DC
Effective internal capacitance	-	C_i = negligibly small	C_i = negligibly small
Effective internal inductance	-	L_i = negligibly small	L_i = negligibly small
• Max. switching voltage AC/DC	250 V/24 V	DC 30 V	DC 30 V
1 fault message output • Binary output: Terminals 31 and 32			
• Connection	At switching amplifier in accordance with EN 60947-5-6: (NAMUR), U_H = 8.2 V, R_i = 1 kΩ).		-
• Signal state High (not triggered)	R = 1.1 kΩ	> 2.1 mA	> 2.1 mA

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	Without Ex protection	With Ex protection Ex ia	With Ex protection Ex "ic", "nA", "t"
• Signal state Low (triggered)	R = 10 kΩ	< 1.2 mA	< 1.2 mA
• Auxiliary power	U_H ≤ DC 35 V I ≤ 20 mA	-	-
• Connecting to circuits with the following peak values	-	U_i = 15 V I_i = 25 mA P_i = 64 mW	"ic": U_i = 15 V I_i = 25 mA
Effective internal capacitance	-	C_i = 5.2 nF	C_i = 5.2 nF
Effective internal inductance	-	L_i = negligibly small	L_i = negligibly small
Galvanic isolation	The 3 outputs are galvanically isolated from the basic device		
Test voltage	DC 3150 V, 2 s		
Rated condition height	Max. 2 000 m mean sea level Use a suitable power supply at an altitude of more than 2 000 m (6,562 ft.) above sea level.	-	-

7.5.5 EMC filter module

	Without Ex protection	With Ex protection Ex ia	With Ex protection Ex "ic", "nA", "t"
EMC filter module type C73451-A430-L8 is required for NCS sensor or an external potentiometer. External position sensor (potentiometer or NCS; option) with the following maximum values			
Resistance of the external potentiometer	10 kΩ		
Maximum values when powered by the PROFIBUS basic device	-	U_o = 5 V I_o = 75 mA static I_o = 160 mA short-term P_o = 120 mW	U_o = 5 V I_o = 75 mA P_o = 120 mW
Maximum values when powered by other basic devices	-	U_o = 5 V I_o = 100 mA P_o = 33 mW C_o = 1 µF L_o = 1 mH	U_o = 5 V I_o = 75 mA P_o = 120 mW C_o = 1 µF L_o = 1 mH
Galvanic isolation	Galvanically connected with the basic device		
Test voltage	DC 840 V, 1 s		

7.5.6 Non-contacting position sensor

Additional modules	Without Ex protection	With Ex protection Ex "ia"	With Ex protection Ex "ic", "nA"
Actuating range			
• Linear actuator 6DR4004-.N.20	3 to 14 mm (0.12 ... 0.55")		
• Linear actuator 6DR4004-.N.30	10 ... 130 mm (0.39 ... 5.12"); up to 200 mm (7.87") on request		
• Part-turn actuator	30 ... 100°		
Linearity (after corrections made by positioner)	± 1 %		
Hysteresis	± 0.2%		
Temperature influence (range: rotation angle 120° or stroke 14 mm)	≤ 0.1%/10 K (≤ 0.1%/18 °F) for -20 to 90 °C (-4 to 194 °F) ≤ 0.2%/10 K (≤ 0.2%/18 °F) for -40 to -20 °C (-40 to -4 °F)		
Climate class	According to DIN EN 60721-3-4		

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Additional modules	Without Ex protection	With Ex protection Ex "ia"	With Ex protection Ex "ic", "nA"
• Storage	1K5, but -40 to +90 °C (1K5, but -40 to +176 °F)		
• Transport	2K4, but -40 to +90 °C (2K4, but -40 to +176 °F)		
Vibration resistance			
• Harmonic oscillations (sine wave) according to IEC 60068-2-6	3.5 mm (0.14"), 2 ... 27 Hz, 3 cycles/axis 98.1 m/s² (321.84 ft/s²), 27 ... 300 Hz, 3 cycles/axis		
• Permanent shocks according to IEC 60068-2-29	300 m/s²(984 ft/s²), 6 ms, 4000 shocks/axis		
Torque for cable gland nut made of	Plastic	Metal	Stainless steel
	2.5 Nm (1.8 ft lb)	4.2 Nm (3.1 ft lb)	4.2 Nm (3.1 ft lb)
Housing protection type	IP68 according to EN 60529; NEMA 4X / Encl. Type 4X		
For connecting to circuits with the following peak values	-	U_i = 5 V I_i = 160 mA P_i = 120 mW	U_i = 5 V
Effective internal capacitance	-	C_i = 180 nF	C_i = 180 nF
Effective internal inductance	-	L_i = 922 µH	L_i = 922 µH

Certificates and approvals	
CE conformity	The applicable directives and standards applied with their revision levels can be found in the EC declaration of conformity on the Internet.

Explosion protection Types of protection	Ex markings	
	ATEX/IECEx	FM
• Intrinsic safety "ia"	Zone 1: II 2 G Ex ia IIC T6/T4 Gb	IS, Class I, Divison 1, ABCD IS, Class I, Zone 1, AEx ib, IIC
• Intrinsic safety "ic"	Zone 2: II 3 G Ex ic IIC T6/T4 Gc	-
• Non-sparking "nA"	Zone 2: II 3 G Ex nA IIC T6/T4 Gc	NI, Class I, Divison 2, ABCD NI, Class I, Zone 2, AEx nA, IIC
Permissible ambient temperature	T4: -40 ... +90 °C (-40 ... +194 °F) T6: -40 ... +70 °C (-40 ... +158 °F)	T4: -40 ... +85 °C (-40 ... +185 °F) T6: -40 ... +70 °C (-40 ... +158 °F)

7.5.7 External position sensing system

7.5.7.1 Operating conditions for all device versions

Ambient temperature	In hazardous areas, observe the maximum permissible ambient temperature corresponding to the temperature class.
• Permissible ambient temperature for operation	-40 ... +90 °C (-40 ... +194°F)
Degree of protection [1)]	IP66 according to EN 60529 / NEMA 4X
Climate class	According to DIN EN 60721-3-4
• Storage	1K5, but -40 ... +90 °C (1K5, but -40 ... +194 °F)
• Transport	2K4, but -40 ... +90 °C (2K4, but -40 ... +194 °F)
• Operation	4K3, but -40 ... +90 °C (4K3, but -40 ... +194 °F)

[1]) Impact energy max. 1 joule.

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7.5.7.2 Constructional design for all device versions

How does it work?	
• Range of stroke (linear actuator)	3 ... 130 mm (0.12 ... 5.12") (angle of rotation of the positioner axis 16 to 90°)
• Angle of rotation (part-turn actuator)	30 ... 100°
Mounting method	
• On the linear actuator	Using the mounting kit 6DR4004-8V and, if required, an additional lever arm 6DR4004-8L on the actuators as per IEC 60534-6-1 (NAMUR) with a fin, columns, or a plane surface.
• On the part-turn actuator	Using the mounting kit 6DR4004-8D on the actuators with fastening plane as per VDI/VDE 3845 and IEC 60534-6-2: The required mount must be provided on the actuator-side.
Material	
• Enclosure	Makrolon® glass-fiber reinforced polycarbonate (PC)
Weight, basic device	Approximately 0.9 kg (1.98 lb)
Torque for plastic cable gland nut	2.5 Nm

7.5.7.3 Certificates, approvals, explosion protection for all device versions

Electrical data	
For connecting to circuits with the following peak values	U_i = 5 V I_i = 100 mA P_i = 160 mW C_i = negligibly small L_i = negligibly small

Certificates and approvals	
CE conformity	The applicable directives and standards applied with their revision levels can be found in the EC declaration of conformity on the Internet.

Explosion protection	**Ex markings**
Explosion protection in accordance with	**ATEX**
Intrinsic safety "ia"	Zone 1: II 2 G Ex ia IIC T6/T4 Gb Zone 21: II 2 D Ex ia IIIC 110°C Db
Intrinsic safety "ic"	Zone 2: II 3 G Ex ic IIC T6/T4 Gc
Non-sparking "nA"	Zone 2: II 3 G Ex nA IIC T6/T4 Gc
Permissible ambient temperature	T4: -40 ... +90 °C (-40 ... +194 °F) T6: -40 ... +60 °C (-40 ... +140 °F)

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A Appendix

A.1 Certificate

The certificates can be found on the enclosed CD and on the Internet under:

Certificates (http://www.siemens.com/processinstrumentation/certificates)

A.2 Technical support

Technical Support

You can contact Technical Support for all IA and DT products:

- Via the Internet using the **Support Request:**
  Support request (http://www.siemens.com/automation/support-request)
- E-mail (mailto:support.automation@siemens.com)
- **Phone:** +49 (0) 911 895 7 222
- **Fax:** +49 (0) 911 895 7 223

Further information about our technical support is available on the Internet at
Technical support (http://www.siemens.com/automation/csi/service)

Industry Online Support

In addition to our documentation, we offer a comprehensive knowledge base on the Internet at:

Service&Support (http://www.siemens.com/automation/service&support)

There you will find:

- The latest product information, FAQs, downloads, tips and tricks.
- Our newsletter with the latest information about our products.
- A Knowledge Manager to find the right documents for you.
- Our bulletin board, where users and specialists share their knowledge worldwide.
- Your local contact partner for Industry Automation and Drives Technologies in our partner database.
- Information about field service, repairs, spare parts and lots more under "Services."

Additional Support

Please contact your local Siemens representative and offices if you have any questions about the products described in this manual and do not find the right answers.

Find your contact partner at:

Partner (http://www.automation.siemens.com/partner)

Documentation for various products and systems is available at:

Instructions and manuals (http://www.siemens.com/processinstrumentation/documentation)

See also

SIPART PS2 product information (http://www.siemens.com/sipartps2)

Process instrumentation catalog (http://www.siemens.com/processinstrumentation/catalogs)

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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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Get more information

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