Operating Instructions Electropneumatic Positioner 6DR5axb (a-0,1,2,3/b-0,1,2)

Instruction **D10447**
May 2003

DeZURIK, Inc. Sartell, Minnesota USA | Phone: 320-259-2000 | www.dezurik.com | info@dezurik.com

Instructions

These instructions are for use by personnel who are responsible for the installation, operation and maintenance of DeZURIK valves, actuators or accessories.

Safety Messages

All safety messages in the instructions are identified by a general warning sign and the signal word CAUTION, WARNING or DANGER. These messages indicate procedures to avoid injury or death.

Safety label(s) on the product indicate hazards that can cause injury or death. If a safety label becomes difficult to see or read, or if a label has been removed, please contact DeZURIK for replacement label(s).

⚠WARNING

Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline materials. Handle valves which have been removed from service with suitable protection for any potential pipeline material in the valve.

Inspection

Your DeZURIK product has been packaged to provide protection during shipment; however, items can be damaged in transport. Carefully inspect the unit for damage upon arrival and file a claim with the carrier if damage is apparent.

Parts

Replaceable wear parts are listed on the assembly drawing. These parts can be stocked to minimize downtime. Order parts from your local DeZURIK sales representative or directly from DeZURIK. When ordering parts please provide the following information:

If the valve has a data plate: please include the 7-digit part number with either 4-digit revision number (example: 9999999R000) or 8-digit serial number (example: S1900001) whichever is applicable. The data plate will be attached to the valve assembly. Also, include the part name, the assembly drawing number, the balloon number and the quantity stated on the assembly drawing.

If there isn't any data plate visible on the valve: please include valve model number, part name, and item number from the assembly drawing. You may contact your local DeZURIK Representative to help you identify your valve.

DeZURIK Service

DeZURIK service personnel are available to maintain and repair all DeZURIK products. DeZURIK also offers customized training programs and consultation services. For more information, contact your local DeZURIK sales representative or visit our website at DeZURIK.com.

Operating Instructions Edition 05/2003

sipart ps2

Electropneumatic Positioner

6DR5axb (a-0,1,2,3/b-0,1,2)

(English)

SIEMENS

DeZURIK

Instruction D10447

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Contents

1 Safety Information

1.1 Meaning of Terms

DANGER

indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

indicates a potentially hazardous situation which, if not avoided, **could** result in death or serious injury.

CAUTION

used with the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION

used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE

NOTICE used without the safety alert symbol indicates a potential situation which, if not avoided, may result in an undesireable result or state.

NOTE

indicates a reference to a possible advantage when this recommendation is followed.

1.2 Introduction

These Operating Instructions describe the basic steps for assembly, connection, and commissioning.

These Operating Instructions do not replace the Manual for the SIPART PS2 electropneumatic positioner. The Manual contains more detailed information about assembly, function, and operation.

The Manual can be ordered under Order No.

A5E00074631 (English)
A5E00074630 (German)

from one of our Siemens offices or representatives.

Danger-free use

This device has left the factory in a perfect condition as regards safety. The notes and warnings in these Operating Instructions must be observed by the user if this state is to be maintained and hazard-free operation of the device assured.

Qualified personnel

A qualified person in the sense of these Operating Instructions is one who is familiar with the installation, commissioning and operation of the device and who has the appropriate qualifications, e.g.:

- ❑ Is trained or authorized to energize, de-energize, ground and tag circuits and equipment in accordance with established safety practices
- ❑ Is trained in the proper care of protective equipment in accordance with established safety practices
- ❑ Is trained in first aid
- ❑ In the case of devices with explosion protection: is trained or authorized to carry out work on the electric circuits of potentially explosive equipment.

WARNING

The device must only be installed and operated by qualified personnel.
The device is designed for connection to functional or safety extra-low voltage.
The electric safety is determined by the power supply units alone.
High positioning forces are generated by pneumatic actuators. To prevent injury, installation and operation must be carried out under strict observation of the safety regulations.
Reference is specifically made here to the observance of the applicable safety regulations for potentially explosive equipment.

Correct and safe operation of this device is dependent on proper transport, storage and installation as well as careful operation and maintenance.

2 Scope of Delivery of Positioner

- ❑ Positioner as ordered
- ❑ Operating Instructions, German/English (enclosed with device)
- ❑ Leaflet ”Operation – a concise overview”, German and English (in the device)

3 Assembly

3.1 General

DANGER

The positioner and its option modules would be supplied as separate units and in different versions. Positioners and option modules are available for operation in zones with and without an explosion hazard. These versions are marked by a special rating plate.

When combining components, make sure that only positioners and option modules can be combined that are approved for the zone where they will be used. This especially applies to safe operation of the positioner in zone in which the atmosphere might be subject to an explosion hazard (Zones 1 and 2). In that case it is imperative to use categories (2 and 3) both of the device itself and its options.

CAUTION

It is essential that you observe the following sequence during assembly to avoid injuries or mechanical damage to the positioner/extension kit:

1.	Mechanical fitting of positioner	See Chapter 3 (depending on version)
2.	Connection of electric power supply	See Chapter 5, page 54
3.	Connection of pneumatic supply	See Chapter 6, page 54
4.	Put into operation	See Chapter 7, page 57

In addition you must always ensure that no water can penetrate through an open housing or screw joint. This can occur when the SIPART PS2 cannot not be assembled and connected immediately on site.

In general the SIPART PS2 may only be operated with dry compressed air. Therefore use the usual water separator. In extreme cases, an additional drying unit may even be required. This is particularly important when the SIPART PS2 is operated at low ambient temperatures. In addition, please ensure that the purging air changeover switch (on the valve manifold, above the pneumatic terminal block) is in the position OUT.

For rotary actuators that are exposed to strong acceleration forces or vibrations, please use a sufficiently stable console (e.g. sheet thickness > 4mm with backing) and the extension kit “linear actuator” or the integrated mounting for linear actuators.

3.1.1 Information on the use of positioners in wet environments

This information is important for the assembly and operation of the SIPART PS2 positioner in wet environments (frequent and heavy rain and/or long–term tropical condensation) for which the protection type IP 65 is no longer sufficient and, in particular, when there is a danger that the water can freeze.

To prevent water from entering into the device during normal operation (e.g. through the exhaust vents) or to prevent difficulties reading the display, please avoid the following unfavorable assembly positions.

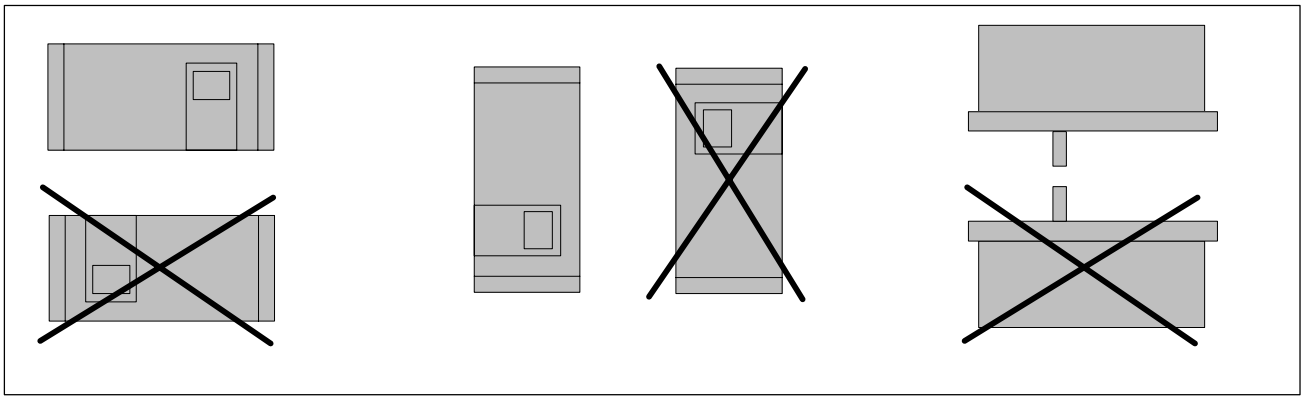


Fig. 1 Favorable and unfavorable assembly positions

If circumstances force you to operate the SIPART PS2 in an unfavorable assembly position, it is possible to prevent the penetration of water by means of additional measures.

CAUTION

Never clean the SIPART PS2 with high–pressure water cleaning apparatus because the protection type IP65 does not have sufficient protection for this.

The necessary additional measures against the penetration of water are dependent on the chosen assembly position and the following items may be required in addition:

- ❑ Screw joint with sealing ring (e.g. FESTO: CK -1 / 4-PK-6)
- ❑ Plastic tubing approx. 20 to 30 cm (e.g. FESTO: PUN- 8X1.25 SW)
- ❑ Cable ties (number and length dependent on the local conditions)

Procedure

- ❑ Arrange the piping in such a way that rain water or condensed water running down the pipes can drip off before reaching the terminal block of the SIPART PS2.
- ❑ Check the seals of the electrical connections for perfect seating.
- ❑ Check the seal in the housing cover for damage and soiling. If necessary, clean or replace.
- ❑ Mount the SIPART PS2 when possible so that the sintered bronze silencer on the underside of the housing faces downwards (vertical assembly position). If this is not possible, the silencer should be replaced by a suitable screw joint with plastic tubing.

Assembly of the screw joint with plastic tubing

- ❑ Unscrew and remove the sintered bronze silencer from the exhaust vent on the underside of the housing.
- ❑ Screw the above–mentioned screw joint into the exhaust vent.
- ❑ Mount the above–mentioned plastic tubing onto the screw joint and check for a tight fit.
- ❑ Fasten the plastic tubing with a cable tie to the fitting so that the opening is facing downwards.
- ❑ Ensure that the tubing is not kinked and that the exhaust air can flow out unhindered.

3.1.2 Information for the use of positioners that are exposed to strong acceleration forces or vibration

Fittings under heavy mechanical stresses such as from breakaway flaps, violently shaking or vibrating valves, or steam jets can be exposed to strong acceleration forces far above those specified. This can result, in extreme cases, to a shifting of the friction clutch.

For such cases the position controller equipped with a fixing device for the slip clutch with which adjustment due to the above mentioned influences can be prevented.

The setting possibility is accessible below the black knurled wheel and is recognizable from slots on the yellow wheel. The zero point adjustment and the setting possibility of the slip clutch are identified by symbols on an additional plate.

Procedure

After you have mounted the position controller and commissioned it completely, you can set the slip clutch torque as follows:

- ❑ Plug a conventional 4 mm wide screwdriver into a slot in the yellow wheel.
- ❑ Then turn the yellow wheel to the left with the screwdriver until it snaps in audibly. This increases the torque of the slip clutch.
- ❑ A fixed slip clutch is recognizable from an approx. 1 mm wide gap between the yellow and black wheel.
- ❑ If you have to make a zero point setting, e.g. after changing the drive, please reduce the torque first by turning the yellow wheel to the right stop. After the zero point setting, you can fix the slip clutch as described above.

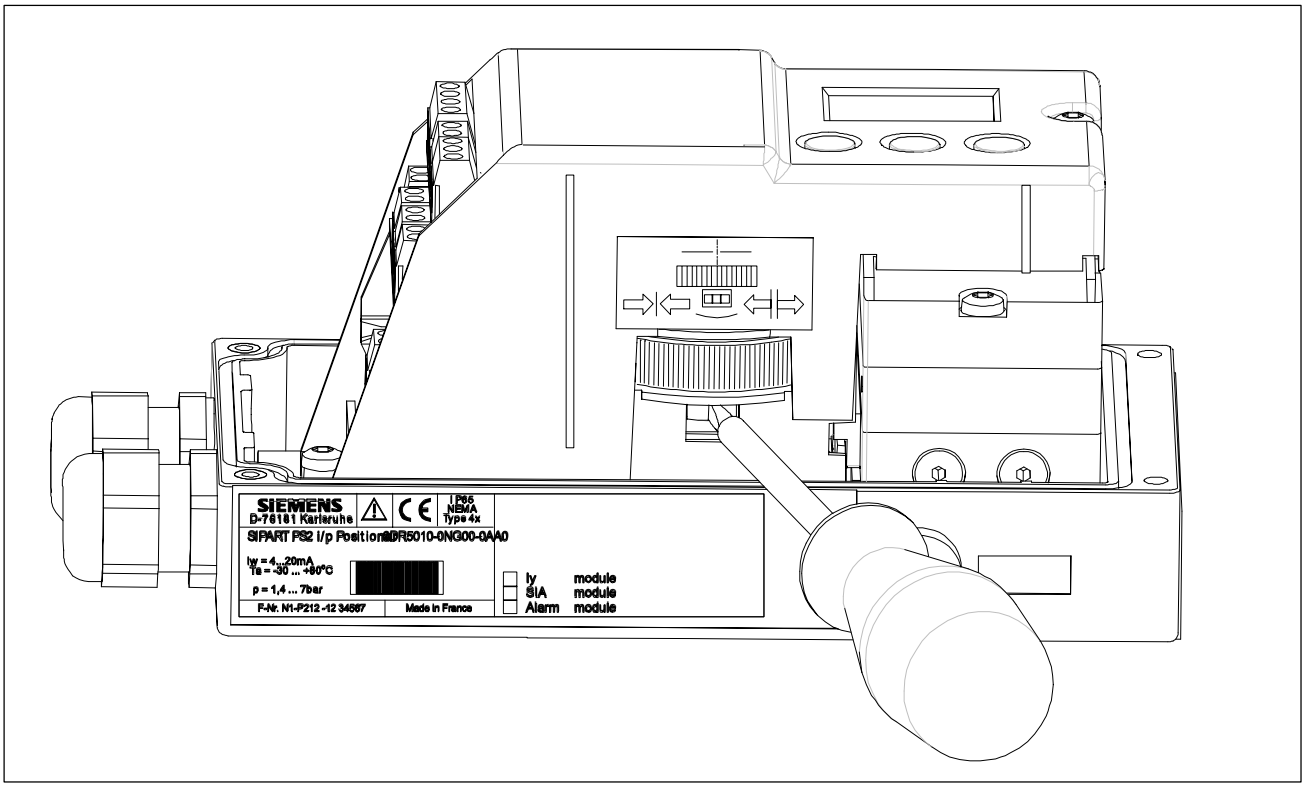


Fig. 2 Fixing device for the slip clutch

External position sensor

There are potential cases for which the above–mentioned measures are not sufficient. This could be, for example, in the presence of strong and lasting vibrations, increased or too low ambient temperatures, and in the presence of nuclear radiation.

In such cases, separate mounting of position sensor and control unit is helpful. For this, a universal component is available that is suitable for both linear and rotary actuators.

You will need the following:

- ❑ The position sensor unit (order number C73451-A430-D78). This consists of a SIPART PS2 housing with an integrated friction clutch, in-built potentiometer and various blind plugs and seals.
- ❑ The control unit, a SIPART PS2 positioner in any version.
- ❑ The EMC filter plate which is available in a set together with cable clamps and M-20 cable glands and has the order number C73451–A430–D23. The EMC filter plate must be mounted in the SIPART PS2 positioner. The Installation Instructions supplied with the EMC filter plate explains the assembly of the components.
- ❑ A three-pin cable to connect the components.

This upgrade set must also always be used for the control unit when any potentiometer (resistance value 10 kOhm) is mounted on the actuator instead of the position sensor unit C73451-A430-D78.

3.2 Extension Kit ”Linear Actuator” 6DR4004–8V and 6DR4004–8L

The following are included in the *delivery of the extension kit* ”Linear actuator IEC 534 (3 mm to 35 mm)” (see Figure 3 for item Nos.):

Item No.	Quantity	Designation	Remarks
1	1	NAMUR mounting bracket IEC 534	Standardized connection for mounting console with ledge, column or plane surface
2	1	Pick-up bracket	Guides the roll with driver pin and rotates the lever arm
3	2	Clamping assembly	Mounting of pick-up bracket on actuator spindle
4	1	Driver pin	Assembly with roll (5) on lever (6)
5	1	Roll	Assembly with driver pin (4) on lever (6)
6	1	NAMUR lever	For stroke range 3 mm to 35 mm For stroke ranges > 35 mm to 130 mm (special delivery), lever 6DR4004–8L is also required
7	2	U-bolt	Only for actuators with columns
8	4	Hexagon head screw	M8 x 20 DIN 933–A2
9	2	Hexagon head screw	M8 x 16 DIN 933–A2
10	6	Spring washer	A8 – DIN 127–A2
11	6	U-washer	B 5.4 – DIN 125–A2
12	2	U-washer	B 6.4 – DIN 125–A2
13	1	Spring	VD–115E 0.70x11.3x32.7x3.5
14	1	Spring washer	A6 – DIN 137A–A2
15	1	Lock washer	3.2 – DIN 6799–A2
16	3	Spring washer	A6 – DIN 127–A2
17	3	Hexagon head screw	M6 x 25 DIN 933–A2
18	1	Hexagon nut	M6 – DIN 934–A4
19	1	Square nut	M6 – DIN 557–A4
21	4	Hexagon nut	M8 – DIN 934–A4
22	1	Guide washer	6.2x9.9x15x3.5

3.2.1 Assembly Sequence

(see Figure 3, page 50)

1. Mount clamping assembly (3) with socket cap screws (17) and lock washers (16) on the actuator spindle.
2. Insert the pick-up bracket (2) into the recesses of the clamping assembly. Set the required length and screw only so tight that the pick-up bracket can still be shifted.
3. The center of the pin (4) is set to the value of the stroke range specified on the actuator or set to the next large scale value. The same value can be set later for 3.YWAY during start-up, to display the travel in mm after initialization.
4. Push the lever onto the positioner shaft as far as possible, and secure with the socket cap screw (17).
5. Fit the mounting bracket (1) with two hexagonal head screws (9), lock washer (10) and flat washer (11) on the rear of the positioner.
6. Selection of the row of holes depends on the width of the actuator yoke. The roll (5) should engage in the pick–up bracket (2) as close to the spindle as possible, but must not touch the clamping assembly.
7. Hold the positioner with the mounting bracket on the actuator such that the roll (5) is guided within the pick-up bracket (2).
8. Tighten the pick-up bracket.
9. Position the mounting parts according to the type of actuator.
   - Actuator with ledge: hexagonal head screw (8), flat washer (11) and lock washer (10).
   - Actuator with plane surface: four hexagonal head screws (8) with flat washer (11) and lock washer (10).
   - Actuator with columns: two U-bolts (7), four hexagonal nuts (21) with flat washer (11) and lock washer (10).
10. Secure positioner onto the yoke using the previously positioned mounting parts.

NOTE

Adjust the height of the positioner such that the horizontal lever position is reached as close as possible to the center of the stroke. You can use the lever scale of the actuator for orientation. It must always be guaranteed that the horizontal lever position is passed through within the stroke range.

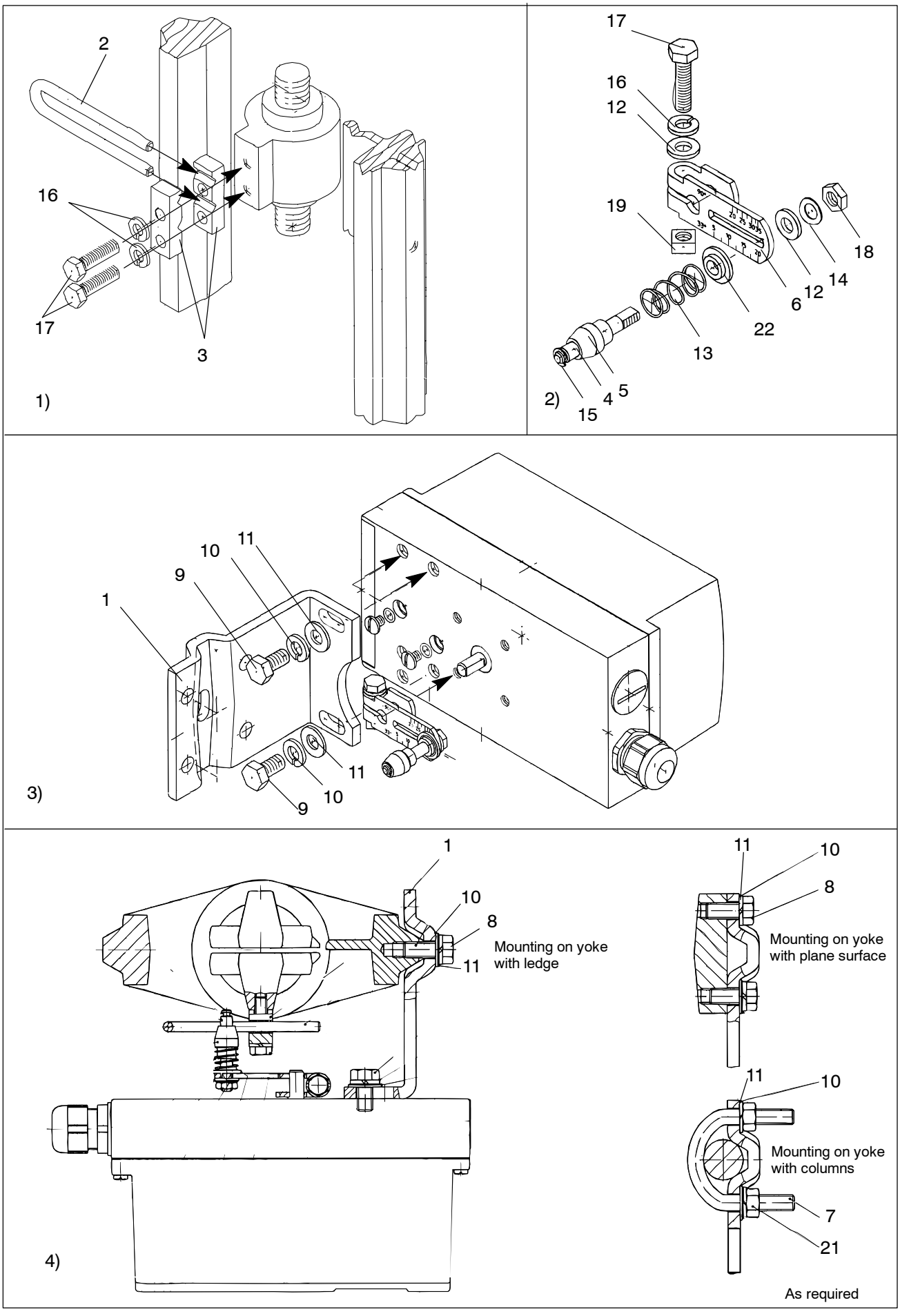


Fig. 3 Assembly sequence (linear actuator)

3.3 Extension Kit "Rotary Actuator" 6DR4004–8D

The following are included in the *delivery of the extension kit* "Rotary actuator" (see Figure 4, page 52 for item Nos.):

Item No.	Quantity	Designation	Remarks
2	1	Coupling wheel	Mounting on position feedback shaft of SIPART PS2
3	1	Driver	Mounting on end of actuator shaft
4	1	Multiple scale	Indication of actuator position, comprising 4.1 and 4.2
4.1	8	Scale	Different divisions
4.2	1	Pointer	Reference point for scale (adhesive label)
14	4	Hexagon head screw	DIN 933 – M6 x 12
15	4	Lock washer	S6
16	1	Fillister head screw	DIN 84 – M6 x 12
17	1	Washer	DIN 125 – 6.4
18	1	Hexagon socket screw	Premounted with coupling wheel
19	1	Allen key	For item 18

3.3.1 Assembly Sequence

(see Figure 4, page 52)

1. Place VDI/VDE 3845 mounting console ((9), actuator-specific, scope of supply of actuator manufacturer) onto rear of positioner and secure using hexagon head screws (14) and lock washers (15).
2. Adhere pointer (4.2) onto mounting console in the center of the centering hole.
3. Push coupling wheel (2) onto positioner axis as far as possible, pull back by about 1 mm, and tighten hexagon socket screw (18) using the supplied Allen key.
4. Place the driver (3) onto the end of the actuator shaft and secure using Fillister head screw (16) and washer (17).
5. Carefully place positioner with mounting console onto the actuator such that the pin of the coupling wheel engages in the driver.
6. Align the positioner/mounting console assembly in the center of the actuator and screw tight.
   (Screws not included in delivery; they are part of the actuator mounting console!)
7. Following startup as described in Section 7: Drive actuator to end position and adhere scale (4.1) onto the coupling wheel (2) according to the direction of rotation or the turning range. *The scale is self-adhesive!*

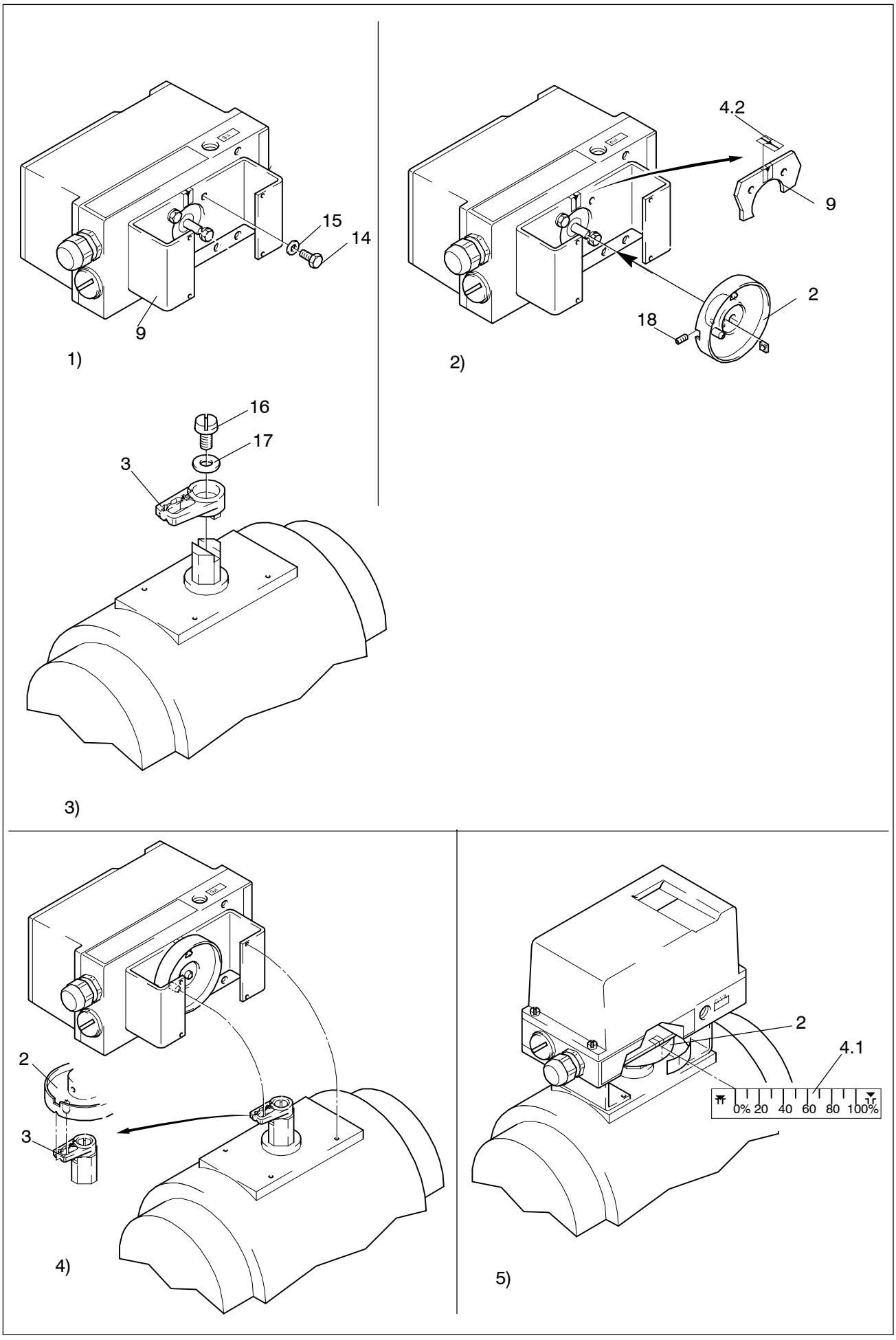


Fig. 4 Assembly sequence (rotary actuator)

4 Installation of Options

(see Figure 9, page 97)

- ❑ Unscrew housing cover.
- ❑ Unscrew module cover (1).
- ❑ **J_y module**: Insert the J_y module (3) into the lower PCB slot guide of the container, make the electrical connection with the accompanying ribbon cable (6).
- ❑ **Alarm module**: Insert the alarm module (4) into the upper PCB slot guide of the container, make the electrical connection with the accompanying ribbon cable (5).
- ❑ **SIA module** (slot-type initiator alarm module)
  1. Remove all electrical connections of the basic electronics (2).
  2. Loosen the two fixing screws (2.1) of the basic electronics.
  3. Unclip the basic electronics by carefully bending out from the four attachment points.
  4. Guide the SIA module (7) from above until the upper PCB slot guide of the container is reached.
  5. Push the SIA module approx. 3 mm to the right into the PCB slot guide of the container.
  6. Screw in the special screw (7.1) through the SIA module into the shaft of the positioner **(Torque: 2 Nm)**

CAUTION

The pins pushed into the control-gate valve bearing must be aligned shortly before contact with the special screw. When screwing-in further, the control-gate valve bearing and the special screw must be turned simultaneously so that the pins insert into the special screw. The SIA module may be damaged if you will not observe this.

7. Place the insulation cover (10) over the SIA module on one side under the seating area of the basic electronics on the container wall. The openings on the insulation cover must fit onto the corresponding studs on the container wall. By carefully bending the container walls, fit the insulation cover over the SIA module.
8. Clip the basic electronics into the four attachment points and screw down the basic electronics with the two fixing screws (2.1).
9. Make all the electrical connections between the basic electronics and options with the accompanying ribbon cables and between the basic electronics and the potentiometer with the potentiometer cable.
10. Attach the supplied module cover instead of the standard cover with the two screws.
11. Select the plates from the accompanying set of plates to correspond with those that were already present on the standard version of the module cover. Stick the selected plates onto the mounted module cover in accordance with the standard version.
12. Make all the electrical connections.

Setting the two limits:

13. Move the actuator to the first desired mechanical position.
14. Adjust the upper adjustment screw (for output terminals 41, 42) by hand until the output level changes.
15. Move the actuator to the second desired mechanical position.
16. Adjust the lower adjustment screw (for output terminals 51, 52) by hand until the output level changes.

NOTE

By rotating the adjustment screw past the level–changed value to the next level-changed value, you can set a High-Low or a Low-High switch.

5 Electric Connection

(see Figure 10 to 21, page 98 to 103)

Electric connection:		Screw terminals 2.5 mm^2
Cable inlet:		M20 x 1.5
Signal range		
Setpoint w:	4 to 20 mA	With 2-wire connection
	0/4 to 20 mA	With 3-wire or 4-wire connection
		Power supply U_H: 18 to 30 V

The plastic housing is metallize coated inside against high-frequency radiation. This shield is connected with the female thread jacks on the back side (see figure 5).

Please note that one of them must at least be connected to ground.

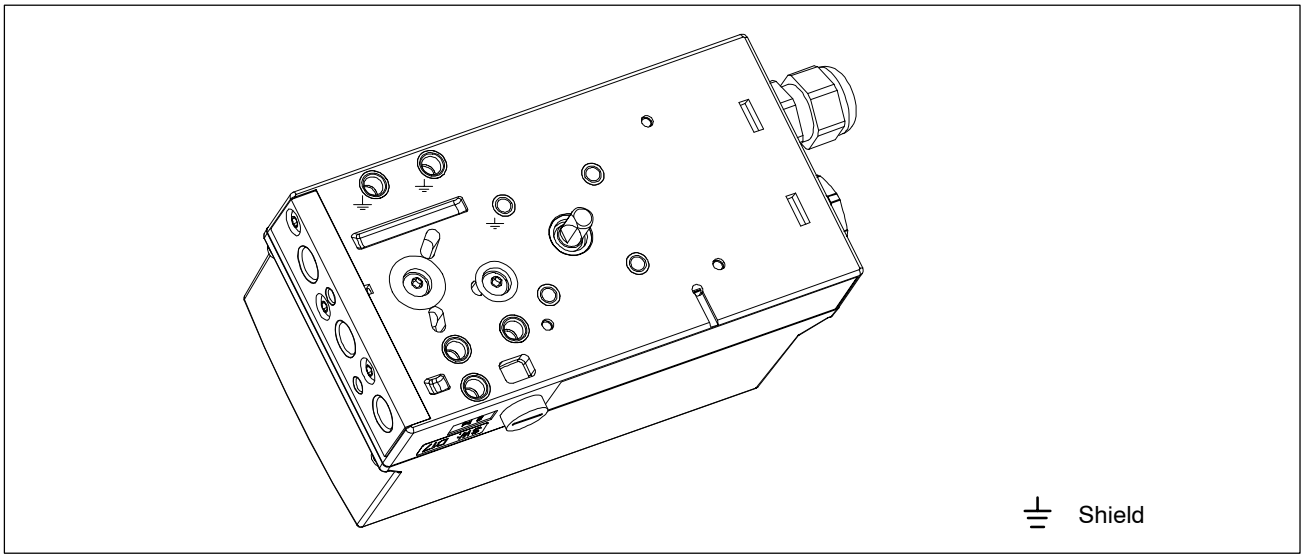


Fig. 5 Ground plate

6 Pneumatic Connection

CAUTION

If the electric supply is connected, the pneumatic supply must only be connected following assembly if the positioner is switched to the input level ”P manual mode” (for the as supplied conditions, see leaflet ”Operation – a concise overview”).

NOTICE

Ensure that the air quality is suitable! Grease-free industrial air, particulates < 30 µm, pressure dew point 20 K below lowest ambient temperature.

The pneumatic connections are located on the right-hand side of the positioner (Figure 6).

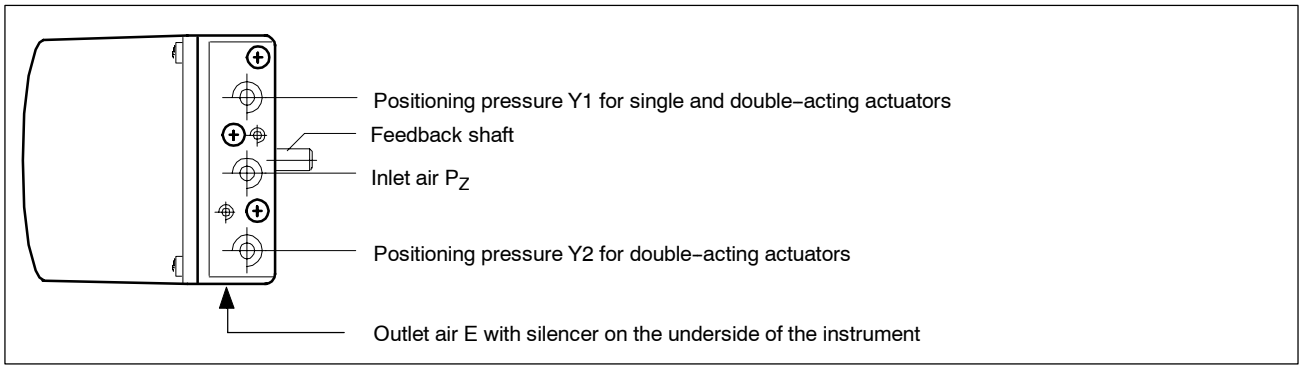


Fig. 6 Pneumatic connection

Two pneumatic connections for the integrated installation of single–acting linear actuators are located on the rear of the positioner:

- ❑ Positioning pressure Y1
- ❑ Air outlet E

These connections are locked with screws when supplied.

Outlet air E can be used to ensure a flow of dry instrument air through the pick–off area and the spring chamber to prevent corrosion.

Procedure:

- ❑ Connect manometer for inlet air pressure and positioning pressure in necessary.
- ❑ Connection via female thread G 1/4 DIN 45141:

  PZ Inlet air 1.4 to 7 bar
  Y1 Positioning pressure 1 for single-action and double-action actuators
  Y2 Positioning pressure 2 for double-action actuators
  E Exhaust output (remove silencer if necessary)

- ❑ Safety setting on failure of electric supply:

  single-action: Y1 Vented
  double-action: Y1 Max. positioning pressure (inlet air pressure)
  Y2 Vented

- ❑ Connect positioning pressure Y1 or Y2 (only with double-action actuators) according to desired safety setting.
- ❑ Connect inlet air to PZ.

☞ **NOTE**

Spring return actuators need sufficient high supply pressure so that the complete stroke can be travelled up to the end position of the actuator.

6.1 Purging air switchover

The purging air changeover switch above the pneumatic terminal block (Figure 7) on the valve manifold can be accessed when the housing is open. When the switch is in position IN the interior of the housing is purged with very small quantities of clean and dry instrument air. In position OUT the purging air is led directly out of the instrument.

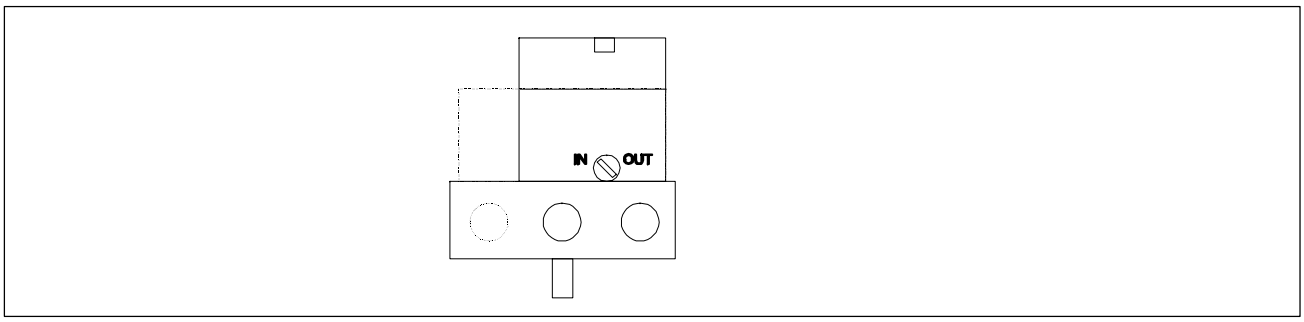


Fig. 7 Purging air changeover switch above the pneumatic terminal block, view of the device on the pneumatic connection side with the cover open

6.2 Restrictors

To increase the positioning times for fast actuators when necessary, the air flow can be reduced with the restrictors Y1 and Y2 (only for double-action valves) (Figure 8). Turning the restrictors in the clockwise direction reduces the air flow until it is shut off. To set the restrictors we recommend closing them first and then opening them again slowly (see Initialization RUN3). In case of double-action valves please note that both restrictors are set alike.

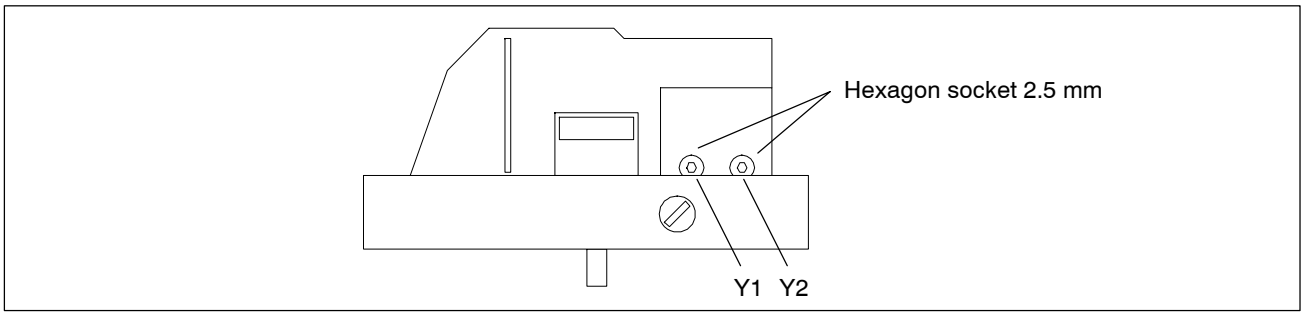


Fig. 8 Restrictors

7 Commissioning (see Leaflet "Operation – a concise overview")

Because of the numerous applications it can have, the positioner must be adapted to the actuator after assembly (initialized). This initialization can be undertaken in three different ways:

- **Automatic initialization**
  The initialization is automatic. The positioner determines sequentially the direction of action, the travel or the rotational angle, the travel times of the actuator and adapts the control parameters to the dynamic behavior of the actuator.
- **Manual initialization**
  The travel or the rotational angle of the actuator can be set manually; the remaining parameters are automatically determined as for automatic initialization. This function is required for soft end stops.
- **Copying initialization data (replacing the positioner)**
  For devices with HART function, the initialization data of a positioner can be read out and transmitted to another positioner. Therefore it is possible to exchange a defective device without interrupting the running process by an initialization.

Before initialization, you only have to set a few parameters for the positioner. The remaining parameters are set with default values that you do not normally have to alter. If you observe the following points, you will not have any problem with commissioning.

☞ **NOTE**

You can return to the previous parameter by pressing the and keys simultaneously.

7.1 Preparation for linear actuators

1. Mount the positioner with the appropriate mounting kit (see Chapter 3.2, page 48).

NOTICE

The position of the leverage ratio switch in the positioner is especially important and on page 95 in the Leaflet "Operation – a concise overview" point 7 of figure "View of device":

Stroke	Lever	Position of the leverage ratio switch
5 to 20 mm	short	33° (i.e. below)
25 to 35 mm	short	90° (i.e. above)
40 to 130 mm	long	90° (i.e. above)

2. Push the driver pin (4, Figure 3, (page 50) 2) on the lever (6, Figure 3, 2) to the scale position corresponding to the nominal stroke or the next highest scale position and screw the driver pin tight with the nut (18, Figure 3, 2).
3. Connect the actuator and positioner with the pneumatic cables and supply pneumatic power to the positioner (see Chapter 6, page 54).
4. Connect a suitable current or voltage source (see Figure 10, page 98 to Figure 15, page 100).
5. The positioner is now in "**P manual**" mode. On the upper line of the display, the current potentiometer voltage (P) is displayed as a percentage, e.g. "**P37.5**", and on the lower line "**NOINI**" is blinking:
   Display:

6. Check that the mechanism is able to move freely over the entire setting range by moving the actuator into each final position with the and keys.

☞ **NOTE**

You can move the actuator quickly by pressing the other direction key while you hold the first direction key down.

7. Now move the actuator into the horizontal position of the lever. The display should show a value between **P48.0** and **P52.0**. If that is not the case, adjust the friction clutch (8, Fig. 3) until "**P50.0**" is shown when the lever is horizontal. The more precisely you achieve that value, the more accurately the positioner can determine the displacement.

7.1.1 Automatic initialization of linear actuators

If you can move the actuator correctly, leave it in a central position, and start automatic initialization:

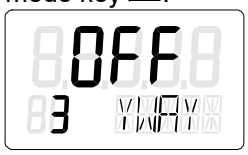
1. Press the mode key for more than 5 s. This takes you into Configuration mode.
   Display:

2. Switch to the second parameter by pressing the mode key briefly.
   Display: or

NOTE

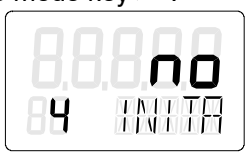
This value must match the setting of the leverage ratio switch (7, Leaflet "Operation – a concise overview") (33° or 90°)

3. Switch to the following display with the mode key:
   Display:



   You only have to set this parameter if you want to have the calculated total stroke displayed in mm at the end of the initialization phase. To do that, select the same value in the display as the value to which you set the driver pin on the scale of the lever.

4. Switch to the following display with the mode key:
   Display:



5. Start initialization by pressing the key for more than 5 s.
   Display:

During the initialization process "**RUN1**" to "**RUN5**" appear one after the other in the lower display.

NOTE

The initialization process can take up to 15 min depending on the actuator.

Initialization is complete when the following display appears:

After you have pressed the mode key briefly, the following display appears:

To exit **Configuration** mode press the mode key for more than 5 s. After about 5 s, the software version is displayed. After you have released the mode key, the unit is in manual mode.

If you want to set further parameters, use the leaflet ”Operation – a concise overview” or the Manual.

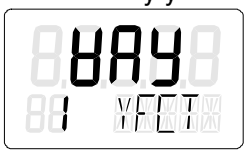
You can start reinitialization from manual or automatic mode at any time.

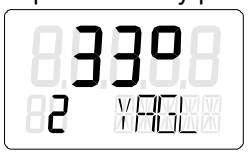
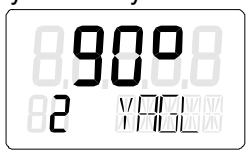
7.1.2 Manual initialization of linear actuators

With this function, the positioner can be initialized without driving the actuator hard into the end stop. The start and end positions of the travel are set manually. The remaining steps for initialization (optimization of the control parameters) are automatically determined as for automatic initialization.

Sequence of steps for manual initialization for linear actuators

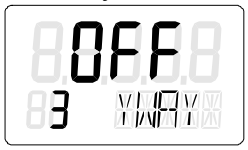
1. Carry out the preparations for linear actuators according to chapter 7.1, page 57. Ensure by driving manually over the entire travel that the displayed potentiometer setting lies within the permissible range of P5.0 and P95.0.
2. Press the mode key for longer than 5 s. This way you will enter Configuration mode.
   Display:



3. Switch to the second parameter by pressing the mode key briefly.
   Display:  or the display 

> **NOTE**
>
> This value must agree with the setting of the transmission ratio selector (33° or 90°).

4. Move to the following display with the mode key:
   Display:



   This parameter only has to be set if you wish to have the determined total stroke displayed in mm at the end of the initialization phase. To do this, select the same value in the display that you have set with the driver pin on the lever scale, or the next highest value for intermediate settings.
5. Move to the following display by pressing the mode key twice:
   Display:

6. Start initialization by pressing the increment key for more than 5 s.
Display:

7. After 5 s, the display changes to:
Display:

(The display of the potentiometer setting is shown here and in the following as an example only).

Drive the actuator with the increment (+) and decrement (–) keys to the position that you wish to define as the first of the two end positions. Then press the mode key. In this way the current position is taken over as end position 1 and will switch to the next step.

NOTE

If the message RANGE appears in the lower line, the selected end position is outside the permissible measuring range. There are several options to correct this error:

- Adjust the friction clutch until OK appears and then press the mode key once more, or
- Drive to another end position with the increment and decrement keys, or
- Interrupt the initialization by pressing the mode key. Then you have to switch to P–Manual mode and correct the travel and the position measurement according to step 1.

8. When step 7 has been completed successfully, the following display appears:
Display:

Now drive the actuator with the increment (+) and decrement (–) keys to the position that you wish to define as the second end position. Then press the mode key. The current position will now be taken over as the end position 2.

NOTE

If the message RANGE appears in the lower line, the selected end position is outside the permitted measuring range or the measuring span is too small. There several options to correct this error:

- Drive to another end position with the increment and decrement keys, or
- Interrupt the initialization by pressing the mode key. Then you have to switch to P–Manual mode and correct the travel and the position measurement according to step 1.

NOTE

If the message Set Middle appears, the lever arm must be moved to the horizontal position with the increment and decrement keys and then the mode key pressed. This sets the reference point of the sine correction for linear actuators.

9. The rest of the initialization occurs automatically. RUN1 through to RUN5 appear in the lower line of the display sequentially. When the initialization has been completed successfully, the following display appears:
Display:

In the first line, the determined stroke in mm will appear in additional if the set lever length has been entered with the parameter 3.YWAY.

After briefly pressing the mode key, 5.INITM appears once more in the lower line. This means that you are now in Configuration mode once more.

To leave Configuration mode, press the mode key for more than 5 s. After approx. 5 seconds, the software version will be displayed. After releasing the mode key, the device will be in Manual mode.

7.2 Preparation for rotary actuators

NOTE

Especially important: Switch the leverage ratio switch (7, leaflet "Operation – a concise overview") in the positioner into position 90° (usual adjustment angle for rotary actuators).

1. Mount the positioner with the appropriate mounting kit (see Chapter 3.3, page 51).
2. Connect the actuator and positioner with the pneumatic cables and supply pneumatic power to the positioner (see Chapter 6, page 54).
3. Connect a suitable current or voltage source (see Figure 10, page 98 to Figure 15, page 100).
4. The positioner is now in "**P manual**" mode. On the upper line of the display, the current potentiometer voltage (P) is displayed as a percentage, e.g. "**P37.5**", and on the lower line "**NOINI**" is blinking:

5. Check that the mechanism is able to move freely over the entire setting range by moving the actuator into each final position with the ▲ and ▼ keys.

NOTE

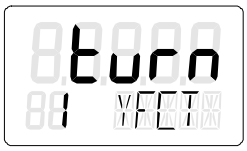
You can move the actuator quickly by pressing the other direction key while you hold the first direction key down.

7.2.1 Automatic initialization of rotary actuators

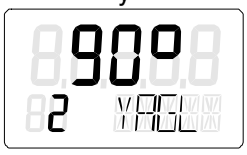
Once you can move the actuator through its setting range correctly, leave it in a central position and start automatic initialization:

1. Press the mode key for more than 5 s. This takes you into Configuration mode.
   Display

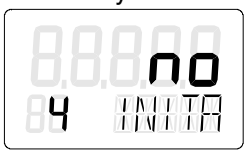
2. Set the parameter to ”turn” with the key:
   Display:



3. Switch to the second parameter by pressing the mode key briefly.
   The second parameter is set to 90° automatically.
   Display:



4. Switch to the following display with the mode key:
   Display:



5. Start initialization by pressing the key for more than 5 s.
   Display:

During the initialization process ”**RUN1**” to ”**RUN5**” appear one after the other in the lower display.

NOTE

The initialization process can take up to 15 min depending on the actuator.

Initialization is complete when the following display appears:

The upper value shows the total angle of rotation of the actuator (example 93,5°).

After you have pressed the mode key briefly, the following display appears:

To exit **Configuration** mode press the mode key for more than 5 s. After about 5 s, the software version is displayed. After you have released the mode key, the unit is in manual mode.

If you want to set further parameters, use the leaflet ”Operation – a concise overview” or the Manual.

You can start reinitialization from manual or automatic mode at any time.

7.2.2 Manual initialization of rotary actuators

With this function, the positioner can be initialized without driving the actuator hard into the end stops. The start and end positions of the travel are set manually. The remaining steps for initialization (optimization of the control parameters) are automatically determined as for automatic initialization.

Sequence of steps for manual initialization for rotary actuators

1. Carry out the preparations for rotary actuators according to chapter 7.2, page 61. Ensure by driving manually over the entire travel that the displayed potentiometer setting lies within the permissible range of P5.0 and P95.0.
2. Press the mode key for longer than 5 s. This way you will enter Configuration mode.
   Display:

3. Set the parameter YFCT to turn with the decrement key (–).
   Display:

4. Switch to the second parameter by pressing the mode key briefly.
   Display:

NOTE

Ensure that the transmission ratio selector is at 90°.

5. Move to the following display by pressing the mode key twice:
   Display:

   The following steps are identical to the steps 6) to 9) for the initialization of linear actuators.

   After successful initialization, the determined rotation range appears in degrees on the upper display.

   After pressing the mode key briefly, 5.INITM appears in the lower display line. You are now once more in Configuration mode.

   To leave Configuration mode, press the mode key for more than 5 s. After approx. 5 seconds the software version will be displayed. After releasing the mode key, the device will be in Manual mode.

7.3 Copying initialization data (replacing the positioner)

With this function, you have the possibility to commission positioners without having to carry out the initialization procedure. This enables, for example, a positioner to be replaced on running equipment when an automatic or manual initialization cannot be carried out without interrupting the process.

NOTE

The initialization (automatic or manual) should be performed as soon as possible afterwards because only then is the positioner optimally adjusted to the mechanical and dynamic characteristics of the actuator.

The transfer of data from the positioner to be replaced to the replacement device takes place via the HART® communication interface.

To replace a positioner, the following steps must be carried out:

1. Read the device parameters and the initialization data (determined during initialization) from the positioner to be replaced with PDM or HART® Communicator and store. This step is not necessary if the device has been parameterized with PDM and the data are already saved.
2. Fix the actuator in its current position (mechanically or pneumatically).
3. Read the current position value from the display of the positioner to be replaced and note. If the electronics are defective, determine the current position by measurement of the actuator or valve.
4. Dismount the positioner. Mount the lever arm of the positioner onto the replacement device. Mount the replacement device onto the fittings. Place the transmission ratio selector at the same position as on the defective device. Read in the device data and initialization data from PDM or Handheld.
5. If the displayed current value does not agree with the noted value from the defective positioner, set the correct value with the friction clutch.
6. The positioner is now ready for operation.

   The precision and the dynamic behavior could be limited in comparison to that from a correct initialization. In particular the position of the hard stops and the corresponding service data could show deviations. Therefore an initialization must be performed at the next possible opportunity.

7.4 Fault correction

Diagnostics indicator

see	**Table**			
In which operating mode did the fault occur?				
• Initialization	**1**			
• Manual mode and automatic mode	**2**	**3**	**4**	**5**
Under which circumstances and conditions did the fault occur?				
• Wet environment (e.g. heavy rain or constant condensation)	**2**			
• Vibrating fittings	**2**	**5**		
• Under impact or shock (e.g. steam jets or breakaway flaps)	**5**			
• Damp (wet) compressed air	**2**			
• Dirty (contaminated with solid particles) compressed air	**2**	**3**		
When does the fault occur?				
• Constantly (reproducibly)	**1**	**2**	**3**	**4**
• Sporadically (not reproducible)	**5**			
• Usually after a certain operating period	**2**	**3**	**5**	

Fault description (symptoms)	**Possible cause(s)**	**Corrective actions**
• SIPART PS2 comes to a halt in RUN 1	• Initialization started from the final stop and • Reaction time of max. 1 min. not waited • Network pressure not connected or too low	• Up to 1 min. waiting time required • Do not start initialization from an end stop • Confirm network pressure
• SIPART PS2 comes to a halt in RUN 2	• Transmission ratio selector and parameter 2 (YAGL) and true stroke did not correlate • Stroke on the lever incorrectly set • Piezo valve(s) do not switch (see Table 2)	• Check settings: • See leaflet: Figure Device view (7) and parameters 2 and 3 • Check stroke setting on the lever • see Table 2

Fault description (symptoms)	Possible cause(s)	Corrective actions
• SIPART PS2 comes to a halt in RUN 3	• Actuator positioning time too long	• Open restrictor fully and/or set pressure PZ(1) to the highest permissible value • Use booster if necessary
• SIPART PS2 comes to a halt in RUN 5, does not reach FINISH (waiting time > 5 min)	• Play in the positioner, actuator, fittings system	• Linear actuator: Check seating of the stud screw of the coupling wheel • Rotary actuator: Check seating of the lever on the positioner shaft • Correct any other play between the actuator and the fittings

Table 1

Fault description (symptoms)	Possible cause(s)	Corrective actions
• CPU test blinks in the display of the SIPART PS2 (ca. every 2 secs) • Piezo valve(s) do not switch	• Water in the valve manifold (from wet compressed air)	• At the early stages the fault can be corrected by subsequent operation with dry air (when necessary, in a temperature cupboard at 50 to 70 °C) • Otherwise: Repair at CSC (see page 66)
• Actuator cannot be moved in manual or automatic mode, or only in one direction	• Dampness in the valve manifold	
• Piezo valve(s) do not switch (no soft clicking can be heard when the + or – keys are pressed in manual mode)	• Screw between cover hood and the valve manifold is not tight or the hood is jammed	• Tighten screw, or release cause of jamming when necessary
	• Dirt (swarf, particles) in the valve manifold	• Repair at CSC[1)] or new device with integrated fine filter which can be replaced and cleaned
	• Deposits on the contact(s) between the electronics board and the valve manifold can occur from abrasion through continuous stresses from strong vibrations	• Clean all contact surfaces with alcohol: when necessary bend the valve manifold contact springs back into place

Table 2

Fault description (symptoms)	Possible cause(s)	Corrective actions
• Actuator does not move	• Compressed air < 1.4 bar	• Set inlet air pressure to > 1.4 bar
• Piezo valve(s) do not switch (although a soft clicking can be heard when the + or – keys are pressed in manual mode)	• Restrictor(s) closed down (screw(s) at the right end stop)	• Open restrictor screw(s) (see leaflet, Figure “View of device (6)”) by turning to the left
	• Dirt in the valve manifold	• Repair at CSC[1)] or new device with integrated fine filter which can be replaced and cleaned
• One piezo valve constantly switches in stationary automatic mode (constant setpoint) and in manual mode	• Pneumatic leak in the positioner, actuator system, start leak test in RUN 3 (Initialization) !!!	• Fix leak in the actuator and/or supply line • If the actuator and supply line are intact: Repair of SIPART PS 2 at CSC[1)] or new device
	• Dirt in the valve manifold (see above)	• See above

Table 3

Fault description (symptoms)	Possible cause(s)	Corrective actions
• The two piezo valve constantly switch alternately in stationary automatic mode (constant setpoint), actuator oscillates around a middle point	• Static friction on the packing glands of the fittings or actuator too high	• Reduce static friction or increase dead zone of SIPART PS2 (parameter dEbA) until the oscillating movements stop.
	• Play in the positioner, actuator, fittings system	• Linear actuator: Check seating of the stub screw of the coupling wheel • Rotary actuator: Check seating of the lever on the positioner shaft • Correct any other play between the actuator and fittings
	• Actuator too fast	• Increase positioning times by means of restrictor screws • If fast positioning times are required, increase dead zone (parameter dEbA) until the oscillating movements stop.
• SIPART PS2 does not drive the valve up to the end stop (at 20 mA)	• Supply pressure too low • Load of the supply controller or system output too low; required load potential.	• Increase supply pressure • Intermediate burden converter • Select 3/4 wire operation

Table 4

Fault description (symptoms)	Possible cause(s)	Corrective actions
• Zero point shifts sporadically (> 3 %)	• Such high accelerations have occurred through impact or shock that the friction clutch has shifted (e.g. through steam jets in the steam pipelines)	• Shut off the cause of the shocks • Reinitialize the positioner • Upgrade at CSC[1)]: mount reinforced friction clutch (order number C73451-A430-D14)
• Device function breaks down totally: no display	• Insufficient electrical supply	• Check electrical supply
	With very high continuous stresses by vibrations, the following can occur: • Screws of the electrical terminals can loosen • The electrical terminals and/or electronic modules can be shaken loose	• Tighten screws and secure with sealing varnish • Repair at CSC[1)] • Prevention: Mount the SIPART PS2 on rubber metal

Table 5

[1)] CSC Address (Customer Support Center)

Siemens Production
Automatisation S. A. CSC
1, chemin de la Sandlach
B. P. 189

F–67506 Haguenau CEDEX

– France –

Tel. 0033–38890–6677
Fax 0033–38890–6688

e-mail: Hotline.ADPA1–2@khe.siemens.de

8 Certificates

The SIPART PS2 positioner with the accompanying options will be approved as standard in zone 1 as EEx ia/ib (see EC Type Examination Certificate) and for zone 2 as Ex n (see Conformity Statement).

WARNING

Since the maximum values of normal operation may be violated in the event of a fault when using the positioner and its options in zone 2, the EEx n device and its options must never be used again subsequently in zone 1.

SIEMENS

EG-Konformitätserklärung
EC Declaration of Conformity

No. 1240.010- S01

Hersteller: *Manufacturer:*	Siemens AG
Anschrift: *Address:*	Östliche Rheinbrückenstr. 50; 76187 Karlsruhe Bundesrepublik Deutschland
Produktbezeichnung: *Product description*	SIPART PS2 6DR5axb-xexxx-xxxx a = 0, 1, 2, 3, 5; b = 0, 1; c = N, E, G 6DR4004-6J Iy – Modul 6DR4004-6G SIA - Modul 6DR4004-6A Alarm – Modul C73451-A430-L8 EMV - Modul

Das bezeichnete Produkt stimmt in der von uns in Verkehr gebrachten Ausführung mit den Vorschriften folgender Europäischer Richtlinien überein:
The product described above in the form as delivered is in conformity with the provisions of the following European Directives:

89/336/EWG Richtlinie des Rates vom 3. Mai 1989 zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit (geändert durch 91/263/EWG, 92/31/EWG, 93/68/EWG und 93/97/EWG).
Council Directive of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility (amended by 91/263/EEC, 92/31/EEC, 93/68/EEC and 93/97/EEC)

94/9/EG Richtlinie des Europäischen Parlaments und des Rates vom 23. März 1994 zur Angleichung der Rechtsvorschriften der Mitgliedstaaten für Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen.
Directive of the European Parliament and the Council of 23 March 1994 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres

CE-Kennzeichnung / *CE marking*: **06/02**

Karlsruhe, den / *the* 025.06.2002

Siemens AG

Entwicklung Schradi i. V. Schradi — Name, Funktion *Name, function* — Unterschrift *signature*

Fertigung van Dycke i. V. van Dycke — Name, Funktion *Name, function* — Unterschrift *signature*

Anhang A ist integraler Bestandteil dieser Erklärung
Annex A is integral part of this declaration
Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, ist jedoch keine Zusicherung von Eigenschaften.
Die Sicherheitshinweise der mitgelieferten Produktdokumentation sind zu beachten.
This declaration certifies the conformity to the specified directives but contains no assurance of properties. The safety documentation accompanying the product shall be considered in detail.

SIEMENS

Anhang A zur EG-Konformitätserklärung
Annex A to the EC Declaration of Conformity

No. 1240.010- S01

Produktbezeichnung: *Product description*	SIPART PS2 6DR5axb-xexxx-xxxx a = 0, 1, 2, 3, 5; b = 0, 1; c = N, E, G 6DR4004-6J Iy – Modul 6DR4004-6G SIA - Modul 6DR4004-6A Alarm – Modul C73451-A430-L8 EMV - Modul

Die Konformität mit den auf Blatt 1 angeführten Richtlinien wird nachgewiesen durch die Einhaltung folgender Normen (variantenabhängig):
Conformity to the Directives indicated on page 1 is assured through the application of the following standards (depending on versions):

Richtlinie *directive*	Norm *Standard: Referenznummer Reference number*	Ausgabedatum *Edition*	a =	b =	c =
89/336/EWG	EN 61326/A1 Anh. A	1998	0, 1, 2, 3, 5	0, 1	N, E, G
94/9/EG	EN 50 014	1997	0, 2, 5	0, 1	E
94/9/EG	EN 50 020	1994	0, 2, 5	0, 1	E
94/9/EG	EN 50021	1999	0, 2, 5	0, 1	G

Zertifikate:
Certificates:

Zertifikat *Certificate*	Prüfbericht Nr.: *Report no.:*	a =	b =	c =
TÜV 00 ATEX 1654	00 Px 26800 01 Px 14510 02 YEX 142409a	0, 2, 5	0, 1	E
TÜV 01 ATEX 1786 X	02 YEX 134074	0, 2, 5	0, 1	G

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, ist jedoch keine Zusicherung von Eigenschaften
Die Sicherheitshinweise der mitgelieferten Produktdokumentation sind zu beachten.
This declaration certifies the conformity to the specified directives but contains no assurance of properties. The safety documentation accompanying the product shall be considered in detail.

8.2 EC Type Examination Certificate TÜV 00 ATEX 1654

TÜV CERT

Translation

(1) **EC TYPE-EXAMINATION CERTIFICATE**

(2) Equipment or Protective System intended for use in potentially explosive atmospheres - **Directive 94/9/EC**

(3) EC-Type Examination Certificate Number

TÜV 00 ATEX 1654

(4)	Equipment:	Electropneumatic Positioner SIPART PS2 type 6DR5***-*****-**** with options
(5)	Manufacturer:	Siemens AG, Automatisierungs- und Antriebstechnik (A&D)
(6)	Address:	Östliche Rheinbrückenstraße 50 D-76187 Karlsruhe

(7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) The TÜV Hannover/Sachsen-Anhalt e.V., TÜV CERT-Certification Body, notified body number N° 0032 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential report N° 00Px26800.

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

EN 50 014: 1997 **EN 50 020: 1994**

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

(11) This EC-type examination certificate relates only to the design and construction of the specified equipment or protective system according to Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and placing on the market of this equipment or protective system.

(12) The marking of the equipment or protective system must include the following:

II 2 G EEx ia IIC T6 resp. EEx ib IIC T6

TÜV Hannover/Sachsen-Anhalt e.V.
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Hanover, 2000-12-20

TÜV NORD

Head of the Certification Body

AP/CERTNORD 10.99

(13) **SCHEDULE**

(14) **EC-TYPE EXAMINATION CERTIFICATE N° TÜV 00 ATEX 1654**

(15) Description of equipment

The Electropneumatic Positioner SIPART PS2 Typ 6DR5***-*****-**** is used for the control of valve resp. of flap positions of pneumatic actuators.

The Electropneumatic Positioner SIPART PS2 is an intrinsically safe apparatus that may be operated with the options listed below and that meets the requirements of category 2.

Options:	Alarm module	6DR4004-6A
	SIA module	6DR4004-6G
	Iy module	6DR4004-6J
	Card module for an external sensor (potentiometer)	C73451-A430-L8

The use of the positioner fitted with the option Iy module is only permissible for the temperature classes T4 – T1.

The permissible ambient temperature range in dependence of the temperature class has to be taken from the following table:

temperature class	permissible ambient temperature range
T6	-30°C to 50°C
T5	-30°C to 65°C
T4 - T1	-30°C to 80°C

Electrical Data

Basic device:

2-wire circuit without Hart

for 6DR50**-*****-****
Motherboard –L250
Power supply /
control current 4-20 mA ..... in type of protection "Intrinsic Safety" EEx ia IIC
series connection EEx ib IIC
(terminals 6+ and 7/8) only for the connection to certified intrinsically safe circuits

Maximum values:
U_i = 30 V
I_i = 100 mA
P_i = 1 W

effective internal capacitance: C_i = 15 nF
effective internal inductance: L_i = 0,12 mH

2-wire circuit with Hart

for 6DR52**-*****-****
Motherboard –L200
Power supply /
control current 4-20 mA ..... in type of protection "Intrinsic Safety" EEx ia IIC
series connection EEx ib IIC
(terminals 3+ and 7/8, only for the connection to certified intrinsically
Jumper between terminals 4/5 – 6) safe circuits

Maximum values:
U_i = 30 V
I_i = 100 mA
P_i = 1 W

effective internal capacitance: C_i = 30 nF
effective internal inductance: L_i = 0,24 mH

3/4-wire circuit with Hart

for 6DR52**-*****-****
Plug-in module –L200
Power supply 18-30 V ..... in type of protection "Intrinsic Safety" EEx ia IIC
(terminals 2+ and 4/5) EEx ib IIC
and only for the connection to certified intrinsically
Control current 4-20 mA safe circuits
(terminals 6+ and 7/8)

Maximum values:
Power supply and the control current U_i = 30 V
circuit are galvanically separated I_i = 100 mA
or have a common base point P_i = 1 W
(terminals 4/5 - 7/8)

effective internal capacitance: C_i = 15 nF
effective internal inductance: L_i = 0,12 mH

Binary input ..... jumpered or connected to a switch contact
Plug-in module –L200 and –L250
(terminal 9 and 10)

Options

Alarm module type 6DR4004-6A:

Binary outputs ..... in type of protection "Intrinsic Safety" EEx ia IIC / EEx ib IIC

(terminals 31 and 32, terminals 41 and 42, terminals 51 and 52)

safely galvanically separated from each other.

only for the connection to certified intrinsically safe circuits

Maximum values:
U_i = 15,5 V
I_i = 25 mA
P_i = 64 mW

effective internal capacitance: C_i = 5,2 nF
The effective internal inductance is negligibly small.

Binary input ..... in type of protection "Intrinsic Safety" EEx ia IIC / EEx ib IIC

(terminals 11 and 12, terminals 21 and 22 (jumper))

safely galvanically separated from the binary outputs and the basic device, but can also activated via a jumper (then no galvanic separation from the basic device)

only for the connection to certified intrinsically safe circuits

Maximum value:
U_i = 25,2 V

The effective internal inductance and capacitance is negligibly small.

SIA module type 6DR4004-6G:

Binary output (fault signalling) ..... in type of protection "Intrinsic Safety" EEx ia IIC / EEx ib IIC

(terminals 31 and 32)

only for the connection to certified intrinsically safe circuits

Maximum values:
U_i = 15,5 V
I_i = 25 mA
P_i = 64 mW

effective internal capacitance: C_i = 5,2 nF
The effective internal inductance is negligibly small.

Binary output (slot initiator) ..... in type of protection "Intrinsic Safety" EEx ia IIC / EEx ib IIC

(terminals 41 and 42, terminals 51 and 52)

only for the connection to certified intrinsically safe circuits

Maximum values per circuit:
U_i = 15,5 V
I_i = 25 mA
P_i = 64 mW

effective internal capacitance: C_i = 30 nF
effective internal inductance: L_i = 100 µH

ly module type 6DR4004-6J:

For the use at temperature classes T4 – T1 only

Power output ..... in type of protection "Intrinsic Safety" EEx ia IIC / EEx ib IIC

(terminals 61 and 62)

safely galvanically separated from the alarm option and the basic device

only for the connection to certified intrinsically safe circuits

Maximum values:
U_i = 30 V
I_i = 100 mA
P_i = 1 W

effective internal capacitance: C_i = 11 nF
The effective internal inductance is negligibly small.

Card module for an external Sensor (potentiometer) type C73451-A430-L8:

External potentiometer ..... only for the connection to certified intrinsically safe circuits

galvanically connected to the basic device

Maximum values:
U_o = 5 V
I_o = 6 mA
P_o = 30 mW

effective outer capacitance: C_o = 1 µF
effective outer inductance: L_o = 1 mH

Note for the erection: The plastic housing of the basic device type 6DR5**0-*****-**** has to be protected against the occurrence of hazardous electrostatic charging.

(16) Test documents are listed in the test report No.: 00Px26800.

(17) Special conditions for safe use

none

(18) Essential Health and Safety Requirements

no additional ones

Translation

1. SUPPLEMENT to

EC TYPE-EXAMINATION CERTIFICATE No. TÜV 00 ATEX 1654

of the company: Siemens AG, Automatisierungs- und Antriebstechnik (A&D)
Östliche Rheinbrückenstraße 50
D-76187 Karlsruhe

In the future, the Electropneumatic positioner SIPART PS2 type 6DR5***-*****-**** inclusive the modules listed below may also be manufactured according to the test documents listed in the test report.

Options:	Alarm module	6DR4004-6A
	SIA module	6DR4004-6G
	Iy module	6DR4004-6J
	Card module for an external sensor (potentiometer)	C73451-A430-L8

The amendments concern the internal design of several modules and of the basic device and some electrical data are changed, as well.

All other data apply unchanged for this 1. Supplement. These data are repeated in the following.

The use of the positioner fitted with the option Iy module is only permissible for the temperature classes T4 – T1.

The permissible ambient temperature range in dependence of the temperature class has to be taken from the following table:

temperature class	permissible ambient temperature range
T6	-30°C to 50°C
T5	-30°C to 65°C
T4 - T1	-30°C to 80°C

Electrical Data

Basic device:

2-wire circuit without Hart

for 6DR50**-*****-****
Motherboard –L250
Power supply / control current 4-20 mA ..... in type of protection "Intrinsic Safety" EEx ia IIC
series connection EEx ib IIC
(terminals 6+ and 7/8)
only for the connection to certified intrinsically safe circuits

Maximum values:
U_i = 30 V
I_i = 100 mA
P_i = 1 W

effective internal capacitance: C_i = 22 nF
effective internal inductance: L_i = 0,12 mH

2-wire circuit with Hart

for 6DR52**-*****-****
Motherboard –L200
Power supply / control current 4-20 mA ..... in type of protection "Intrinsic Safety" EEx ia IIC
series connection EEx ib IIC
(terminals 3+ and 7/8,
Jumper between terminals 4/5 – 6) only for the connection to certified intrinsically safe circuits

Maximum values:
U_i = 30 V
I_i = 100 mA
P_i = 1 W

effective internal capacitance: C_i = 7 nF
effective internal inductance: L_i = 0,24 mH

3/4-wire circuit with Hart

for 6DR52**-*****-****
Plug-in module –L200
Power supply 18-30 V ..... in type of protection "Intrinsic Safety" EEx ia IIC
(terminals 2+ and 4/5) EEx ib IIC
and
Control current 4-20 mA only for the connection to certified intrinsically safe circuits
(terminals 6+ and 7/8)

Maximum values:
Power supply and the control current circuit are galvanically separated or have a common base point
(terminals 4/5 - 7/8)
U_i = 30 V
I_i = 100 mA
P_i = 1 W

effective internal capacitance: C_i = 22 nF
effective internal inductance: L_i = 0,12 mH

Binary input ..... jumpered or connected to a switch contact
Plug-in module –L200 and –L250
(terminal 9 and 10)

1. Supplement to EC Type-Examination Certificate No. TÜV 00 ATEX 1654

Options

Alarm module type 6DR4004-6A:

Binary outputs ..... in type of protection "Intrinsic Safety" EEx ia IIC
EEx ib IIC
(terminals 31 and 32,
terminals 41 and 42,
terminals 51 and 52) only for the connection to certified intrinsically safe circuits

Maximum values:
U_i = 15,5 V
safely galvanically separated from each other. I_i = 25 mA
P_i = 64 mW

effective internal capacitance: C_i = 5,2 nF
The effective internal inductance is negligibly small.

Binary input ..... in type of protection "Intrinsic Safety" EEx ia IIC
(terminals 11 and 12, EEx ib IIC
terminals 21 and 22 (jumper)) only for the connection to certified intrinsically safe circuits

safely galvanically separated from the binary outputs and the basic device, but can also activated via a jumper (then no galvanic separation from the basic device)
Maximum value:
U_i = 25,2 V

The effective internal inductance and capacitance is negligibly small.

SIA module type 6DR4004-6G:

Binary output (fault signalling) ..... in type of protection "Intrinsic Safety" EEx ia IIC
EEx ib IIC
(terminals 31 and 32) only for the connection to certified intrinsically safe circuits

Maximum values:
U_i = 15,5 V
I_i = 25 mA
P_i = 64 mW

effective internal capacitance: C_i = 5,2 nF
The effective internal inductance is negligibly small.

Binary output (slot initiator) ..... in type of protection "Intrinsic Safety" EEx ia IIC
EEx ib IIC

(terminals 41 and 42, terminals 51 and 52)

only for the connection to certified intrinsically safe circuits

Maximum values per circuit:
U_i = 15,5 V
I_i = 25 mA
P_i = 64 mW

effective internal capacitance: C_i = 41 nF
effective internal inductance: L_i = 100 µH

ly module type 6DR4004-6J:

For the use at temperature classes T4 – T1 only

Power output ..... in type of protection "Intrinsic Safety" EEx ia IIC
EEx ib IIC

(terminals 61 and 62)

only for the connection to certified intrinsically safe circuits

safely galvanically separated from the alarm option and the basic device

Maximum values:
U_i = 30 V
I_i = 100 mA
P_i = 1 W

effective internal capacitance: C_i = 11 nF
The effective internal inductance is negligibly small.

Card module for an external Sensor (potentiometer) type C73451-A430-L8:

External potentiometer ..... in type of protection "Intrinsic Safety" EEx ia IIC
EEx ib IIC

galvanically connected to the basic device

Maximum values:
U_o = 5 V
I_o = 100 mA
P_o = 33 mW

effective outer capacitance: C_o = 1 µF
effective outer inductance: L_o = 1 mH

Note for the erection: The plastic housing of the basic device type 6DR5**0-******-**** has to be protected against the occurrence of hazardous electrostatic charging.

(16) Test documents are listed in the test report N° 01 PX 14510.

(17) Special conditions for safe use

none

(18) Essential Health and Safety Requirements

no additional ones

TÜV Hannover/Sachsen-Anhalt e.V.
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Hannover, 2001-07-27

Head of the
Certification Body

Translation

2. SUPPLEMENT to

EC TYPE-EXAMINATION CERTIFICATE No. TÜV 00 ATEX 1654

of the company: Siemens AG, Automatisierungs- und Antriebstechnik (A&D)
Östliche Rheinbrückenstraße 50
D-76187 Karlsruhe

The electropneumatic positioners of the series SIPART PS2 have been extended by a basic device provided with profibus connection. The type designation of this basic device is 6DR55**-*****-**** and it may also operated with the options listed below.

Options:	Alarm module	6DR4004-6A
	SIA module	6DR4004-6G
	Iy module	6DR4004-6J
	Card module for an external sensor (potentiometer)	C73451-A430-L8

Additional some little modifications were realised at the enclosure, the Alarm module and the Iy module.

All other data apply unchanged for this 2. Supplement.

Electrical Data

Basic device:

Profibus device

for 6DR55**-*****-****
motherboard –A5E00095037

Bus circuit ..... in type of protection "Intrinsic Safety" EEx ia IIC
(terminals 6 and 7) resp. EEx ib IIC
only for the connection to certified intrinsically safe circuits
Maximum values:

	FISCO power supply gas group IIC or IIB	Barrier gasgroup IIC or IIB
U_i	17,5 V	24 V
I_i	380 mA	200 mA
P_i	5,32 W	1,2 W

The effective internal capacitance is negligibly small.
effective internal inductance L_i = 8 mH

Binary input..... jumpered or connected to a switch contact
(terminal 9 and 10)

galvanially connected
with the bus circuit

Safe Input
(terminals 81 and 82)

galvanically separated from the bus circuit and the binary input

in type of protection "Intrinsic Safety" EEx ia IIC
resp. EEx ib IIC
only for the connection to certified intrinsically safe circuits
Maximum values:
U_i = 30 V
I_i = 100 mA
P_i = 1 W
The effective internal capacitance and inductance is negligibly small.

Option

Card module for an external Sensor (potentiometer) type C73451-A430-L8:

External potentiometer..... In type of protection "Intrinsic Safety" EEx ia IIC
resp. EEx ib IIC

galvanically connected to
the basic device

Maximum values when supplied by the above mentioned basic device (profi bus version):
U_o = 5 V
I_o = 75 mA, static
I_o = 160 mA, temporary
P_o = 120 mW

effective outer capacitance: C_o = 1 µF
effective outer inductance: L_o = 1 mH

Test documents are listed in the test report N° 02 YEX 142409a.

TÜV Hannover/Sachsenanhalt e.V.
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Hannover, 2002-04-12

Head of the
Certification Body

Translation

3. SUPPLEMENT to

EC TYPE-EXAMINATION CERTIFICATE No. TÜV 00 ATEX 1654

of the company: Siemens AG, Automatisierungs- und Antriebstechnik (A&D)
Östliche Rheinbrückenstraße 50
D-76187 Karlsruhe

In the future, the electropneumatic positioners of the series SIPART PS2 may also be manufactured according to the test documents listed in the test report.

The amendments concern the internal design.

The electrical data and all other data apply unchanged for this supplement.

Test documents are listed in the test report N° 03 YEX 550376.

TÜV NORD CERT GmbH & Co. KG
TÜV CERT-Certification Body
Am TÜV 1
D-30519 Hannover
Tel.: 0511 986-1470
Fax: 0511 986-2555

Hannover, 2003-02-25

Head of the
Certification Body

8.3 Conformity Statement TÜV 01 ATEX 1786 X

Translation

(1) **STATEMENT OF CONFORMITY**

(2) Equipment or Protective System intended for use in potentially explosive atmospheres - **Directive 94/9/EC**

(3) Test certificate number

TÜV 01 ATEX 1786 X

(4) Equipment: Electropneumatic Positioner SIPART PS2 type 6DR5axb-xGxxx-xxxx (a= 0, 2, 5; b = 0, 1) with options

(5) Manufacturer: Siemens AG, Automatisierungs- und Antriebstechnik (A&D)

(6) Address: Östliche Rheinbrückenstraße 50
D-76187 Karlsruhe

(7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) The TÜV NORD CERT GmbH & Co. KG, TÜV CERT Certification Body N° 0032, notified body in accordance with Article 9 of the Council Directive 94/9/EC of March 23, 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in confidential report N° 02 YEX 134074.

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

EN 50021:1999

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

(11) This statement of conformity certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

(12) The marking of the equipment or protective system shall include the following:

II 3 G EEx nA L [L] IIC T6

TÜV Hannover/Sachsen-Anhalt e.V.
TÜV CERT Certification Body
Am TÜV 1
D-30519 Hannover

Head of the
Certification Body

TÜV NORD CERT

Hanover, 2002-06-04

TÜV CERT A4 07.01 10.000 Lö

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(13) **SCHEDULE**

(14) STATEMENT OF CONFORMITY N° TÜV 01 ATEX 1786 X

(15) Description of equipment

The Electropneumatic Positioner SIPART PS2 Typ 6DR5axb-xGxxx-xxxx (a= 0, 2, 5; b = 0, 1) is used for the control of valve resp. of flap positions of pneumatic actuators.

The Electropneumatic Positioner SIPART PS2 is a non-sparking apparatus that internally generates its energy limited circuits. The positioner meets the requirements of category 3.

Options:	Alarm module	6DR4004-6A
	SIA module	6DR4004-6G
	Iy module	6DR4004-6J
	Card module for an external sensor (potentiometer)	C73451-A430-L8

The use of the positioner fitted with the option Iy module is only permissible for the temperature classes T4 – T1.

The permissible ambient temperature range in dependence of the temperature class has to be taken from the following table:

temperature class	permissible ambient temperature range
T6	-30°C to 50°C
T5	-30°C to 65°C
T4 - T1	-30°C to 80°C

Electrical Data

Basic device:

2-wire circuit without Hart
for 6DR50xx-xxxxx-xxxx
motherboard –L250

Power supply /
control current 4-20 mA ..... for the connection to circuits with the following
series connection maximum values in normal operation:
(terminals 6+ and 7/8)

$U_n \leq 30$ V
$I_n \leq 100$ mA

2-wire circuit with Hart
for 6DR52xx-xxxxx-xxxx
motherboard –L200

Power supply /
control current 4-20 mA ..... for the connection to circuits with the following
series connection maximum values in normal operation:
(terminals 3+ and 7/8, $U_n \leq 30$ V
Jumper between terminals 4/5 – 6) $I_n \leq 100$ mA

3/4-wire circuit with Hart
for 6DR52xx-xxxxx-xxxx
motherboard –L200

Power supply 18-30 V ..... for the connection to circuits with the following
(terminals 2+ and 4/5) maximum values in normal operation:
and
control current 4-20 mA $U_n \leq 30$ V
(terminals 6+ and 7/8) $I_n \leq 100$ mA

Profibus device
for 6DR55xx-xxxxx-xxxx
motherboard –A5E00095037

Bus circuit ..... for the connection to circuits with the following
(terminals 6 and 7) maximum values in normal operation:

$U_n \leq 32$ V

Safe input ..... for the connection to circuits with the following
(terminals 81 and 82) maximum values in normal operation:

$U_n \leq 30$ V
$I_n \leq 100$ mA

All Basic devices
Binary input..... jumpered or connected to a switch contact
(terminal 9 and 10)

Options

Alarm module type 6DR4004-6A:

Binary outputs ..... for the connection to circuits with the following maximum values in normal operation:
(3 outputs,
terminals 31 and 32,
terminals 41 and 42,
terminals 51 and 52)

$U_n \leq 15{,}5$ V

Binary input ..... for the connection to circuits with the following maximum values in normal operation:
(terminals 11 and 12,
terminals 21 and 22 (jumper))

$U_n \leq 25{,}2$ V

SIA module type 6DR4004-6G:

Binary output (fault signalling) ..... for the connection to circuits with the following maximum values in normal operation:
(terminals 31 and 32)

$U_n \leq 15{,}5$ V
$P_n \leq 64$ mW

Binary output (slot initiator) ..... for the connection to circuits with the following maximum values in normal operation:
(2 outputs,
terminals 41 and 42,
terminals 51 and 52)

$U_n \leq 15{,}5$ V
$P_n \leq 64$ mW

ly module type 6DR4004-6J:

For the use at temperature classes T4 – T1 only

Power output ..... for the connection to circuits with the following maximum values in normal operation:
(terminals 61 and 62)

$U_n \leq 30$ V
$I_n \leq 100$ mA
$P_n \leq 1$ W

Card module for an external Sensor (potentiometer) type C73451-A430-L8:

External potentiometer ..... in protection concept "Energy Limitation" nL IIC

galvanically connected to the basic device

Maximum values:
$U_o = 5$ V
$I_o = 75$ mA
$P_o = 120$ mW

effective outer capacitance: $C_o = 1$ µF
effective outer inductance: $L_o = 1$ mH

(16) Test documents are listed in the test report N° 02 YEX 134074.

(17) Special conditions for safe use

The electropneumatic positioners SIPART PS2 have to be erected in such a way that the plastic window is only exposed to a low level of hazard of mechanical damage.

The connecting and disconnecting of the not energy limited circuits to the terminals and the plugging resp. unplugging of the internal plug- and socket connectors under voltage, as well, is only permitted during installation, for maintenance or for repair purposes.
Note: The temporal coincidence of explosion hazardous atmosphere and installation, maintenance resp. repair purposes is assessed as unlikely in zone 2.

(18) Essential Health and Safety Requirements

no additional ones

8.4 FM – Approval Report

FM Approvals
1151 Boston-Providence Turnpike
P.O. Box 9102 Norwood, MA 02062 USA
T: 781 762 4300 F: 781 762 9375 www.fmglobal.com

CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

6DR5abc-defgh-0IAJ. Electropneumatic Positioner SIPART PS2.
IS / I / 1 / ABCD / T6 Ta=50°C; T5 Ta=65°C; T4 Ta=80°C - A5E00065622D; Entity; Type 4X
I / 1 / AEx ib IIC / T6 Ta=50°C; T5 Ta=65°C; T4 Ta=80°C - A5E00065622D; Entity; Type 4X
NI / I / 2 / ABCD / T6 Ta=50°C; T5 Ta=65°C; T4 Ta=80°C; Type 4X
NI / I / 2 / IIC / T6 Ta=50°C; T5 Ta=65°C; T4 Ta=80°C; Type 4X

Entity/Nonincendive Field Wiring Parameters:

Assembly	Terminals	Vmax (V)	Imax (mA)	Pmax (W)	Ci (nF)	Li (µH)
Basic Board	6 & 7/8	30	100	1.0	22	120
Basic Board	3 & 7/8	30	100	1.0	7	240
Basic Board	2 & 4/5; 6 & 7/8	30	100	1.0	30	120
Alarm Module	31 & 32; 41 & 42; 51 & 52	15.5	25	0.064	5.7	2.6
Alarm Module	11 & 12	25.2	155	3.9	0	0
SIA Module	31 & 32	15.5	20	0.064	5.7	2.6
SIA Module	41 & 42; 51 & 52	15.5	20	0.064	71	100
Ly Module	61 & 62	30	100	1.0	11	4.2
Assembly	**Terminals**	**Uo (V)**	**Io (mA)**	**Po (mW)**	**Co (µF)**	**Lo (mH)**
Card Module	1-4	5	100	33	1.0	1.0

a = Communications option 0 or 2.
b = Function 1 or 2.
c = Housing material 0 or 1.
d = Friction clutch option 0 or 1.
e = Explosion protection option E or G.
f = Electric/Pneumatic thread option G, N, M or P.
g = Limit switch option 0, 1 or 2.

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FM Approvals HLC 8/02

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Page 1 of 3

h = Module option 0, 1, 2 or 3.
i = Language of documentation A or B.
j = Mounted pressure gauge block option 0, 1, 2, 3 or 4.

6DR55ab-cdefg-0hAI. Electropneumatic Positioner SIPART PS2.
IS / I / 1 / ABCD / T6 Ta=50°C; T5 Ta=65°C; T4 Ta=80°C - A5E00065622AA; Entity; FISCO;
I / 1 / AEx ib IIC / T6 Ta=50°C; T5 Ta=65°C; T4 Ta=80°C - A5E00065622AA; Entity; FISCO;
NI / I / 2 / ABCD / T6 Ta=50°C; T5 Ta=65°C; T4 Ta=80°C;
NI / I / 2 / IIC / T6 Ta=50°C; T5 Ta=65°C; T4 Ta=80°C; Type 4X

Entity/Nonincendive Field Wiring Parameters:

Assembly	Terminals	Vmax (V)	Imax (mA)	Pi (W)	Ci (nF)	Li (µH)
Basic Board	6 & 7	24	200	1.2	0	8.0
Basic Board	81 & 82	30	100	1.0	0	0
Alarm Module	31 & 32; 41 & 42; 51 & 52	15.5	25	0.064	5.7	2.6
Alarm Module	11 & 12	25.2	155	3.9	0	0
SIA Module	31 & 32	15.5	20	0.064	5.7	2.6
SIA Module	41 & 42; 51 & 52	15.5	20	0.064	71	100
Ly Module	61 & 62	30	100	1.0	11	4.2
Assembly	**Terminals**	**Uo (V)**	**Io (mA)**	**Po (mW)**	**Co (µF)**	**Lo (mH)**
Card Module	1-4	5	112	120	1.0	1.0

FISCO Parameters:

Assembly	Terminals	Vmax (V)	Imax (mA)	Pi (W)	Ci (nF)	Li (µH)
Basic Board	6 & 7	17.5	380	5.32	0	8.0

a = Function 1 or 2.
b = Housing material 0 or 1.
c = Friction clutch option 0 or 1.
d = Explosion protection option E or G.
e = Electric/Pneumatic thread option G, N, M or P.
f = Limit switch option 0, 1 or 2.
g = Module option 0, 1, 2 or 3.
h = Language of documentation A or B.
i = Mounted pressure gauge block option 0, 1, 2, 3 or 4.

Equipment Ratings:

Intrinsically Safe for use in Class I, Division 1, Groups A, B, C and D and Class I, Zone 1, Group IIC in accordance with Entity/FISCO requirements and the applicable Control Drawing; Nonincendive for use in Class I, Division 2, Groups A, B, C and D and Class I, Zone 2, Group IIC in accordance with Nonincendive Field Wiring Requirements and the applicable Control Drawing; Indoor and outdoor, Type 4X Hazardous (Classified) Locations

Approved for:

Siemens AG - A&D PI TQ 2
Oestliche Rheinbrueckenstr. 50
Postfact 21 12 62
D-76181 Karlsruhe, Germany

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FM Approvals

This certifies that the equipment described has been found to comply with the following FM Approval Standards and other documents:

Class 3600	1998
Class 3610	1999
Class 3611	1999
Class 3810	1989
NEMA 250	1991

Original Project ID: 3010184 FM Approval Granted: August 29, 2001

Subsequent Revision Reports / Date FM Approval Amended

Report Number	Date	Report Number	Date
3013969	October 16, 2002		
3016206	February 28, 2003		

FM Global Technologies LLC

David W. Styrcula
Technical Team Manager

3/4/03
Date

An FM Global Enterprise

FM Approvals HLC 8/02

3010184
Page 3 of 3

8.5 CSA certificate

CSA INTERNATIONAL

Certificate of Compliance

Certificate: 1233781 **Master Contract:** 185289 (LR 104225)

Project: 1416186 **Date Issued:** March 21, 2003

Issued to: **SIEMENS AG**
Dept. A & D PI TG2
Oestl Rheinbrueckenstr 50
76187 Karlsruhe
GERMANY
Attention: Mr. Eugen Schnitzius

The products listed below are eligible to bear the CSA Mark shown

Issued by: E. Foo, C.E.T.

Authorized by: Nick Allano
Operations Manager

PRODUCTS

CLASS 2258 04 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe Entity - For Hazardous Locations

Class I, Zone 1: Ex ib IIC:
Class I, Division 1, Groups A, B, C, D:

- Electropneumatic Positioner Model SIPART PS2, types 6DR50xx-xExxx and 6DR52xx-xExxx. Intrinsically Safe with Entity Parameters, Temperature Codes and maximum Ambient Temperatures per Installation Dwg A5E00065622D. Enclosure Type 4X.

- Electropneumatic Positioner Model SIPART PS2, type 6DR55xx-xExxx. Intrinsically Safe with Entity/FISCO Parameters, Temperature Codes and maximum Ambient Temperatures per Installation Dwg A5E00065622AA. Enclosure Type 4X.

DQD 507WD 2002/04/30

CSA INTERNATIONAL

Certificate: 1233781 **Master Contract:** 185289 (LR 104225)
Project: 1416186 **Date:** March 21, 2003

CLASS 2258 02 - PROCESS CONTROL EQUIPMENT - For Hazardous Locations

Class I, Zone 2, Group IIC:
Class I, Division 2, Groups A, B, C, D:

- Electropneumatic Positioner Model SIPART PS2, types 6DR50xx-xExxx and 6DR52xx-xExxx. Wiring connection via conduits when Certified barriers not used. Temperature Codes and maximum Ambient Temperatures per Installation Dwg A5E00065622D. Enclosure Type 4X.

- Electropneumatic Positioner Model SIPART PS2, type 6DR55xx-xExxx. Wiring connection via conduits when Entity/FISCO Parameters not used. Temperature Codes and maximum Ambient Temperatures per Installation Dwg A5E00065622AA. Enclosure Type 4X.

APPLICABLE REQUIREMENTS

CAN/CSA-E79-0-95	-	Electrical Apparatus for Explosive Gas Atmospheres--Part 0: General Requirements
CAN/CSA-E79-11-95	-	Electrical Apparatus for Explosive Gas Atmospheres--Part 11: Intrinsic Safety "i"
CSA Std C22.2 No.142-M1987	-	Process Control Equipment
CAN/CSA-C22.2 No.157-92	-	Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations
CSA Std C22.2 No. 213-M1987	-	Non-Incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations
CAN/CSA-C22.2 No. 94-M91	-	Special Purpose Enclosures

MARKINGS

- Submittor's name, tradename and/or CSA Master Contract 185289;
- Model designations;
- CSA Monogram;
- Serial number or date code;
- Hazardous Locations designations;
- Special purpose enclosure designation, TYPE 4X;
- Caution markings, "WARNING: Handle Instrument to avoid electrostatic charge" appear in a visible manner on polymeric enclosure and "Install per Control Dwg A5E00065622D or A5E00065622AA".

DQD 507WD 2002/04/30

CSA INTERNATIONAL

Supplement to Certificate of Compliance

Certificate: 1233781 **Master Contract:** 185289 (LR 104225)

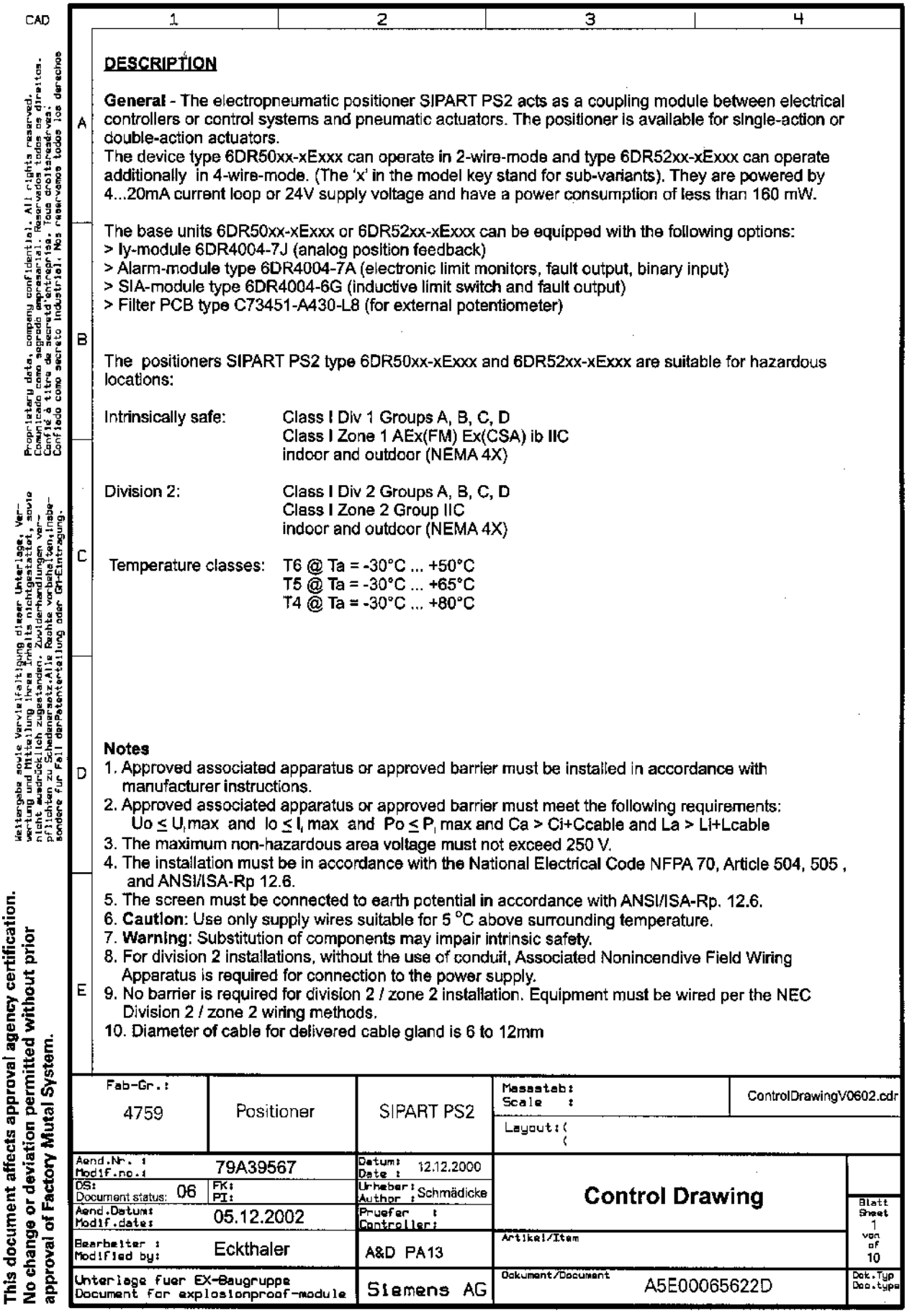
The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
1416186	Mar. 21, 2003	Update to cover report revision per FM Revision Report J.I. 3016206
1375342	Nov. 26, 2002	Update to include similar model 6DR55xx-xExx
1233781	Dec. 18, 2001	Original Certification

DQD 507WD 2002/04/30

8.6 Control Drawing A5E00065622D



CAD | 1 | 2 | 3 | 4

DESCRIPTION

General - The electropneumatic positioner SIPART PS2 acts as a coupling module between electrical controllers or control systems and pneumatic actuators. The positioner is available for single-action or double-action actuators.
The device type 6DR50xx-xExxx can operate in 2-wire-mode and type 6DR52xx-xExxx can operate additionally in 4-wire-mode. (The 'x' in the model key stand for sub-variants). They are powered by 4...20mA current loop or 24V supply voltage and have a power consumption of less than 160 mW.

The base units 6DR50xx-xExxx or 6DR52xx-xExxx can be equipped with the following options:
> ly-module 6DR4004-7J (analog position feedback)
> Alarm-module type 6DR4004-7A (electronic limit monitors, fault output, binary input)
> SIA-module type 6DR4004-6G (inductive limit switch and fault output)
> Filter PCB type C73451-A430-L8 (for external potentiometer)

The positioners SIPART PS2 type 6DR50xx-xExxx and 6DR52xx-xExxx are suitable for hazardous locations:

Intrinsically safe:	Class I Div 1 Groups A, B, C, D Class I Zone 1 AEx(FM) Ex(CSA) ib IIC indoor and outdoor (NEMA 4X)
Division 2:	Class I Div 2 Groups A, B, C, D Class I Zone 2 Group IIC indoor and outdoor (NEMA 4X)
Temperature classes:	T6 @ Ta = -30°C ... +50°C T5 @ Ta = -30°C ... +65°C T4 @ Ta = -30°C ... +80°C

Notes
1. Approved associated apparatus or approved barrier must be installed in accordance with manufacturer instructions.
2. Approved associated apparatus or approved barrier must meet the following requirements: $U_o \leq U_i$ max and $I_o \leq I_i$ max and $P_o \leq P_i$ max and Ca > Ci+Ccable and La > Li+Lcable
3. The maximum non-hazardous area voltage must not exceed 250 V.
4. The installation must be in accordance with the National Electrical Code NFPA 70, Article 504, 505 , and ANSI/ISA-Rp 12.6.
5. The screen must be connected to earth potential in accordance with ANSI/ISA-Rp. 12.6.
6. **Caution**: Use only supply wires suitable for 5 °C above surrounding temperature.
7. **Warning**: Substitution of components may impair intrinsic safety.
8. For division 2 installations, without the use of conduit, Associated Nonincendive Field Wiring Apparatus is required for connection to the power supply.
9. No barrier is required for division 2 / zone 2 installation. Equipment must be wired per the NEC Division 2 / zone 2 wiring methods.
10. Diameter of cable for delivered cable gland is 6 to 12mm

Fab-Gr.: 4759	Positioner	SIPART PS2	Massstab: Scale :	ControlDrawingV0602.cdr
			Layout:	
Aend.Nr. : Modif.no.:	79A39567	Datum: Date : 12.12.2000		
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Aend.Datum: Modif.date:	05.12.2002	Pruefer : Controller:		
Bearbeiter : Modified by:	Eckthaler	A&D PA13	Artikel/Item	
Unterlage fuer EX-Baugruppe Document for explosionproof-module		Siemens AG	Dokument/Document A5E00065622D	Dok.Typ Doc.type

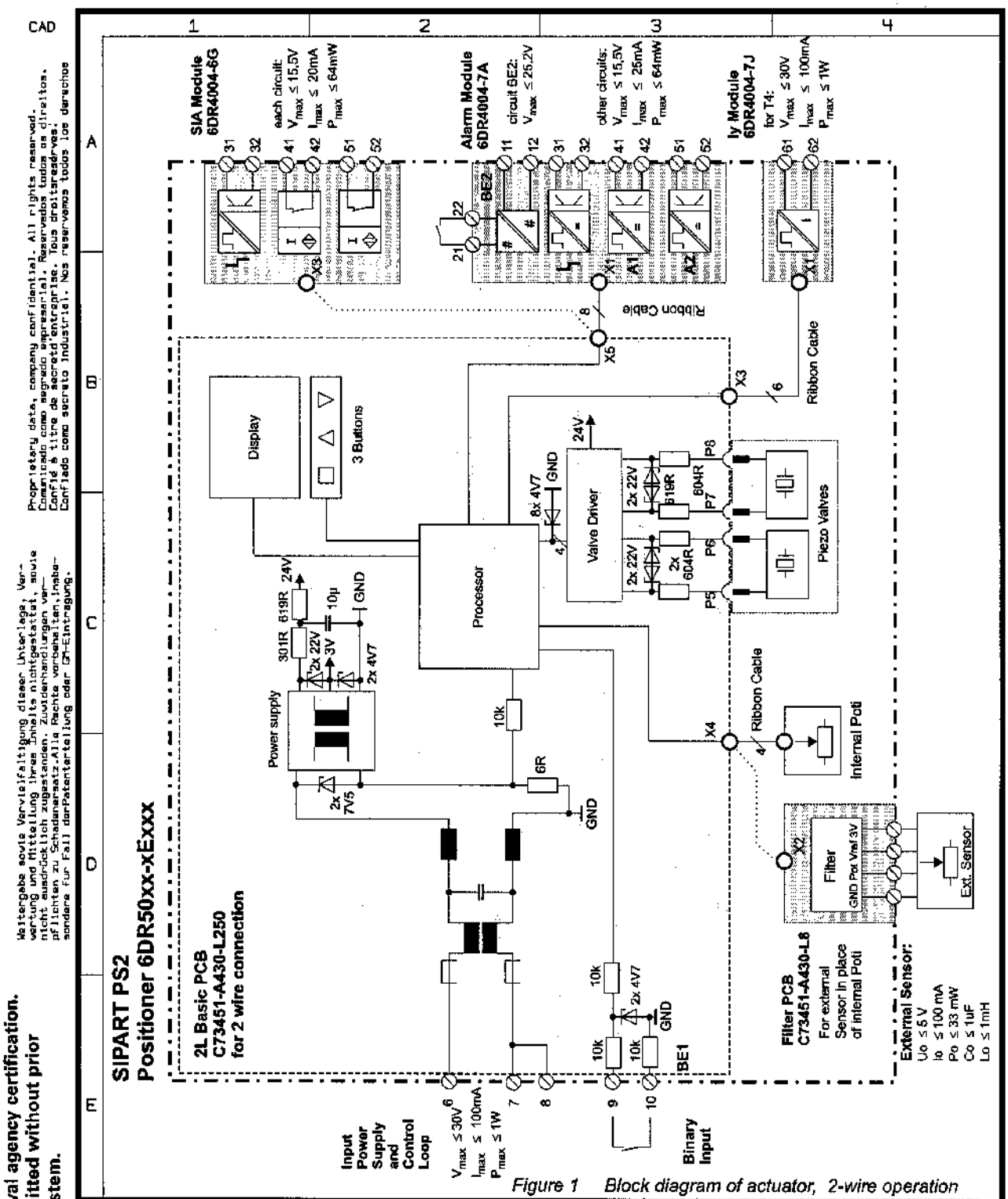

Figure 1 Block diagram of actuator, 2-wire operation

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			Layout:	
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DS: Document status: 06	FK: PI:	Urheber: Author : Schmädicke	Control Drawing	Blatt Sheet 2 von of 10
Aend.Datum: Modif.date:	05.12.2002	Pruefer : Controller:		
Bearbeiter : Modified by:	Eckthaler	A&D PA13	Artikel/Item	
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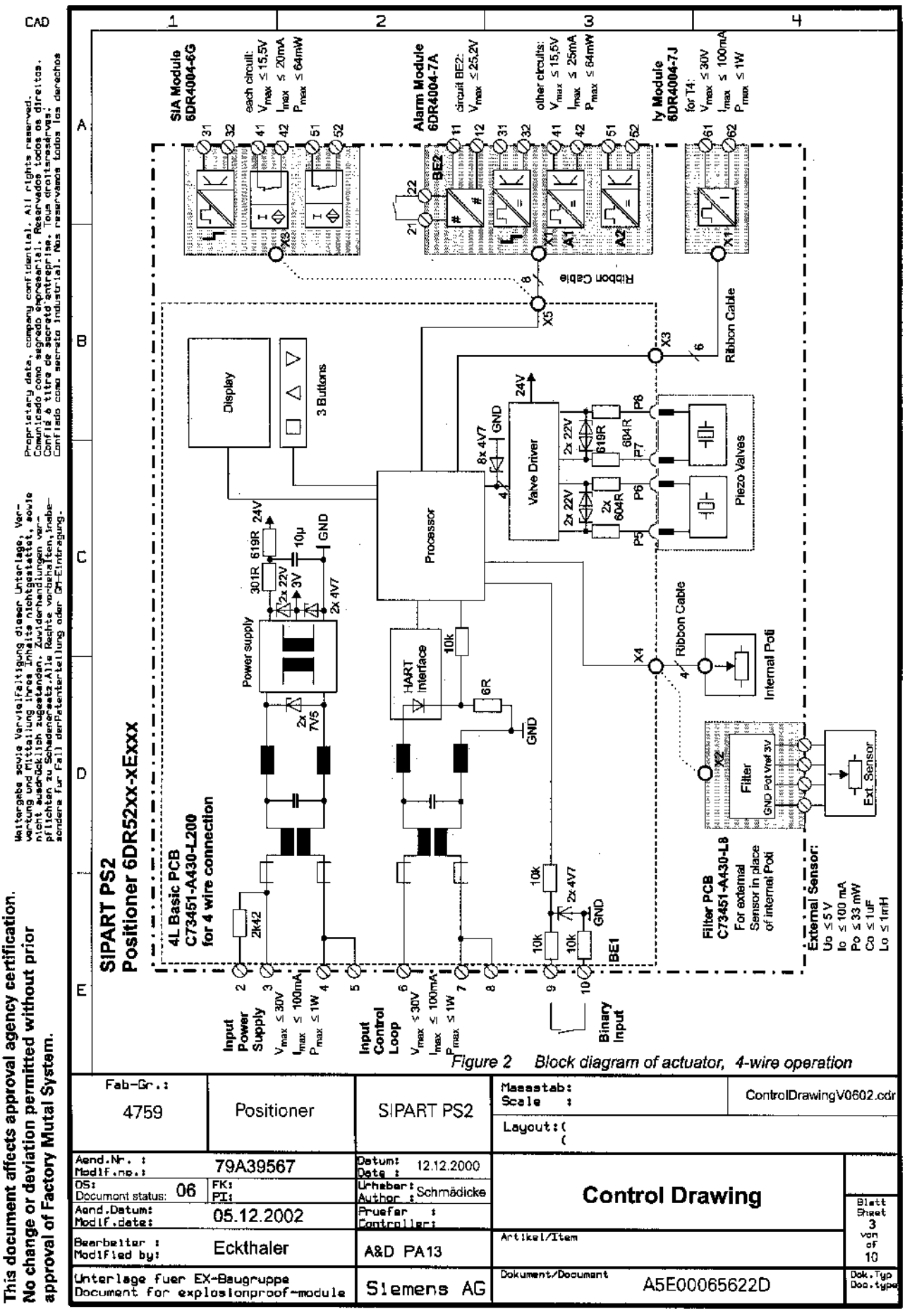

Figure 2 Block diagram of actuator, 4-wire operation

CAD | 1 | 2 | 3 | 4

Base Unit (or basic instrument) type 6DR50xx-xExxx
Notice
Only certified, intrinsically safe electric circuits must be connected as auxiliary power, control and

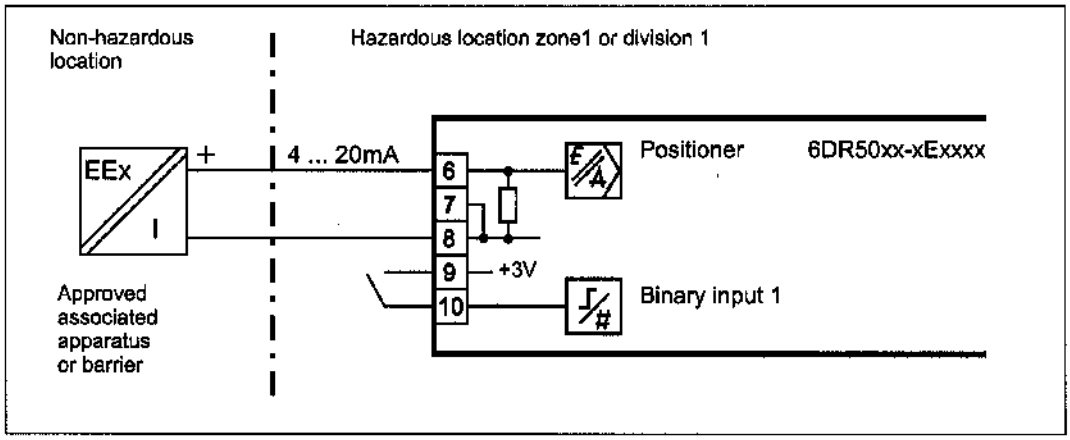

Figure 3 2-wire connection basic instrument 6DR50xx-xExxx (auxiliary power from the signal current)

(2-wire system)
With type of protection "Intrinsically-safe", only for connection to certified intrinsically-safe circuits with the following maximum values: U i = 30 V
I i = 100 mA
P i = 1 W
Effective internal capacitance: C i = 22 nF
Effective internal inductance: L i = 0.12 mH

Binary input circuit (terminals 9 and 10) connected by jumper, or connection to switching contact.

For Division 2 application: V max = 30 V
I max = 100 mA

Binary input circuit: (terminals 9 and 10) Maximum output: V_i = 5V, I_i = 0,25 mA

- **NonIncendive field wiring:** Only connection with approved barrier. Parameters are the same as intrinsically save.

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Bearbeiter : Modified by:	Eckthaler	A&D PA13	Artikel/Item	
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Base Unit (or basic instrument) type 6DR52xx-xExxx
Notice
Only certified, intrinsically safe electric circuits must be connected as auxiliary power, control and

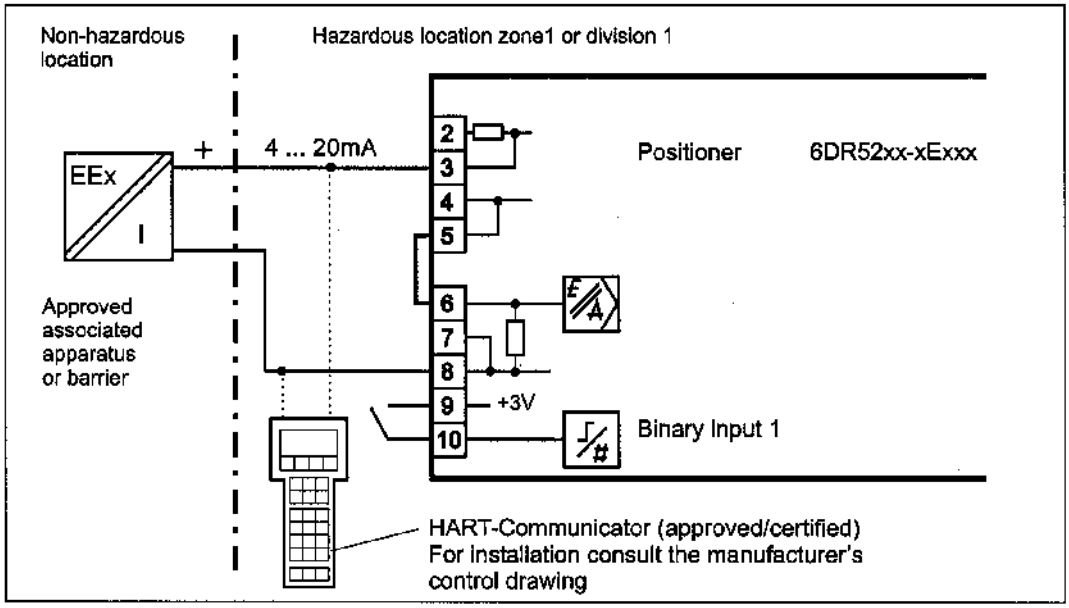

Figure 5 2-wire connection basic instrument 6DR52xx-xExxx (auxiliary power from the signal current)

2-wire system
Power supply and control circuits connected in series, 4 to 20 mA (terminals 3 and 7/8; jumpers across terminals 4/5-6)
With type of protection "Intrinsically-safe", only for connection to certified intrinsically-safe circuits with the following maximum values: U_i =30 V
I_i = 100 mA
P_i =1 W
Effective internal capacitance: C_i = 7 nF
Effective internal inductance: L_i = 0.24 mH

Binary input circuit (terminals 9 and 10) connected by jumper, or connection to switching contact.

For Division 2 application: V_{max} = 30 V
I_{max} = 100 mA

Binary input circuit: (terminals 9 and 10) Maximum output: V_t = 5V, I_t = 0,25 mA

- **Nonincendive field wiring:** Only connection with approved barrier. Parameters are the same as intrinsically save.

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			Layout:	
Aend.Nr. : Modif.no.:	79A39567		Datum: Date : 12.12.2000	
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Aend.Datum: Modif.date:	05.12.2002		Pruefer : Controller:	Blatt Sheet 5 von of 10
Bearbeiter : Modified by:	Eckthaler	A&D PA13	Artikel/Item	
Unterlage fuer EX-Baugruppe Document for explosionproof-module		Siemens AG	Dokument/Document A5E00065622D	Dok.Typ Doc.type

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Base Unit (or basic instrument) type 6DR52xx-xExxx

Notice

Only certified, intrinsically safe electric circuits must be connected as auxillary power, control and

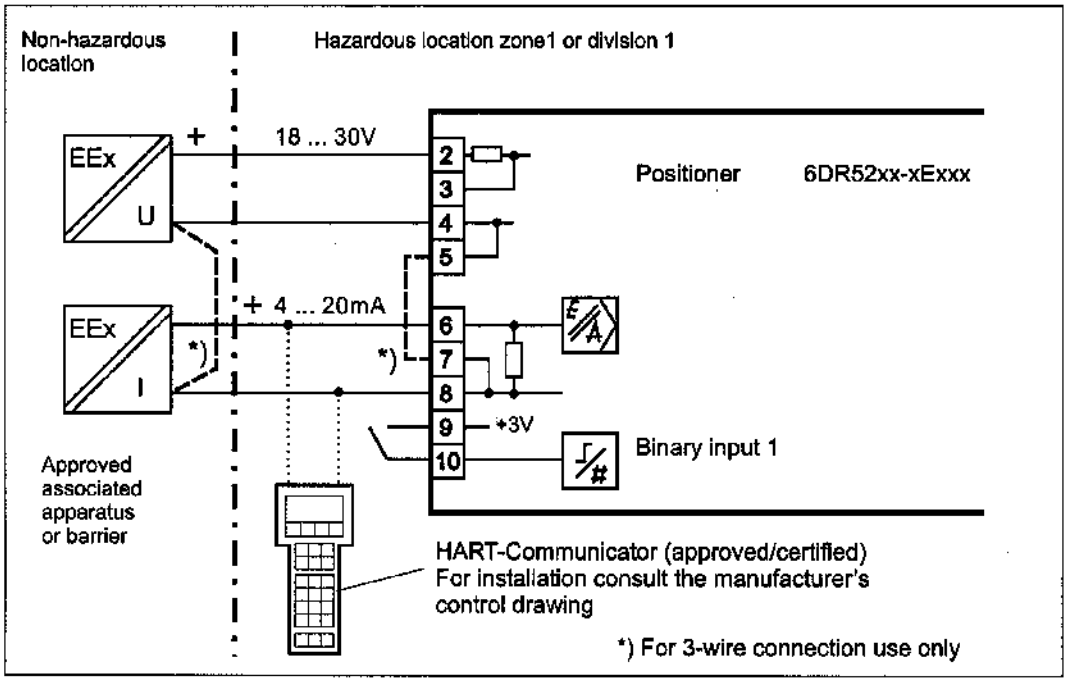

Figure 6 3/4-wire connection basic instrument 6DR52xx-xExxx

3/4-wire system
Power supply and control circuits electrically isolated or with common root (terminals 4/5 - 7/8).
Power supply 18 to 30 V (terminals 2 and 4/5).
Control current 4 to 20 mA (terminals 6 and 7/8).
With type of protection "Intrinsically-safe", only for connection to certified intrinsically-safe circuits with the following maximum values: U i =30 V
I i = 100 mA
P i = 1 W
Effective internal capacitance: C i = 30 nF
Effective internal inductance: L i = 0.12 mH
(per circuit).

Binary input circuit (terminals 9 and 10) connected by jumper, or connection to switching contact.

For Division 2 application: V max = 30 V
I max = 100 mA

Binary Input circuit: (terminals 9 and 10) Maximum output: V_i = 5V, I_i = 0,25 mA

- **Nonincendive field wiring:** Only connection with approved barrier. Parameters are the same as intrinsically save.

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Aend.Nr. : Modif.no.:	79A39567	Datum: 12.12.2000 Date :		
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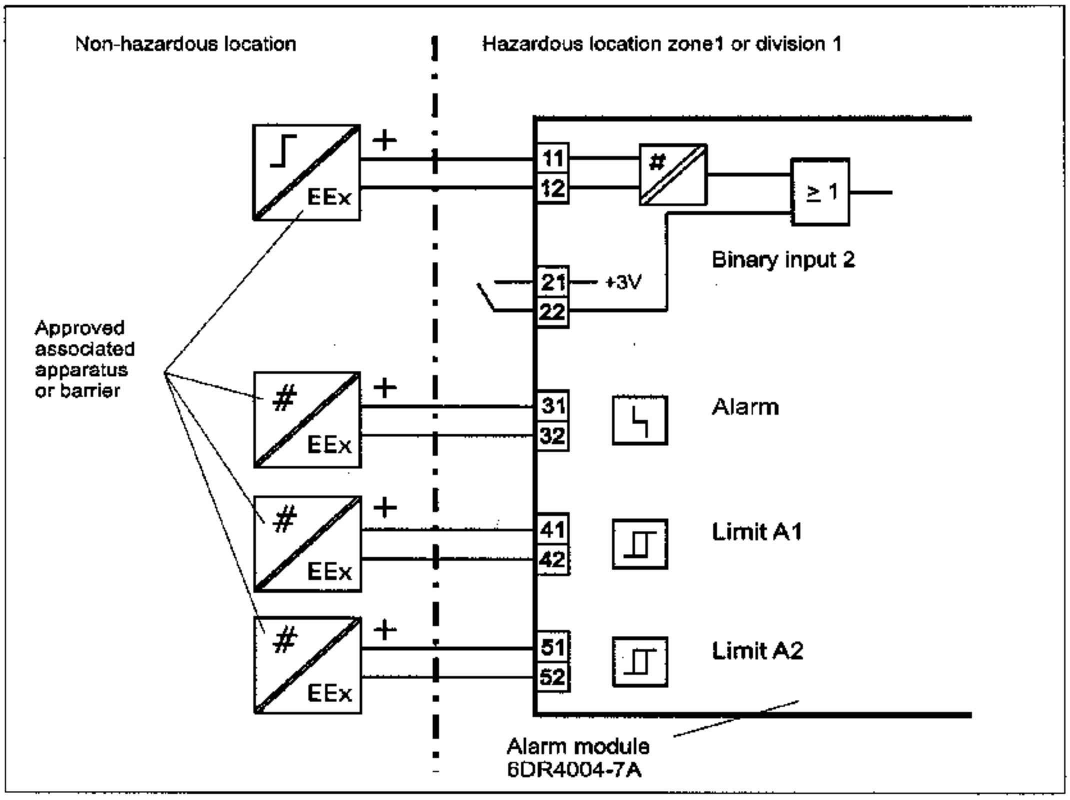

Figure 7 Alarm module 6DR4004-7A

Binary output circuits: (terminScals 31/32, 41/42, 51/52)

With type of protection "Intrinsically-safe", only for connection to certified intrinsically-safe circuits with the following maximum values:
U i =15,5V, I i = 25mA, P i = 64mW,
Effective internal capacitance: C i = 5,7 nF
Effective internal inductance: L i = 2,6µH

Binary input circuit

With type of protection "Intrinsically-safe", only for connection to certified intrinsically-safe circuits with the following maximum values:
U i = 25,2V, I i = 155mA, P i = 3,9W,
Effective internal capacitance: C i = 0
Effective internal inductance: L i = 0

for Division 2 application:

V max = 15,5 V

Binary output circuits:
(31/32,41/42,51/52)
Binary input circuit

V max = 25,2 V

Binary input circuit

connected by jumper, or connection to switching contact.
Maximum output: V_t = 5V, I_t = 0,01 mA

- **Nonincendive field wiring:** Only connection with approved barrier. Parameters are the same as intrinsically save.

Fab-Gr.: 4759	Positioner	SIPART PS2	Massstab: Scale:	ControlDrawingV0602.cdr
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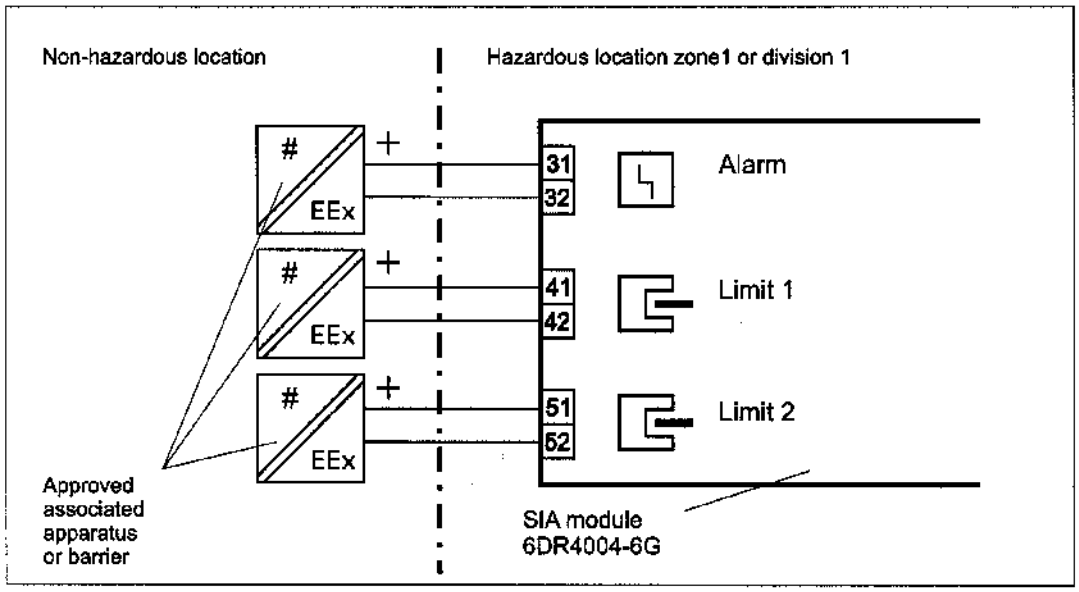

Figure 8 SIA module 6DR4004-6G

Binary output circuit	With type of protection "Intrinsically-safe", only for connection to certified intrinsically-safe circuits with the following maximum values: U i = 15,5V I i = 20mA, P i = 64mW Effective internal capacitance: C i = 5.7 nF Effective internal inductance: L i = 2,6µH
Binary output circuits (terminals 41 and 42	With type of protection "Intrinsically-safe", only for connection to certified intrinsically-safe circuits with the following maximum values: U i = 15,5V i i = 20mA, P i = 64mW Effective internal capacitance: C i = 71 nF Effective internal inductance: L i = 100µH

for Division 2 application:

Binary output circuit	V max = 15,5V P i = 64mW
Binary output circuits (terminals 41 and 42	V max = 15,5V P i = 64mW

- **Nonincendive field wiring:** Only connection with approved barrier. Parameters are the same as intrinsically save.

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			Layout:	
Aend.Nr. : Modif.no.:	79A39567	Datum: Date : 12.12.2000		
DS: Document status: 06	FK: PI:	Urheber: Author : Schmädicke	**Control Drawing**	Blatt Sheet 8 von of 10
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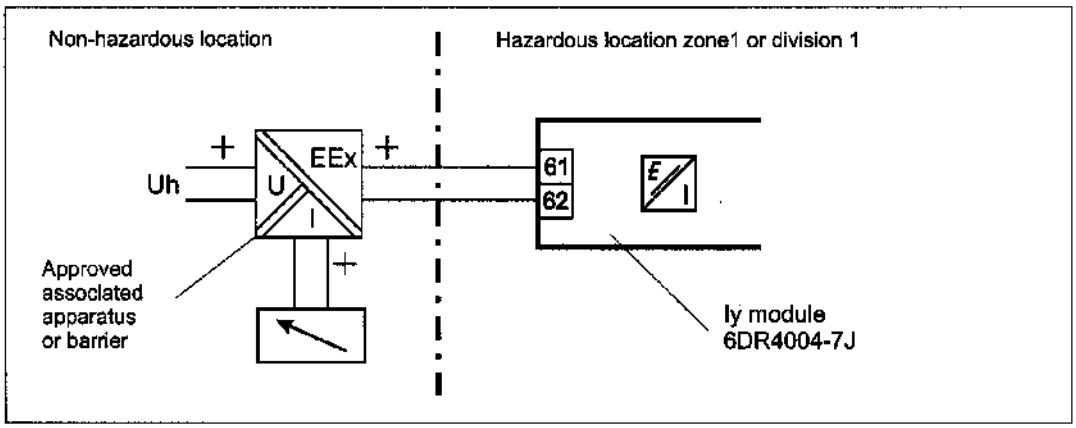

Figure 9 ly module 6DR4004-7J

Output circuit, 4 to 20 mA

With type of protection "Intrinsically-safe", only for connection to certified intrinsically-safe circuits with the following maximum values:

Temperature class T4:	U i = 30 V I i = 100 mA P i = 1 W
Effective internal capacitance:	C i = 11 nF
Effective internal inductance:	L i = 4,2µH

For Division 2 application:

Temperature class T4:	V max = 30 V I max = 100 mA

- **Nonincendive field wiring:** Nonincendive Parameters are the same As intrinsically save.

Fab-Gr.: 4759	Positioner	SIPART PS2	Massstab: Scale :	ControlDrawingV0602.cdr
			Layout:	
Aend.Nr. : Modif.no.:	79A39567	Datum: Date : 12.12.2000		
DS: Document status: 06	FK: PI:	Urheber: Author : Schmädicke	**Control Drawing**	Blatt Sheet 9 von of 10
Aend.Datum: Modif.date:	05.12.2002	Pruefer : Controller:		
Bearbeiter : Modified by:	Eckthaler	A&D PA13	Artikel/Item	
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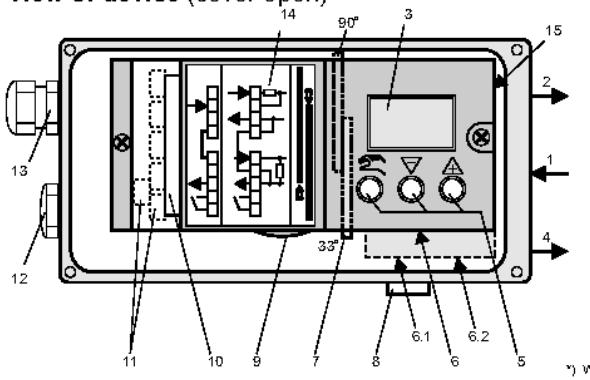
SIEMENS SIPART PS2 6DR5xxx-xx

Leaflet "Operation - a concise overview"

(Order No. A5E00074611-02)

ATTENTION: See Operating Instructions for safety instructions !

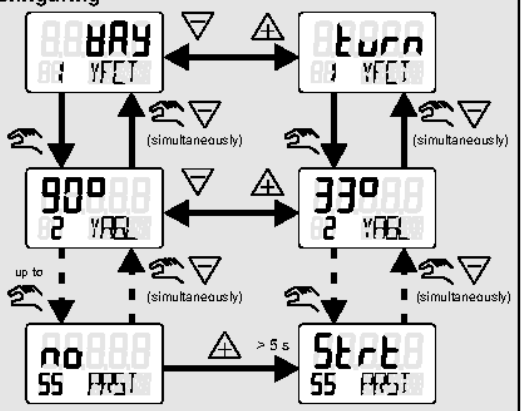
View of device (cover open)



1 Input supply air PZ
2 Output Positioning pressure Y1
3 Display
4 Output Positioning pressure Y2 *)
5 Input keys
6 Restrictor Y1
6.1 Restrictor Y1 *)
6.2 Restrictor Y2 *)
7 Transmission ratio selector
8 Sound absorber
9 Adjustment wheel for slipping clutch
10 Terminals for basic unit
11 Terminals for option modules
12 Plug
13 Cable gland
14 Label (on module cover)
15 Purging air selector

*) With double-action actuators

Configuring



Changing the input level

Mode	Display
P-manual mode Change position using ▽△	Potentiometer setting [%] Not initialized (can be reached using preset) > 5 s PROT
Configure Change parameter name using Change value using ▽△	Parameter value Parameter number Parameter name > 5 s > 5 s > 5 s
Manual mode Change position using ▽△	Position [%] Error code Mode and Setpoint [%] > 5 s > 5 s > 5 s
Automatic	Position [%] Error code Mode and Setpoint [%] 1x 1x
Diagnosis	Diagnosis value + ▽ + △ > 2 s > 2 s > 2 s Diagnosis number Diagnosis name

Automatic initial start-up (starting with factory setting)

Step	Meaning
1.) Part-turn actuator	turn 1 YFCT — 90° 2 YAGL
Linear actuator	WAY 1 YFCT — 33° 2 YAGL — Strt 3 YWAY
2.) Strt 4 INITA	△ Press for > 5 s Remaining steps carried out automatically
3.) P 32.4 57 RUN 1	Direction of action is determined
4.) P 92.4 52 RUN 2	Checking of travel and adjustment of zero and stroke (from stop to stop)
5.) P 82.4 53 RUN 3	Determination and Display of positioning time down (dxx.x), up (uxx.x) Stop with ▽ Pressing the △ key initiates **leakage measurement**
6.) P 32.4 57 RUN 4	Determination of minimum increment length
7.) P 52.4 53 RUN 5	Optimization of transient response
8.) 32.4 FINSH	Initialization terminated successfully (travel in mm for linear actuators) (angle of rotation for part-turn actuators) Continue using:

(The gray values in the top display line are examples)

Possible messages

Display	Meaning	Measures
P 32.4 RUN 1 P 32.4 ERROR	**Actuator does not move**	Acknowledge message using Check restrictor (6) and open if necessary Drive actuator to working range using ▽△ Restart initialization
P 88.4 dOU	**Down tolerance band violated**	Change gearing (7) Continue using △ **or** adjust sliding clutch up to display P 6.4 dOU **then only** Continue using ▽
SEt MIDDL	**Once the slipping clutch has been adjusted**	Linear actuator: Set pick-up lever into vertical position using ▽△ Continue using
P 98.3 UP	**Up tolerance band violated**	Acknowledge message using Set the next highest travel value on the lever Restart initialization Additionally possible with rotary actuators: Adjust using ▽△ up to display: P 92.8 90.95 Continue using
P 98.8 U-d	**Up/down span violated**	Acknowledge message using Set the next lowest travel value on the lever Restart initialization
U 1.3 NOZZL d 1.8 NOZZL	**Actuator does not move Positioning time is possible to adjust**	Adjust positioning time using restrictor(s) Continue using △ or ▽

See Manual for further messages

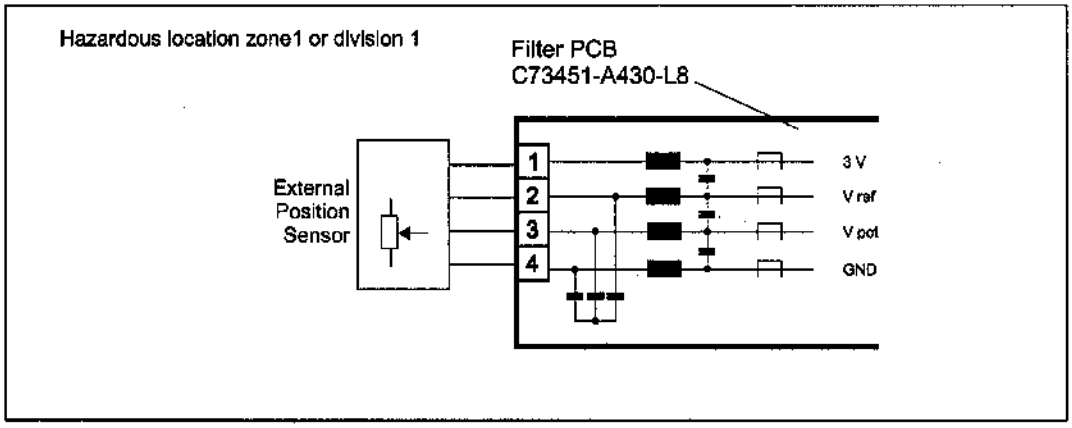


Figure 10 Filter PCB C73451-A430-L8

terminals 1 to 4: for the connection of a passive potentiometer or of a position sensor.

Maximum values: $U_o \leq 5V$, $I_o \leq 100mA$, $P_o \leq 33mW$
max. allowed capacitance: $C_a \leq 1\mu F$
max. allowed inductance: $L_a \leq 1mH$

for Division 2 application:

Maximum values: $U_{oc} \leq 5V$, $I_{sc} \leq 100mA$, $P_o \leq 33mW$
max. allowed capacitance: $C_a \leq 1\mu F$
max. allowed inductance: $L_a \leq 1mH$

Fab-Gr.: 4759	Positioner	SIPART PS2	Maßstab: Scale :	ControlDrawingV0602.cdr
			Layout:	
Aend.Nr. : Modif.no.:	79A39567	Datum: Date : 12.12.2000		
DS: Document status: 06	FK: PI:	Urheber: Author : Schmädicke	Control Drawing	Blatt Sheet 10 von of 10
Aend.Datum: Modif.date:	05.12.2002	Pruefer : Controller:		
Bearbeiter : Modified by:	Eckthaler	A&D PA13	Artikel/Item	
Unterlage fuer EX-Baugruppe Document for explosionproof-module		Siemens AG	Dokument/Document A5E00065622D	Dok.Typ Doc.type

Parameter name	Display	Function	Parameter values	Unit	Factory setting	Customer setting
1.YFCT	1 YFCT	Type of actuator	turn (part-turn actuator) WAY (linear actuator) LWAY (linear actuator without sine correction) ncSt (part-turn actuator with NCS) -ncSt (ditto, inv. direction of action) ncSL (linear actuator with NCS)		WAY	
2.YAGL [1]	2 YAGL	Rated angle of rotation of feedback **Set transmission ratio selector (7) appropriately (see view of device)**	90° 33°	Degrees	33°	
2) 3.YWAY	3 YWAY	Stroke range (optional setting) When used, the value must correspond with the set of the leverage ratio on the actuator Driver pin must be set to the value of the actuator travel or, if this value is not scaled, to the next larger scale value.	OFF 5 | 10 | 15 | 20 (short lever 33°) 25 | 30 | 35 (short lever 90°) 40 | 50 | 60 | 70 | 90 | 110 | 130 (long lever 90°)	mm	OFF	
4.INITA	4 INITA	Initialization (automatically)	noini | no / ###.# | Strt		no	
5.INITM	5 INITM	Initialization (manually)	noini | no / ###.# | Strt		no	
6.SCUR	6 SCUR	Current range of setpoint 0 to 20 mA 4 to 20 mA	0 MA 4 MA		4 MA	
7.SDIR	7 SDIR	Setpoint direction rising falling	riSE FALL		riSE	
8.SPRA	8 SPRA	Setpoint for start of split range	0,0 to 100,0	%	0,0	
9.SPRE	9 SPRE	Setpoint for end of split range	0,0 to 100,0	%	100	
10.TSUP	10 TSUP	Setpoint ramp up	Auto 0 to 400	s	0	
11.TSDO	11 TSDO	Setpoint ramp down	0 to 400	s	0	
12.SFCT	12 SFCT	Setpoint function Linear Equal-percentage 1:25, 1:33, 1:50 Inverse equal-percentage 1:25, 1:33, 1:50 Freely adjustable	Lin 1- 25 1 - 33 1 - 50 n1 - 25 n1 - 33 n1 - 50 FrEE		Lin	
13.SL0 14.SL1 usw. bis 3) 32.SL19 33.SL20	13 SL0 (example)	Setpoint turning point at 0% 5% to 95% 100%	0,0 to 100,0	%	0.0 5.0 etc. to 95.0 100.0	
34.DEBA	34 DEBA	Dead zone of controller	Auto 0,1 to 10,0	%	Auto	
35.YA	35 YA	Start of manipulated variable limiting	0,0 to 100,0	%	0,0	
36.YE	36 YE	End of manipulated variable limiting	0,0 to 100,0	%	100,0	
37.YNRM	37 YNRM	Standardization of manipulated variable To mech. travel To flow	MPOS FLOW		MPOS	
38.YDIR	38 YDIR	Direction of manipulated variable for display Rising Falling	riSE FALL		riSE	
39.YCLS	39 YCLS	Tight closing with manipulated variable Without Top only Bottom only Top and bottom	no uP do uP do		no	
40.YCDO	40 YCDO	Value for tight closing, bottom	0,0 to 100,0	%	0,5	
41.YCUP	41 YCUP	Value for tight closing, top	0,0 to 100,0	%	99,5	
42.BIN1 [4]	42 BIN1	Function of BI 1 None Only message Block configuring Block configuring and manual Drive valve to position up Drive valve to position down Block movement	**OFF** NO contact: on, bLoc1, bLoc2, uP, doWn, StoP NC contact: -on, -uP, -doWn, -StoP		OFF	
43.BIN2 [4]	43 BIN2	Function of BI 2 None Only message Drive valve to position up Drive valve to position down Block movement	OFF NO contact: on, uP, doWn, StoP NC contact: -on, -uP, -doWn, -StoP		OFF	
44.AFCT [5]	44 AFCT	Alarm function Without A1=min. A2=max A1=min. A2=min A1=max. A2=max	OFF normal: n, nA / n, n, / nA nA inverted: n̄, n̄A / n̄, n̄, / n̄A n̄A		OFF	
45.A1	45 A1	Response threshold of alarm 1	0,0 to 100,0	%	10,0	
46.A2	46 A2	Response threshold of alarm 2	0,0 to 100,0	%	90,0	
47.ϟFCT [5]	47 ϟFCT	Function of alarm output on fault Fault + not automatic Fault + not automatic + BI ("+" means logical OR operation)	normal: ϟ / ϟnA / ϟnAb inverted: -ϟ / -ϟnA / -ϟnAb		ϟ	
48.ϟTIM	48 ϟTIM	Monitoring time for fault message "control deviation"	Auto 0 to 100	s	Auto	
49.ϟLIM	49 ϟLIM	Response threshold for fault message "control deviation"	Auto 0,0 to 100,0	%	Auto	
50.ϟSTRK	50 ϟSTRK	Limit for stroke integral	OFF 1 to 1.00E9		OFF	
51.ϟDCHG	51 ϟDCHG	Limit for direction change	OFF 1 to 1.00E9		OFF	
52.ϟZERO	52 ϟZERO	Limit for end stop monitoring, bottom	OFF 0,0 to 100,0	%	OFF	
53.ϟOPEN	53 ϟOPEN	Limit for end stop monitoring, top	OFF 0,0 to 100,0	%	OFF	
54.ϟDEBA	54 ϟDEBA	Limit for dead zone monitoring	OFF 0,0 to 10,0	%	OFF	
55.PRST	55 PRST	Preset (factory setting) "no" nothing activated "Strt" start of factory setting after pressing key for 5 s "oCAY" display following successful factory setting CAUTION: preset results in "NO INIT"	no Strt oCAY			

1) If "turn" is selected, you cannot set 33°

2) Parameter does not appear if 1.YFCT=turn has been selected

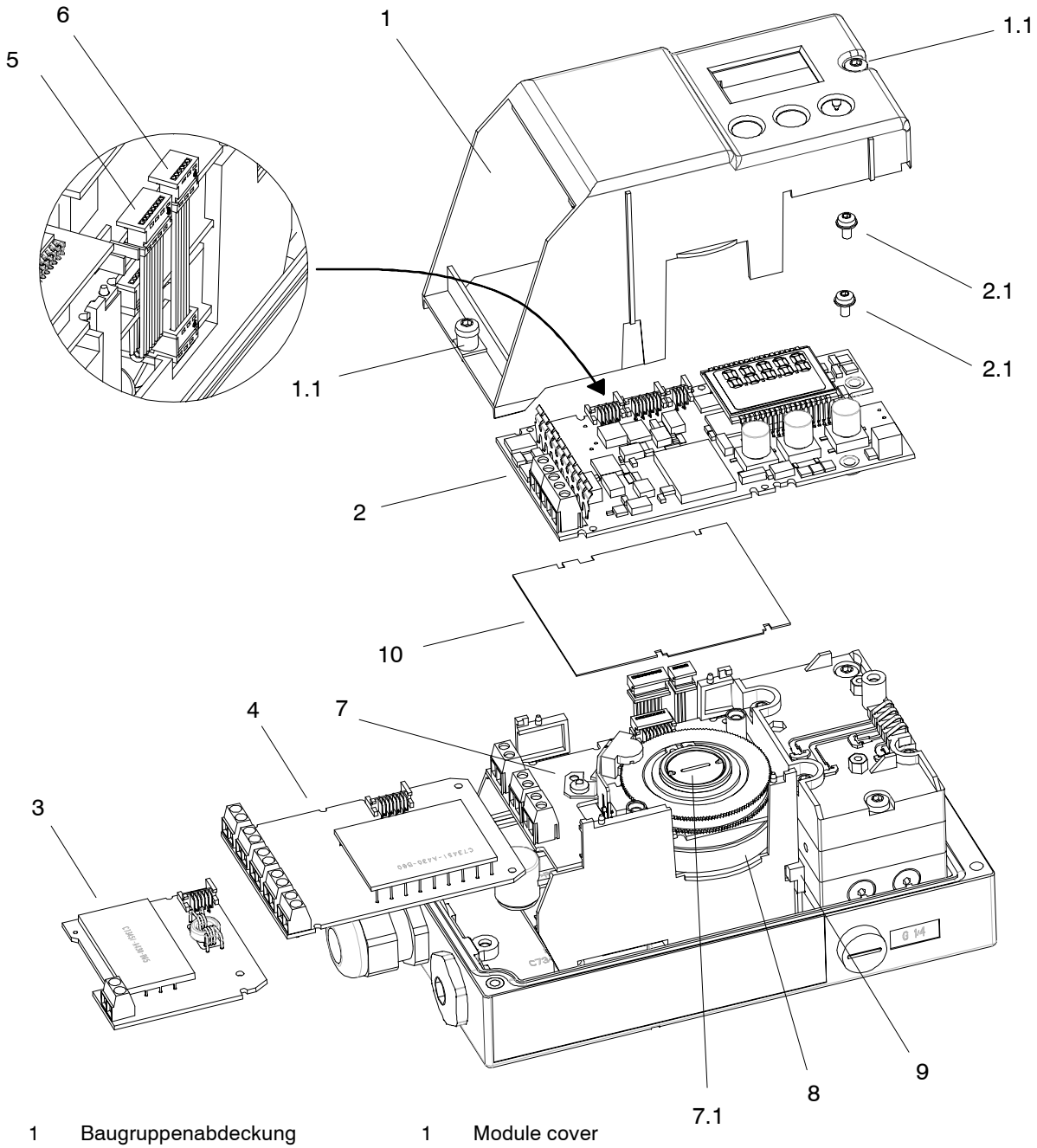
3) Turning points only appear wih selection 12.SFCT = FrEE

4) NC contact means: action with opened switch or Low level
NO contact means: action with closed switch or High level

5) Normal means: High level without fault
Inverted means: Low level without fault

Anhang
Appendix

Einbau der Optionen
Installation of options



1	Baugruppenabdeckung	1	Module cover
1.1	Befestigungsschrauben	1.1	Fixing screws
2	Grundelektronik	2	Basic electronics
2.1	Befestigungsschrauben	2.1	Fixing screws
3	J_y–Modul mit Bandkabel (6)	3	J_y module with ribbon cable (6)
4	Alarm–Modul mit Bandkabel (5)	4	Alarm module with ribbon cable (5)
7	SIA-Modul	7	SIA module
7.1	Spezialschraube	7.1	Special screw
8	Verstellrad Rutschkupplung	8	Adjustment wheel for slipping clutch
9	Getriebeübersetzungsumschalter	9	Transmission ratio selector
10	Isolierabdeckung	10	Insulation cover

Bild 9 Einbau der Optionsmodule

Fig. 9 Installation of options

Elektrischer Anschluss Grundgerät
Electric connection of basic device

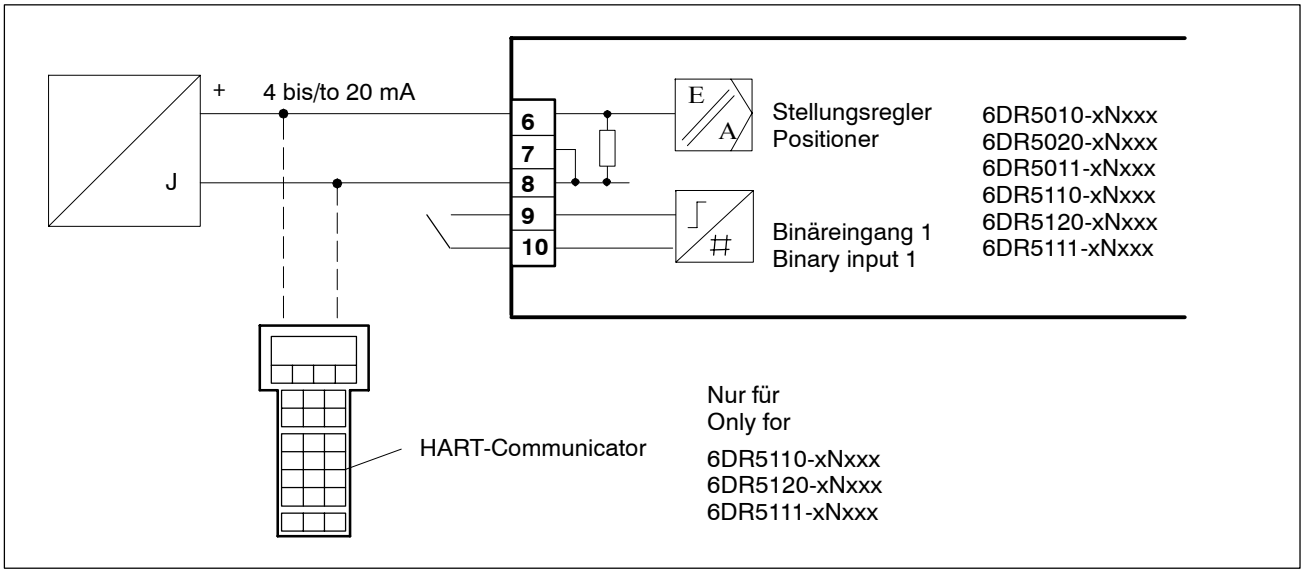


Bild 10 2-Leiteranschluss **nicht** Ex

Fig. 10 2-wire connection **not** explosion-proof

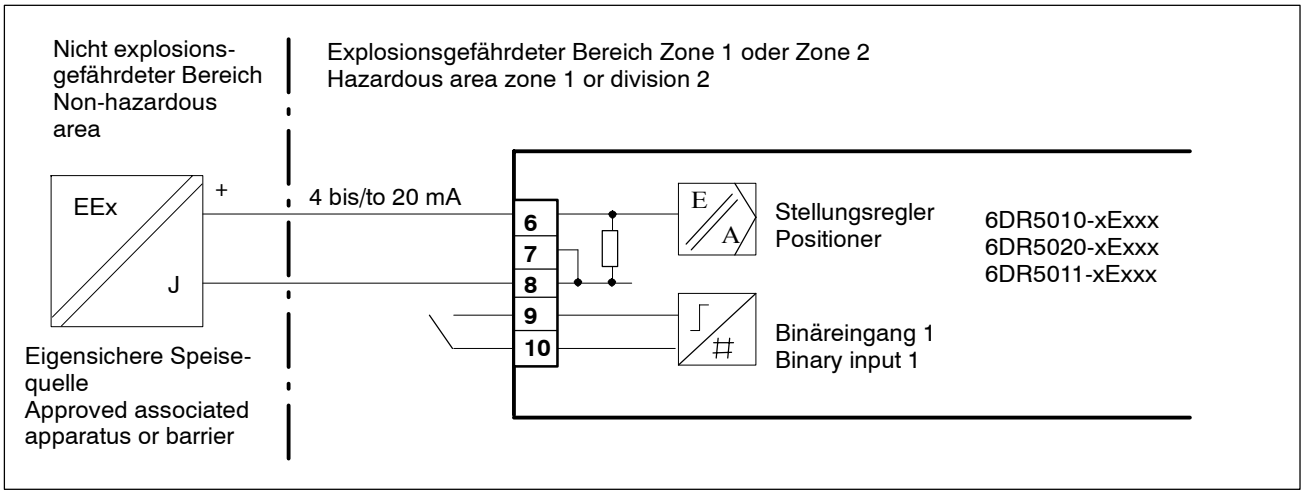


Bild 11 2-Leiteranschluss, EEx i, EEx n

Fig. 11 2-wire connection, EEx i, EEx n

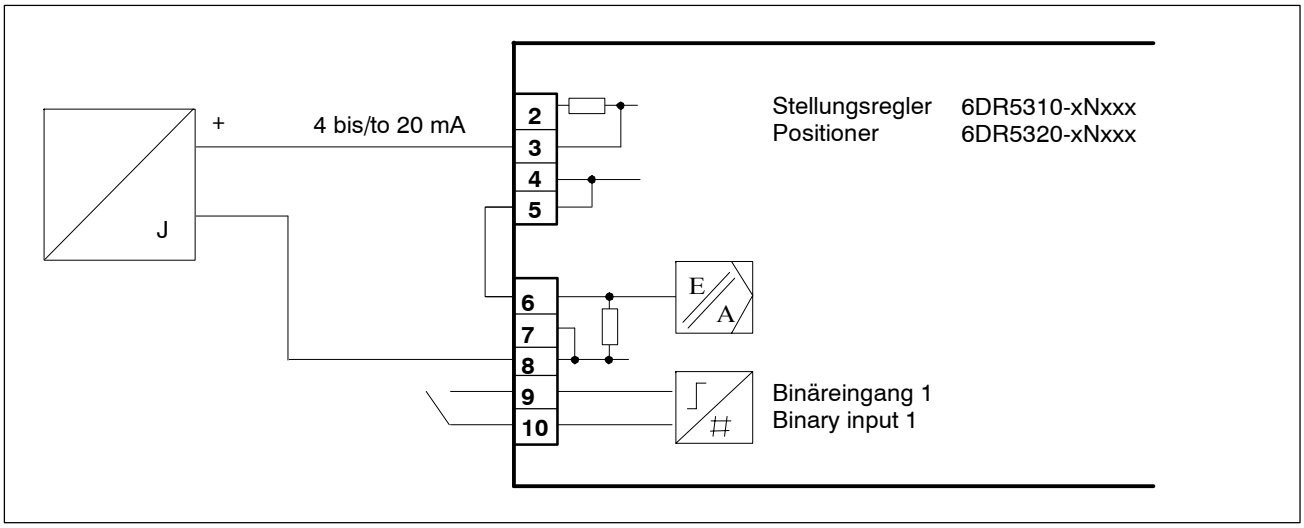


Bild 12 2-Leiteranschluss, nicht Ex

Fig. 12 2-wire connection, not explosion-proof

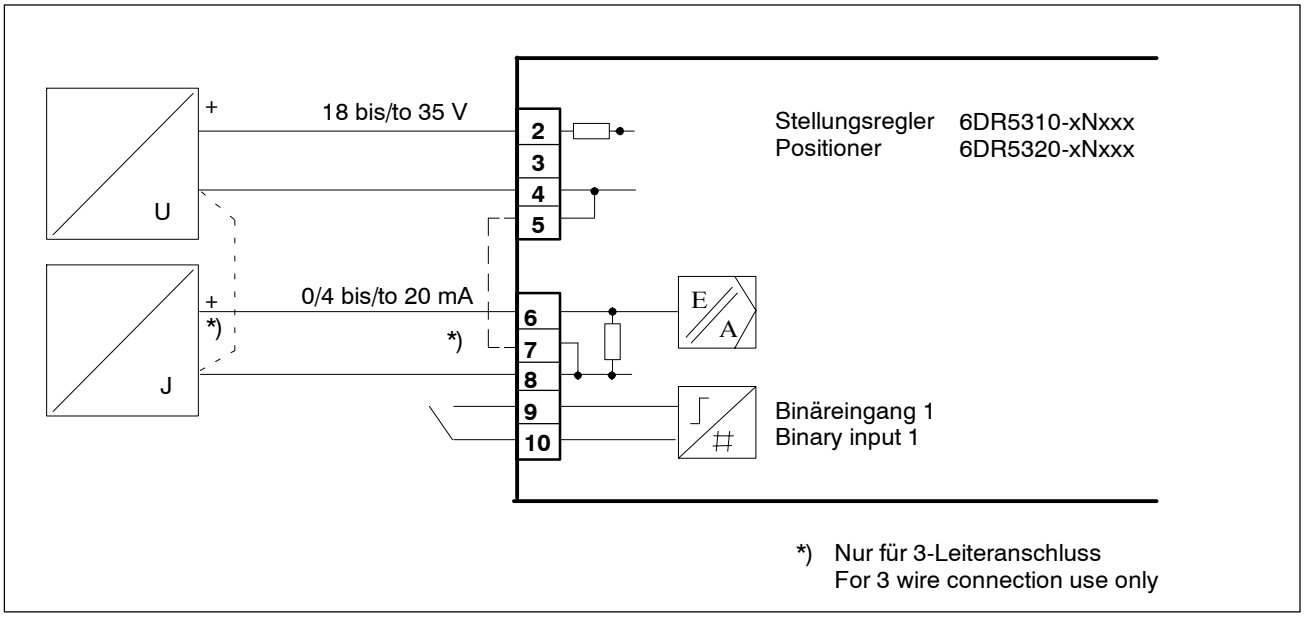


Bild 13 3/4-Leiteranschluss, nicht Ex

Fig. 13 3/4-wire connection, not explosion-proof

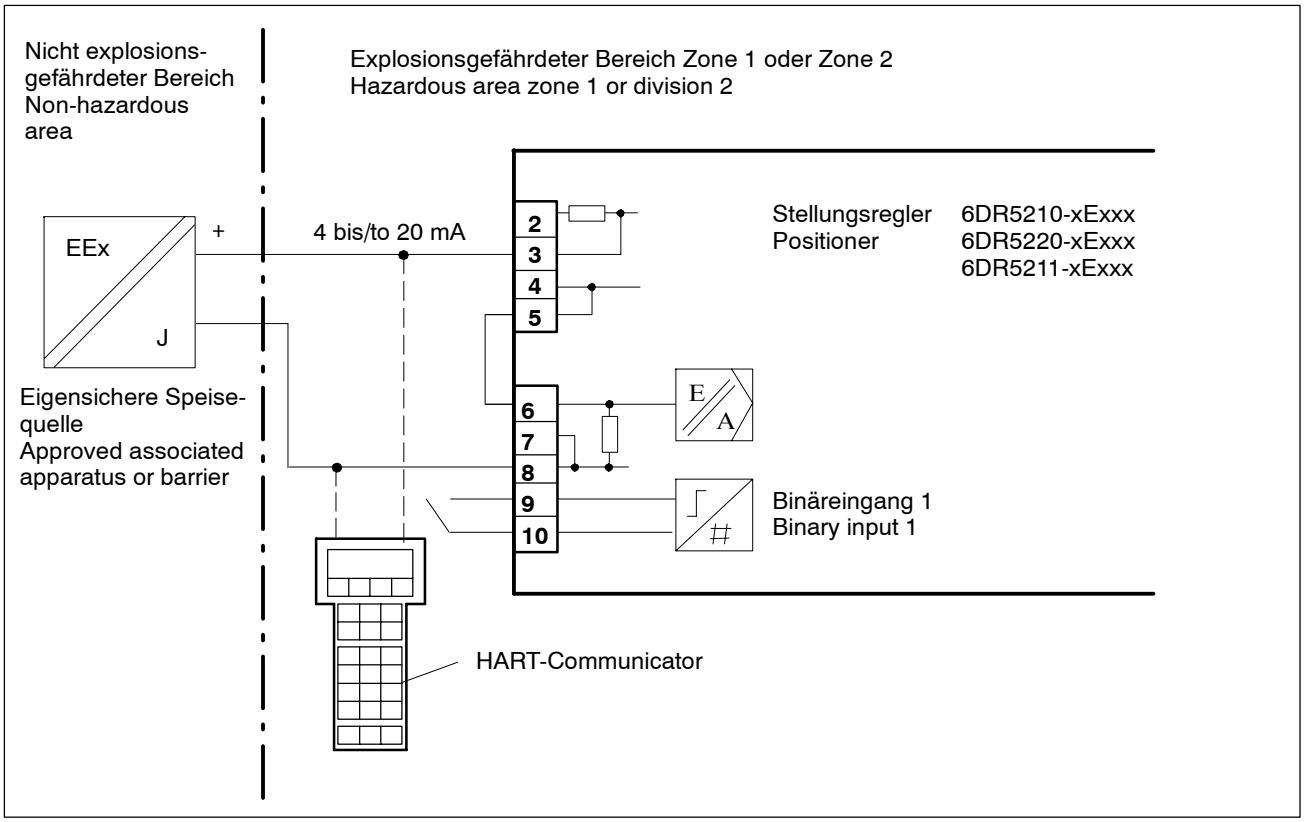


Bild 14 2-Leiteranschluss, EEx i, EEx n

Fig. 14 2-wire connection, EEx i, EEx n

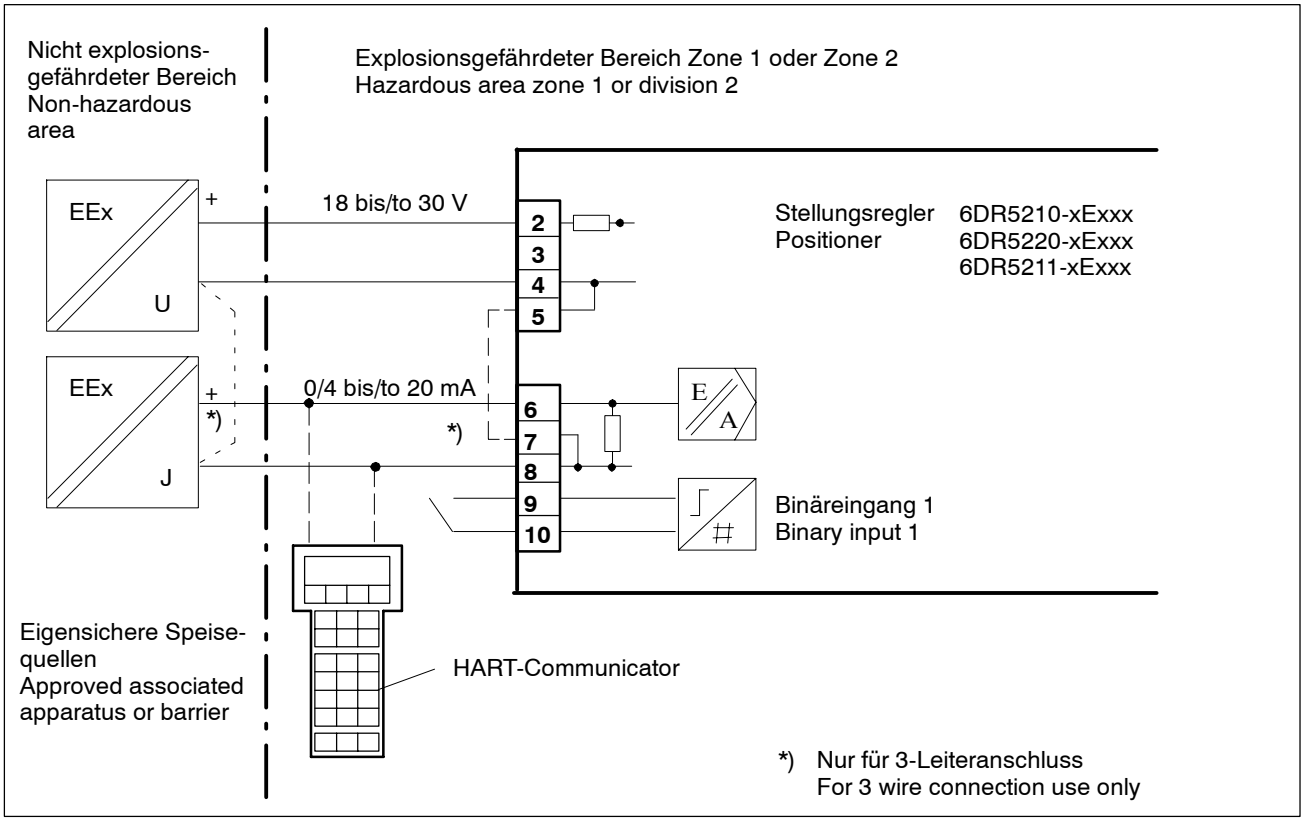


Bild 15 3/4-Leiteranschluss, EEx i, EEx n

Fig. 15 3/4-wire connection, EEx i, EEx n

Elektrischer Anschluss Optionen
Electric connection of options

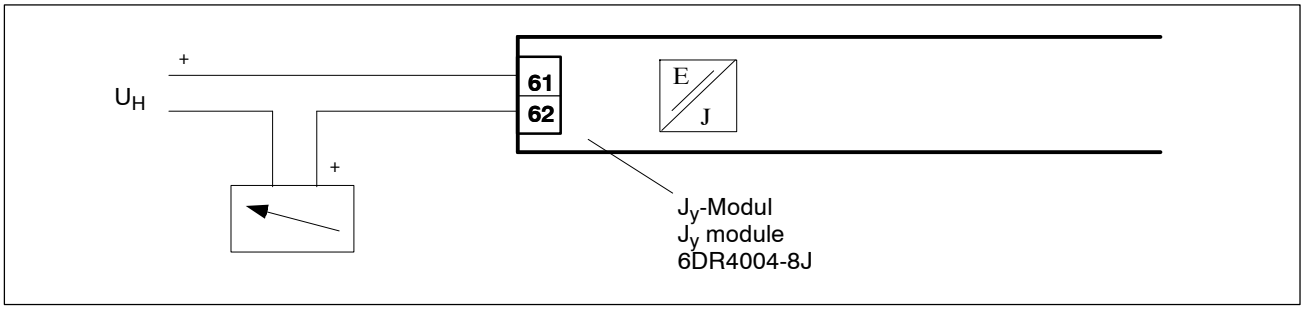


Bild 16 J_y–Modul, **nicht** Ex
Fig. 16 J_y module, **not** explosion-proof

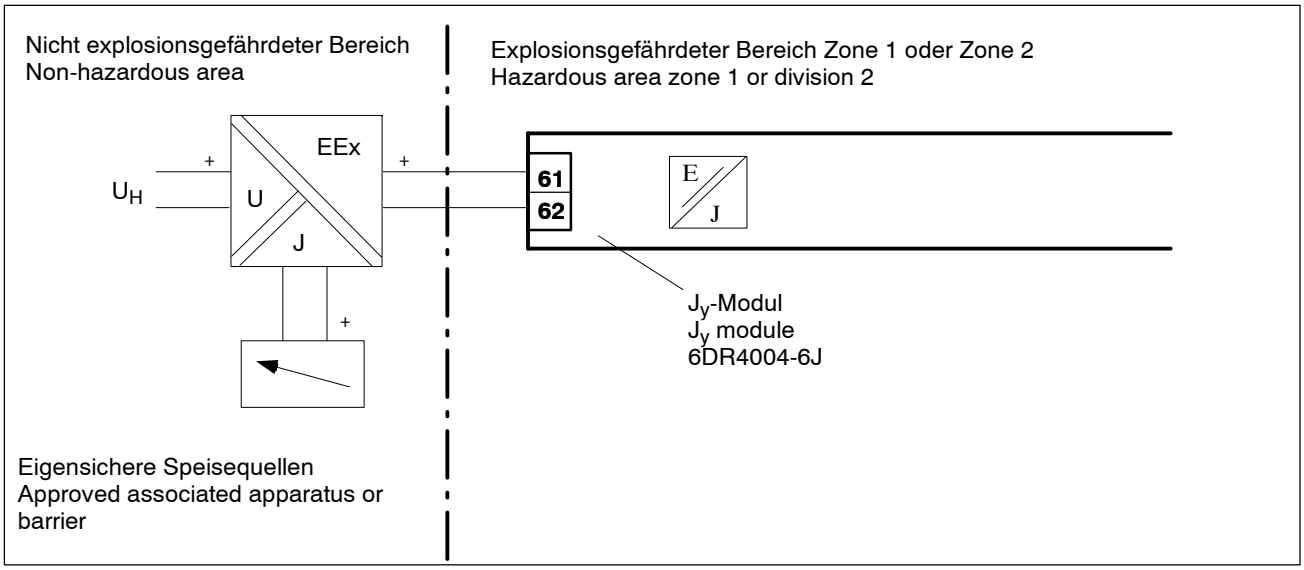


Bild 17 J_y-Modul, EEx i, EEx n
Fig. 17 J_y module, EEx i, EEx n

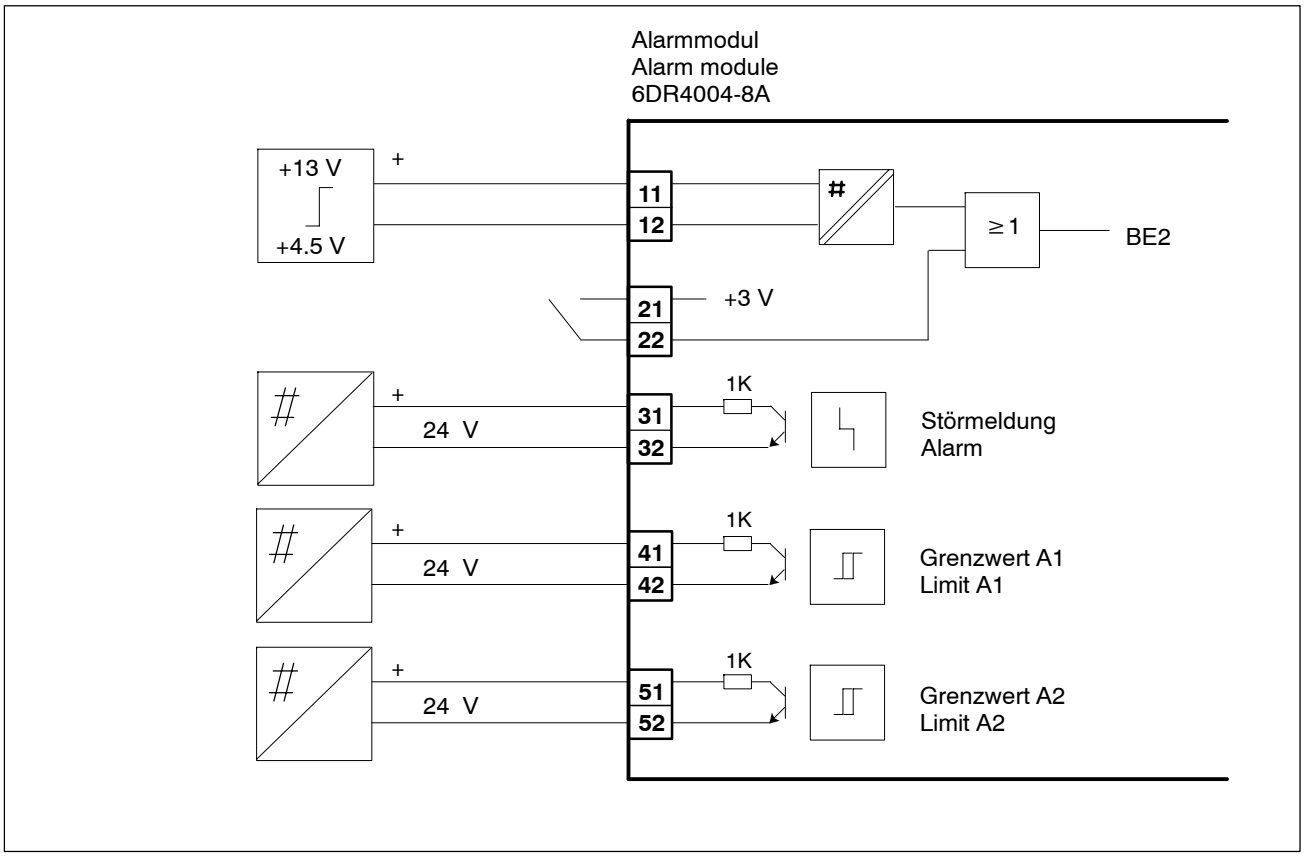


Bild 18 Alarmmodul, **nicht** Ex

Fig. 18 Alarm module, **not** explosion-proof

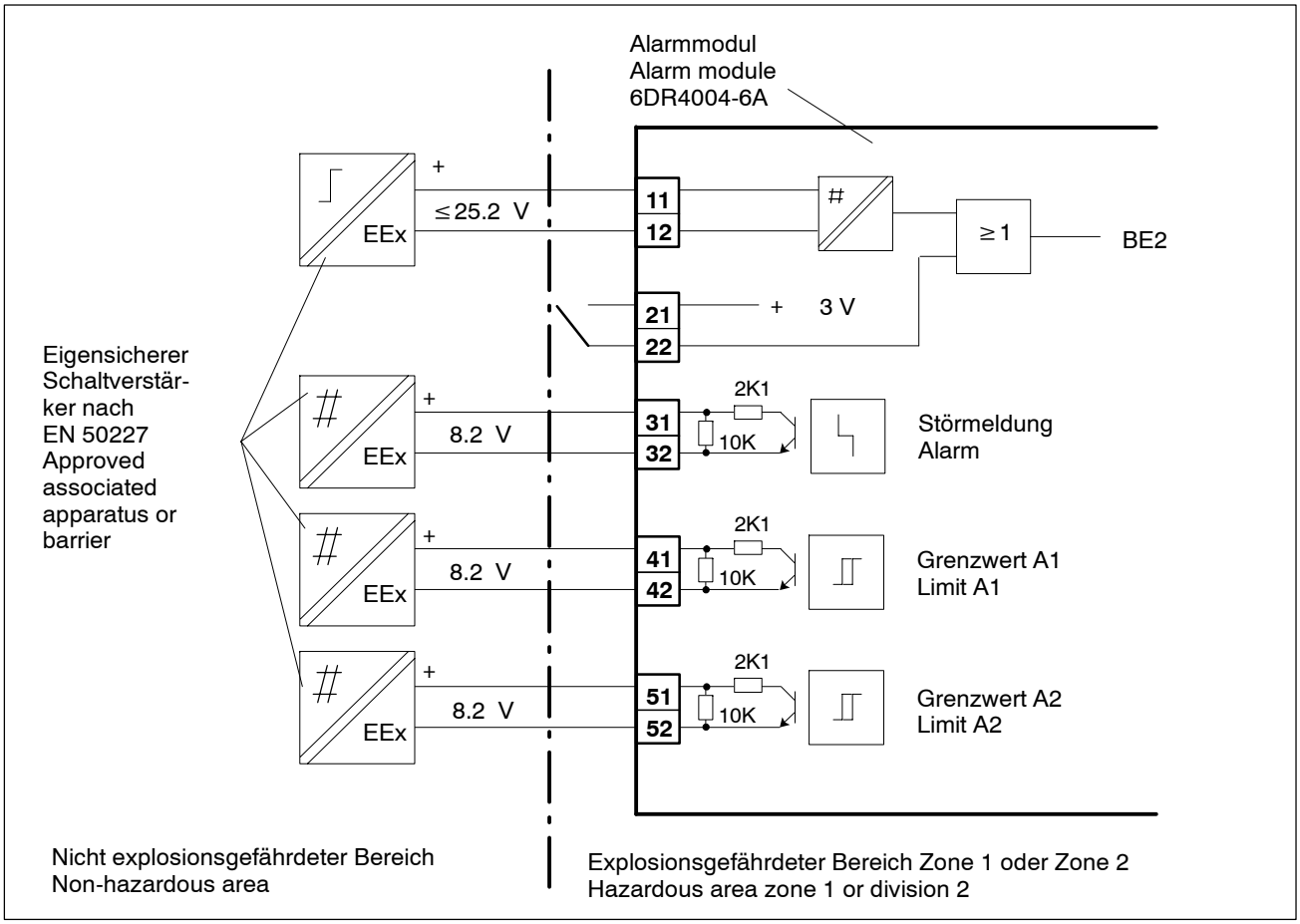


Bild 19 Alarmmodul, EEx i, EEx n

Fig. 19 Alarm module, EEx i, EEx n

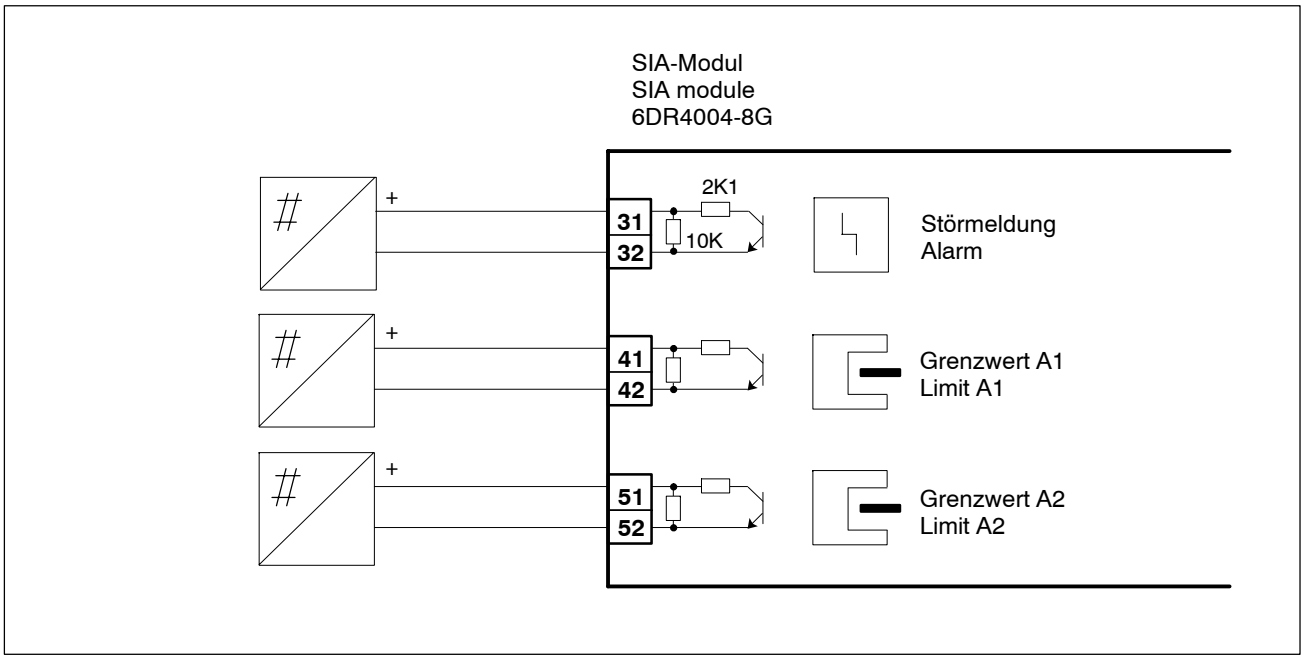


Bild 20 SIA-Modul, **nicht** Ex

Fig. 20 SIA module, **not** explosion-proof

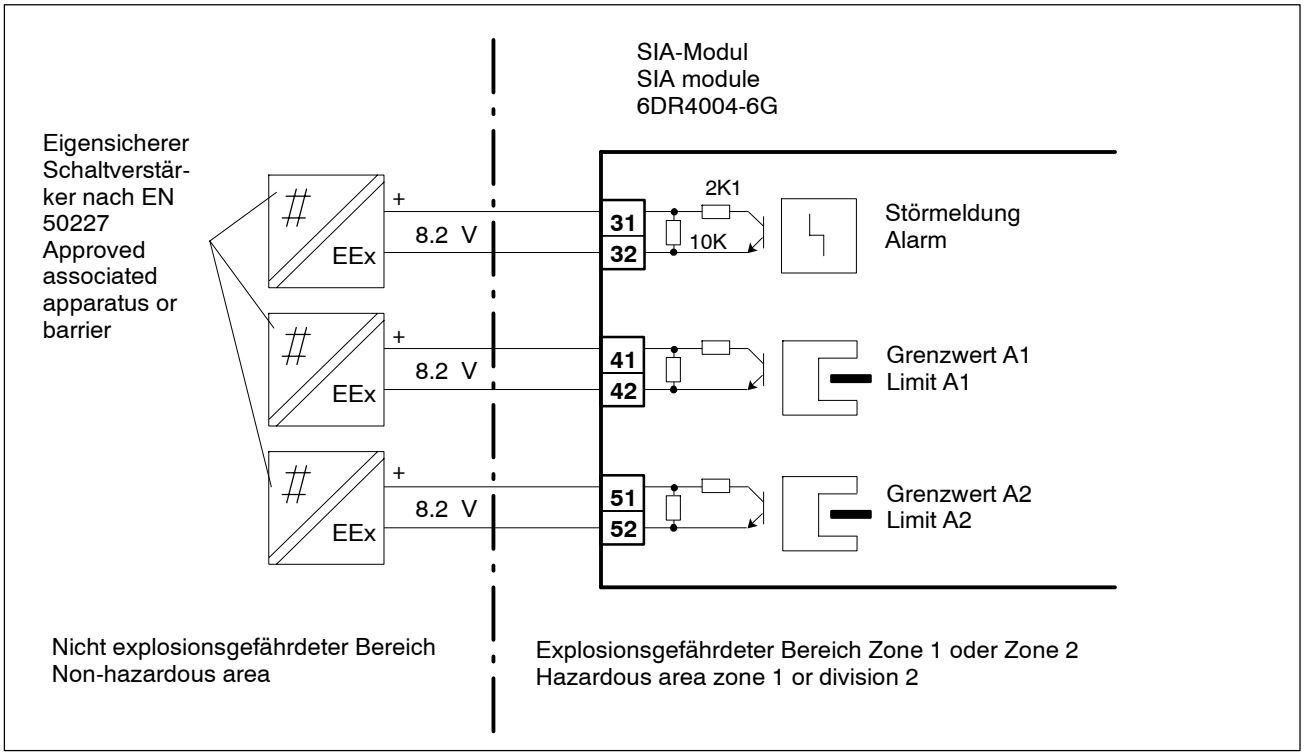


Bild 21 SIA-Modul, EEx i, EEx n

Fig. 21 SIA module, EEx i, EEx n

Hebel NAMUR
NAMUR lever

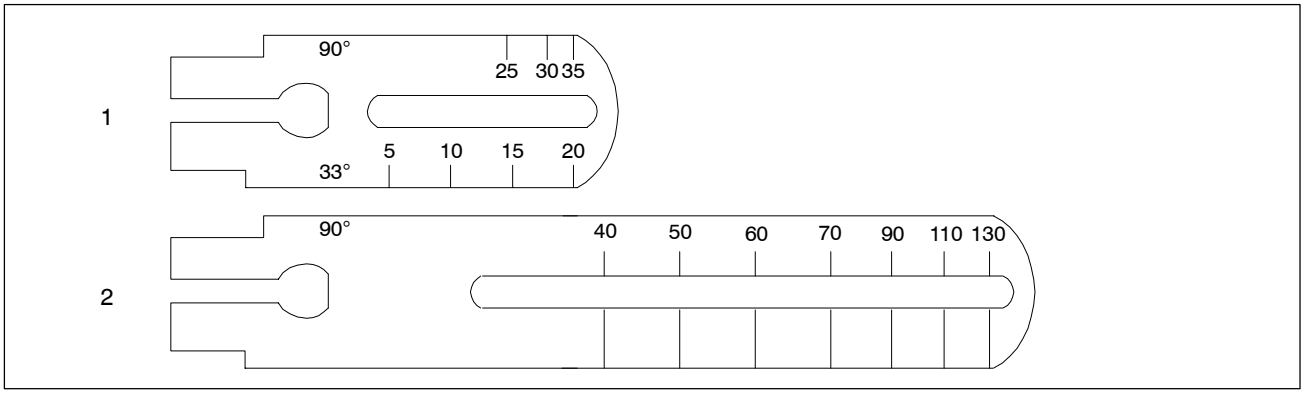


Bild 22 Hebel NAMUR 3 mm bis 35 mm (1), Hebel NAMUR > 35 mm bis 130 mm (2)

Fig. 22 NAMUR lever 3 mm to 35 mm (1), NAMUR lever > 35 mm to 130 mm (2)

Maßbilder
Dimension drawings

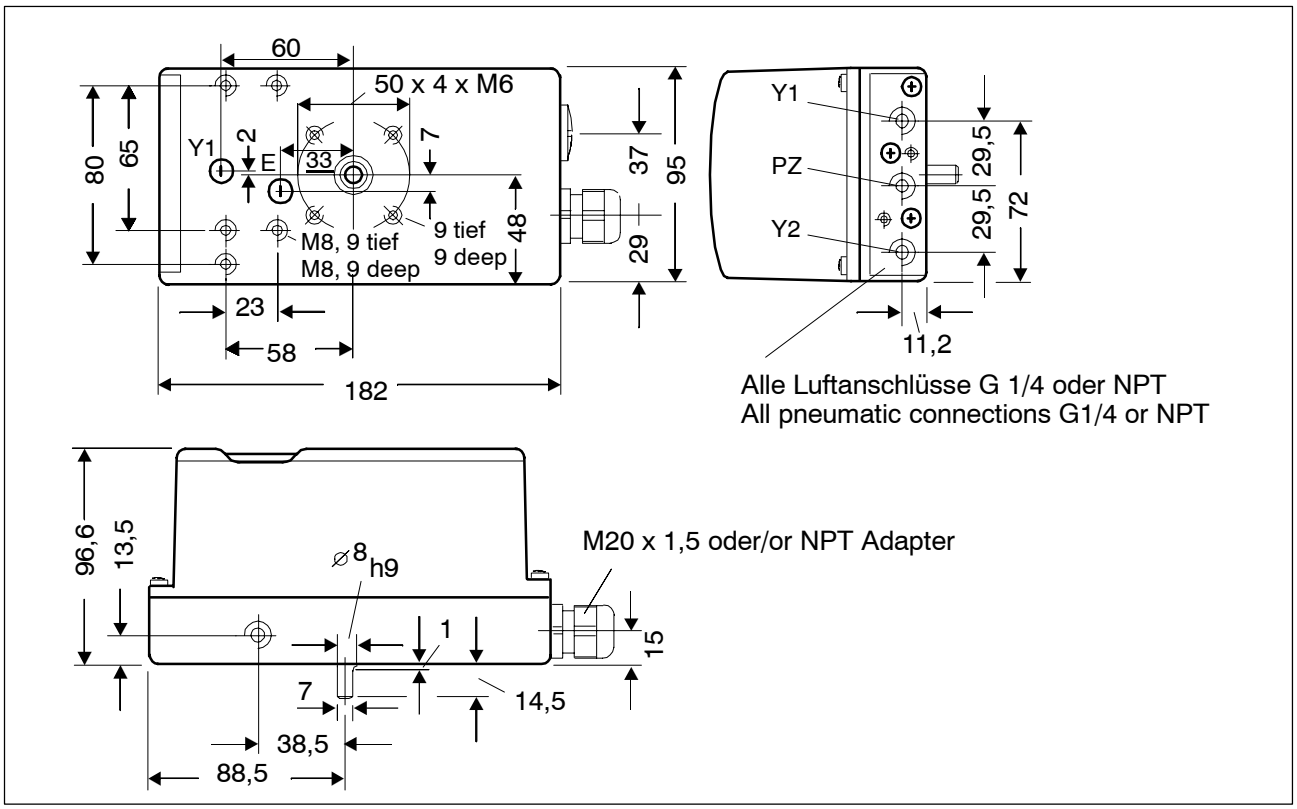


Bild 23 Maßbild Ausführung Kunststoffgehäuse

Fig. 23 Dimension drawing of plastic housing version

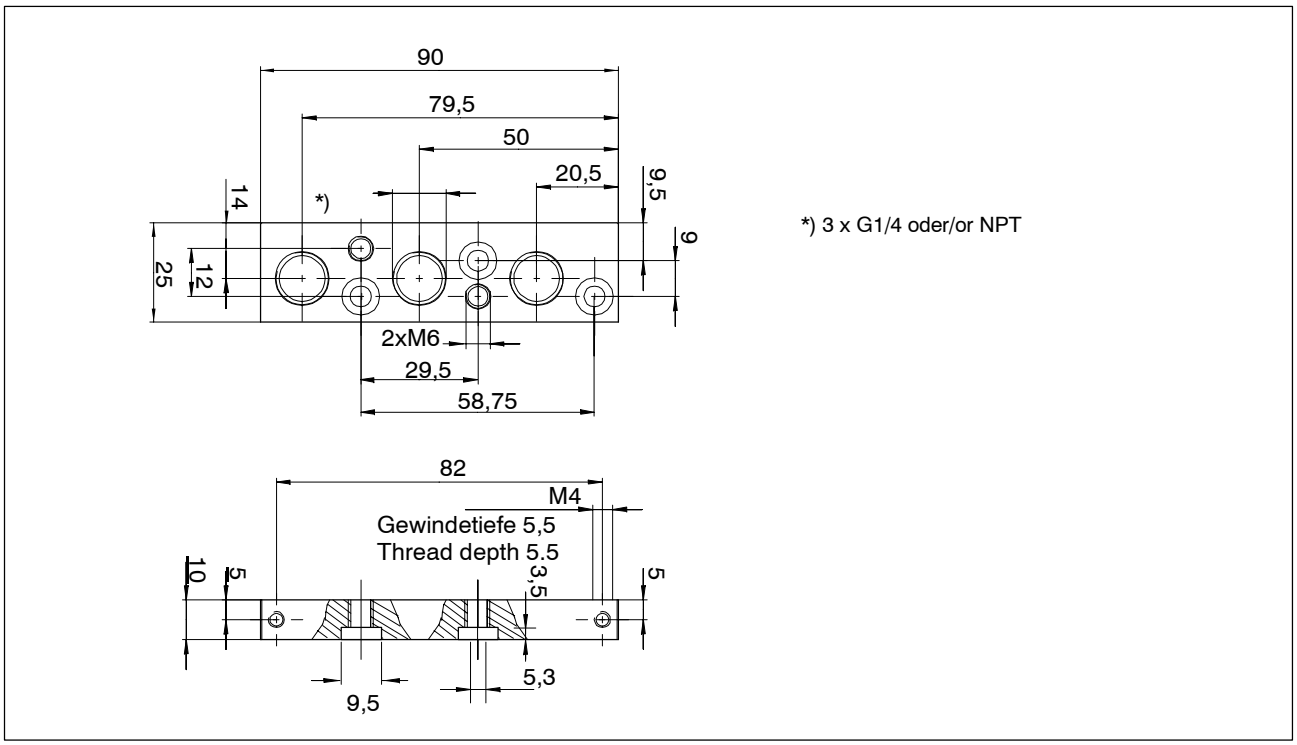


Bild 24 Maßbild Anschlussleiste für Kunststoffgehäuse

Fig. 24 Dimension drawing of terminal block for plastic housing

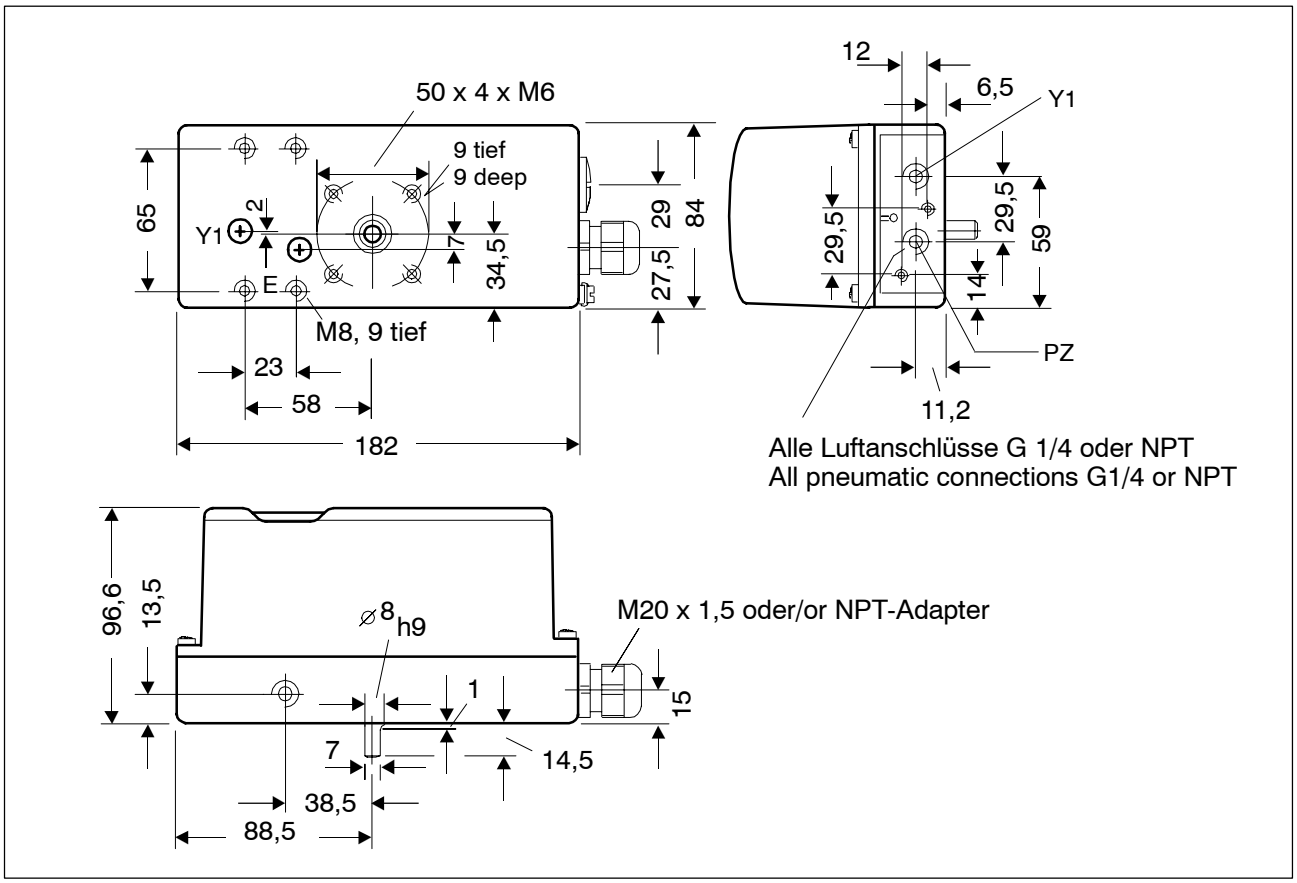


Bild 25 Maßbild Ausführung Metallgehäuse

Fig. 25 Dimension drawing of metal housing version

1P A5E00074600

Siemens AG

Bereich Automation and Drives
Geschäftsgebiet Process Instrumentation and Analytics
D-76181 Karlsruhe

www.fielddevices.com

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Assembly information for SIPART PS2 with External Position Detection System (Remote Positioner Sensor)

This information is intended to facilitate the assembly of the SIPART PS2 positioner together with an external position detection system. You will require this type of assembly if the normal positioner valve assembly is exposed to strong vibrations, radiation or other adverse environmental conditions.

The positioner is supplied as normal with electrical and pneumatic energy but is not fitted to the valve. The connection to the valve and the determination of the drive position is carried out with an additional position detection system in a separate housing.

You will need:

- an SIPART PS2 positioner (order no. 6DR4xxx- oder 6DR5xxx-)
- an EMC filter module (order no. C73451-A430-D23)
- an external position detection system (order no. C73451-A430-D78)

Preparations of positioner:

- Unscrew the lower screw of the two screws in the terminal compartment of the positioner, and the three-pole ribbon cable connection to the built-in potentiometer on the PCB.
- Secure the EMC filter module with this screw as shown on page 3.
- Now connect the ribbon cable of the EMC filter module to the positioner PCB.
- Connect the positioner mounted in a distance to the electrical energy supply and connect it and the drive to the required pneumatic lines.

Assembly of the external position detection system:

- Mount the housing which contains the position detection system onto the valve according to the SIPART PS2 Assembly and Installation Instructions with the required mechanical fittings.
- Ensure that the set-up is functioning perfectly by pressing the "+" or "-" button on the positioner.

Electrical connections of the two housings and start-up procedure:

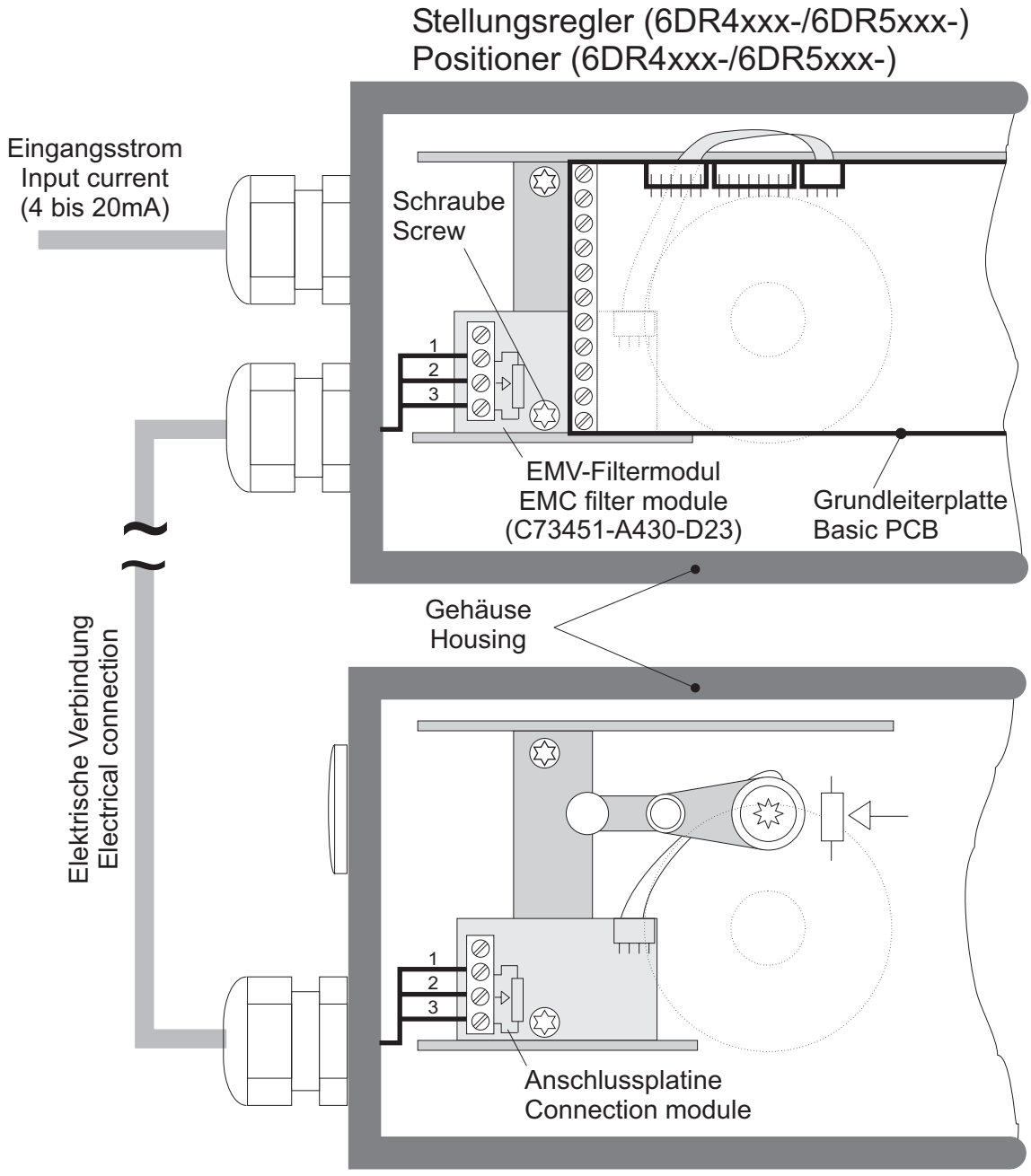
- Connect the three terminals of the connection module with the three terminals of the EMC filter module according to drawing on page 3. PROFIBUS PA devices need a shielded cable.
- Start-up the positioner in the normal fashion according to the SIPART PS2 Assembly and Installation Instructions.

C79000-M7474-C39-03
AG 11/00

SIEMENS

Prinzipdarstellung für die Verdrahtung des
SIPART PS2 mit einem externen Stellungserfassungssystem

Connecting the SIPART PS2 with an external position detection system



Externes Stellungserfassungssystem
External position detection system
(C73451-A430-D78)

Limited Warranty

DeZURIK, Inc. (“Seller”) manufactured products, auxiliaries and parts thereof that we manufacture for a period of twenty-four (24) months from date of shipment from Seller’s factory, are warranted to the original purchaser only against defective workmanship and material, but only if properly stored, installed, operated, and serviced in accordance with Seller’s recommendations and instructions.

For items proven to be defective within the warranty period, your exclusive remedy under this limited warranty is repair or replacement of the defective item, at Seller’s option, FCA Incoterms 2020 Seller’s facility with removal, transportation, and installation at your cost.

Products or parts manufactured by others but furnished by Seller are not covered by this limited warranty. Seller may provide repair or replacement for other’s products or parts only to the extent provided in and honored by the original manufacturer’s warranty to Seller, in each case subject to the limitations contained in the original manufacturer’s warranty.

No claim for transportation, labor, or special or consequential damages or any other loss, cost or damage is being provided in this limited warranty. You shall be solely responsible for determining suitability for use and in no event shall Seller be liable in this respect.

This limited warranty does not warrant that any Seller product or part is resistant to corrosion, erosion, abrasion or other sources of failure, nor does Seller warrant a minimum length of service.

Your failure to give written notice to us of any alleged defect under this warranty within twenty (20) days of its discovery, or attempts by someone other than Seller or its authorized representatives to remedy the alleged defects therein, or failure to return product or parts for repair or replacement as herein provided, or failure to store, install, or operate said products and parts according to the recommendations and instructions furnished by Seller shall be a waiver by you of all rights under this limited warranty.

This limited warranty is voided by any misuse, modification, abuse or alteration of Seller’s product or part, accident, fire, flood or other Act of God, or your failure to pay entire contract price when due.

The foregoing limited warranty shall be null and void if, after shipment from our factory, the item is modified in any way or a component of another manufacturer, such as but not limited to; an actuator is attached to the item by anyone other than a Seller factory authorized service personnel.

All orders accepted shall be deemed accepted subject to this limited warranty, which shall be exclusive of any other or previous warranty, and this shall be the only effective guarantee or warranty binding on Seller, despite anything to the contrary contained in the purchase order or represented by any agent or employee of Seller in writing or otherwise, notwithstanding, including but not limited to implied warranties.

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December 2022