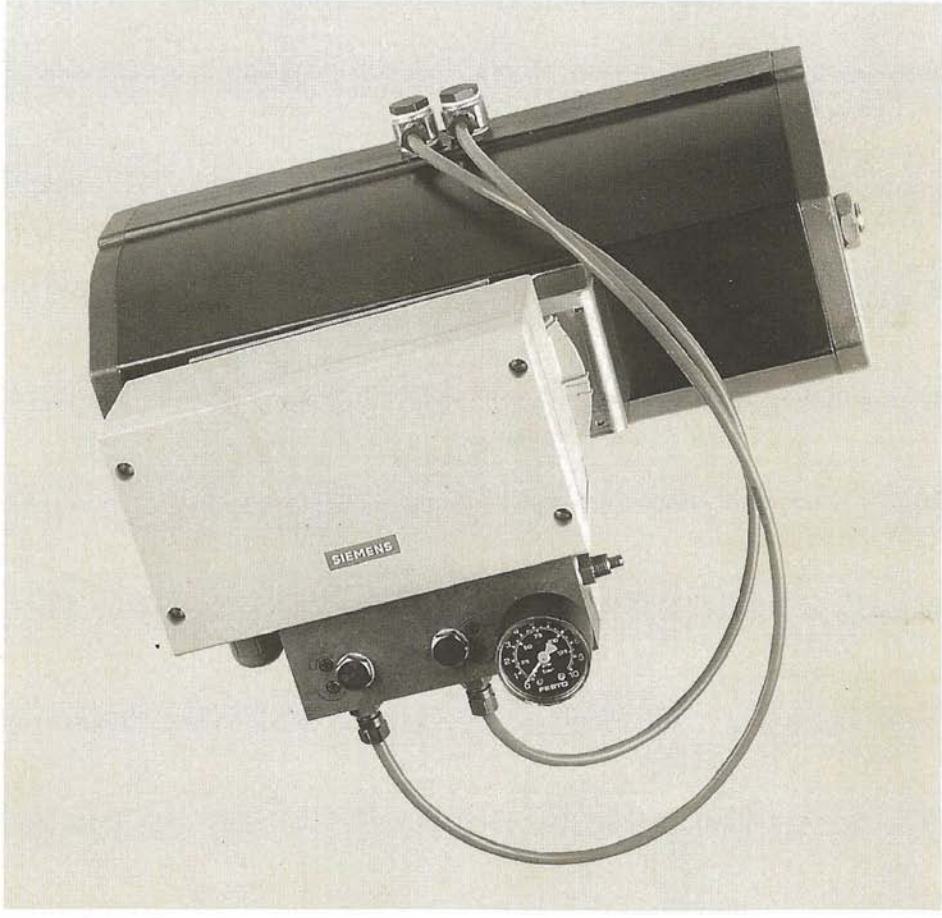
SIEMENS

SIPART® PS

6DR3*01-1N/E-2N/E

Bedienungsanleitung	Bestell-Nr.
Operating Instructions	Ord. No.
Instructions de service	N° de cde:
Instrucciones de servicio	N° de ped.
Istruzioni di servizio	N° di ord. C73000-B7464-C138-5



SIEMENS

SIPART® PS

6DR3*01-1N/E -2N/E

Elektro-pneumatischer Stellungsregler
Drehantrieb

Electropneumatic positioners
Rotary drive

Positionneur electropneumatique
Commande de rotation

Posizionatore elettropneumatico
Comando di rotazione

Posicionador electroneumático
Impulso de rotación

C73000-B7464-C138

The positioner must be installed and commissioned in exactly the same sequence as described in these operating instructions. It is essential that the warnings in the relevant chapters are heeded during this process.
For the sake of clarity, these instructions only cover the information required for commissioning and operating the instrument. If further information is required (i.e. regarding design and area of application), please refer to the MP 31 catalog.

⚠ WARNING

This instrument must only be installed and commissioned by qualified personnel. The degree of electrical safety is determined solely by the devices supplying the power.
Pneumatic drives generate considerable positioning forces. Safety precautions must therefore be scrupulously observed during installation and commissioning in order to prevent injuries.
Your attention is drawn, if applicable, to the relevant regulations regarding operation in hazardous areas.

Qualified personnel

for the purposes of these operating instructions are persons who are experienced in the installation, commissioning and operation of this product and who are suitably qualified to perform their duties, e.g.

- have received training or instruction in how to switch on, earth, mark and switch off electric circuits, instruments and systems in accordance with current safety standards
- have received training or instruction in the maintenance and use of appropriate safety equipment according to current safety stan dards
- have received training in first-aid
- in the case of ex-proof instruments: have received training or instruction in working with electrical circuits in hazardous areas.

Contents

1 Block diagram

The positioner forms together with the actuator a feedback loop, in which the indicated operating position y, as controlled variable x, is compared with the specified value w (lw). A system deviation leads to a directional response of a five-point switch whose terminals ±Δy actuate the control valves. Within the zone of high system deviation (high-speed zone), travelling occurs in maintained contact, within the zone of medium system deviation (short-step zone) travelling occurs in pulse sequences of minimum length.

These positioning pulses effect differences in pressure in the actuator chamber(s) and consequently an adjustment of the actuators.

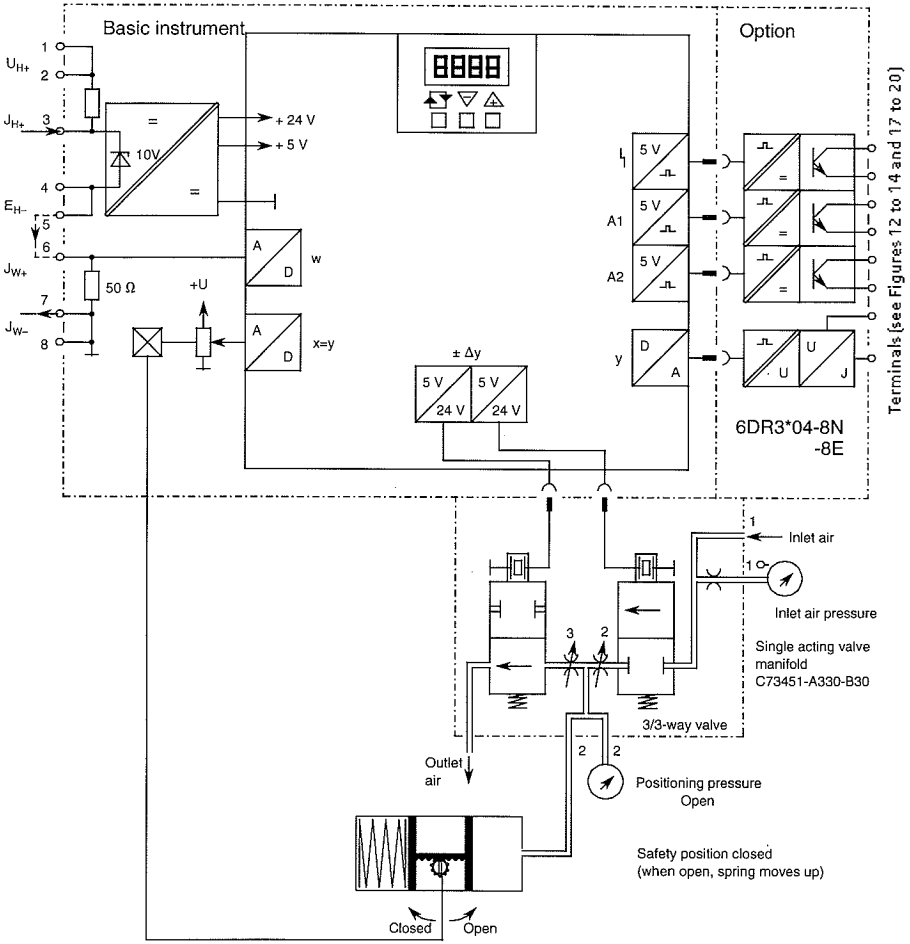


Figure 2a 6DR3*01-1N/1E for single acting actuators

No positioning pulses are output in the zone of low system deviation (adaptive dead band). The dead band adaptation and the adaptation of the minimum pulse length in automatic operation allow the best possible control accuracy to be achieved with the minimum switching frequency. The start parameters are determined at the initialization phase.
The actuator position can be output as Iy = 4 to 20 mA using this option and can be monitored by two limit values (A1, A2). In addition, the function of the electronics and the positioner in automatic operation can be monitored via the fault signal output (↯). In this procedure, the scale of the system deviation as dependent on the actuating time is monitored. The three alarm outputs are fail-safe, i.e. a faulty or current-free basic instrument leads to error messages.

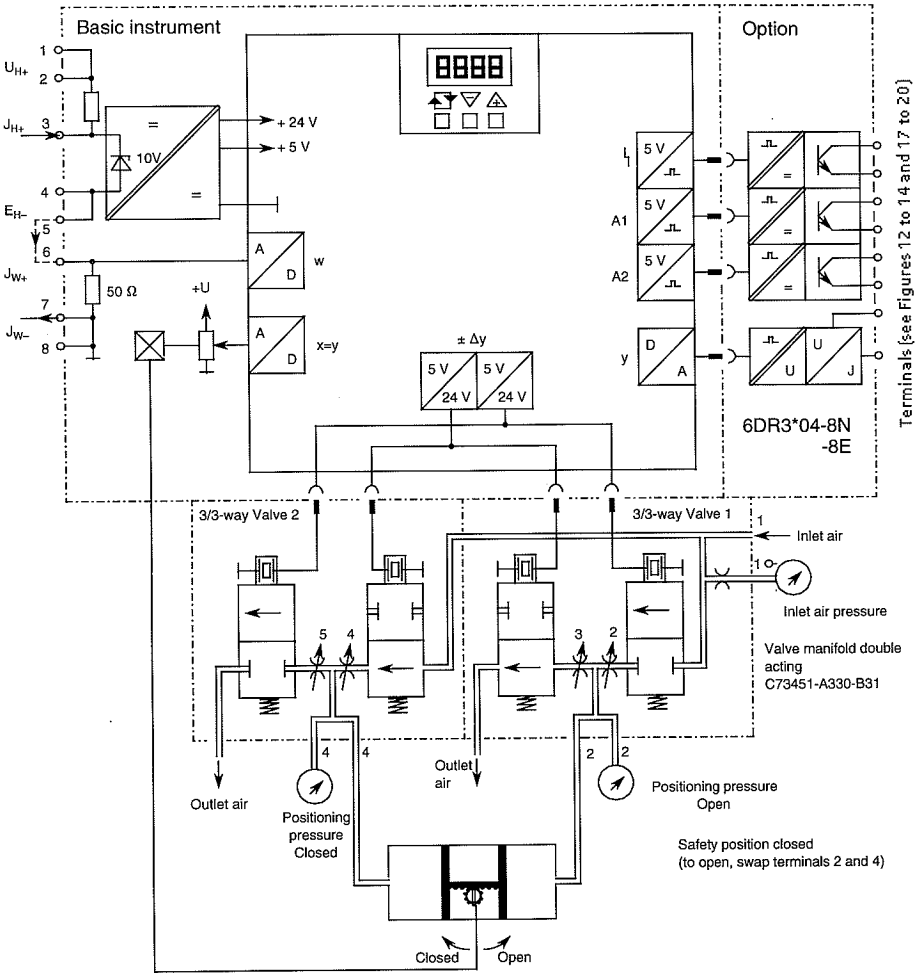


Figure 2b 6DR3*01-2N/2E for double acting actuators

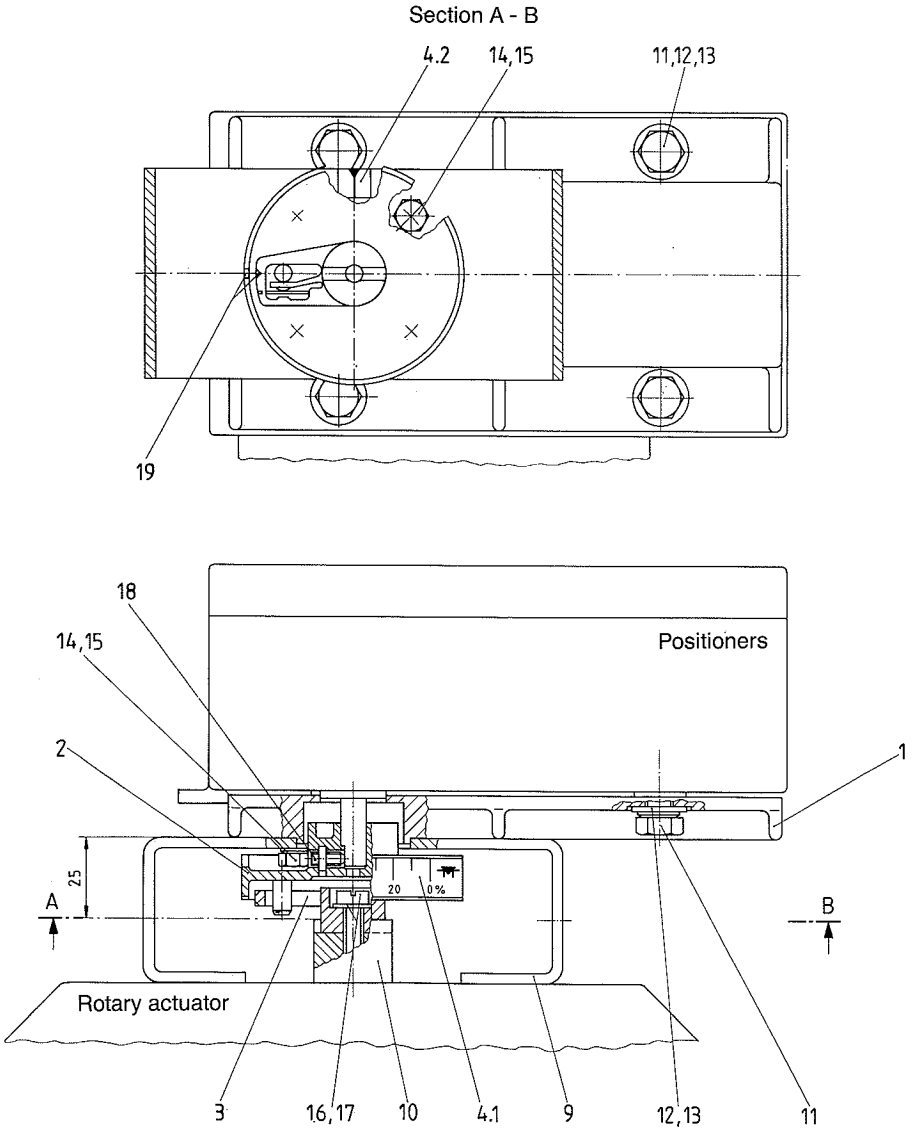


Figure 3 Installation of accessories and positioner

No.	Description	
1	Rear panel adapter	C73451-A330-C55
2	Coupling wheel	C73451-A330-B51
3	Driver	C73451-A330-B52
4	Multiple label	C73451-A330-C59
4.1	Scales	— —
4.2	Pointer marker	— —
7		
8		
9	Mounting console	— — [1]
10	Shaft end	— —
11	Hexagonal bolt	DIN933-M8 × 16
12	Washer	DIN125-8.4
13	Retaining washer Schnorr	S8
14	Hexagonal bolt	DIN933-M16 × 12
15	Retaining washer Schnorr	S6
16	Round headed screw	DIN84-M6 × 12
17	Washer	DIN125-6,4
18	Socket-head cap screw	— —
19	Markings	— —
20		

[1] is not included in the scope of delivery of mounting kit 6DR3004-8D

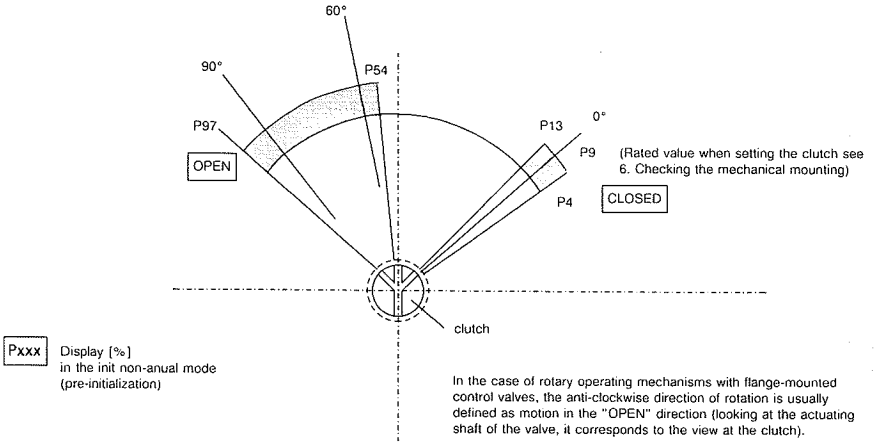


Figure 4 up and lower tolerance bands on the segment scale

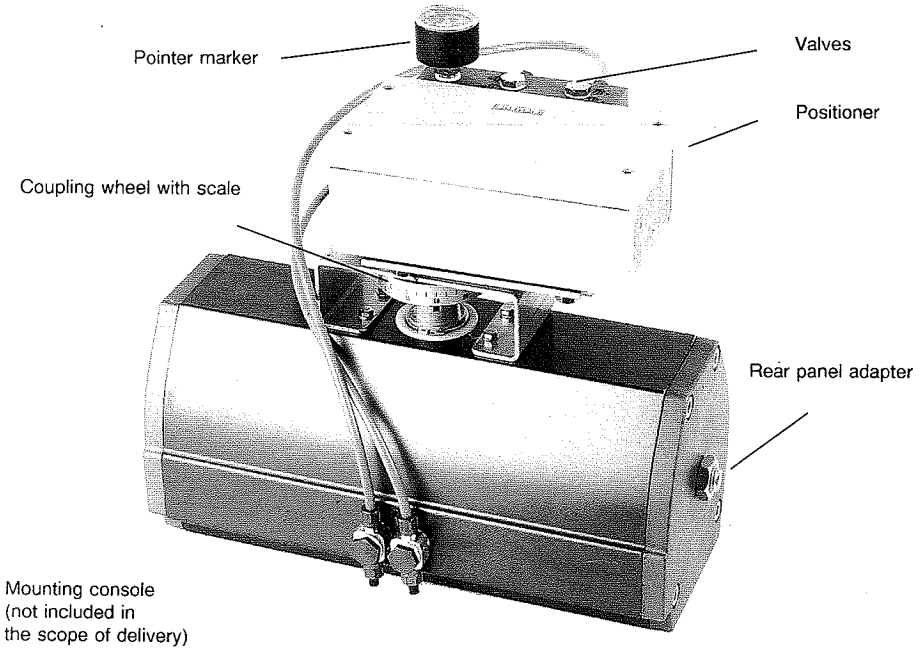


Figure 5 Installed positioner

2 Mechanical mounting

2.1 Changing the purging air

In order to keep the positioner housing free from harmful vapours and condensation, it is purged with outlet air from the piezoelectric pre-control valve (factory setting). The purging air can be fed directly to atmosphere by rotating a seal:

- Detach the complete valve manifold from the housing by loosening both fastening screws (Figure 6).
- Rotate the seal on valve number 1 through 180° (see the position of the seal on valve 2 in Figure 6).
- Screw the valve manifold securely back on to the positioner housing

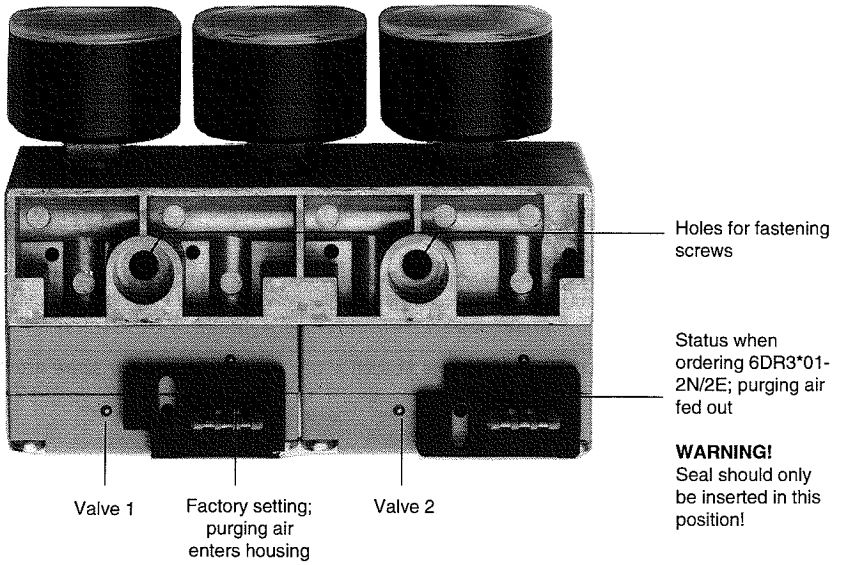


Figure 6 Settings for purging air

2.2 Installation of the positioner

WARNING

The positioner may only be installed when the actuator is not pressurised.

The device is installed on the actuator using the mounting console (to VDI/VDE 3845) supplied by the actuator manufacturer and mounting kit 6DR3004-8D.

The parts referred to below can be seen in Figures 3 and 5.
Proceed as follows:

- Place the rear panel adapter on the centering flange at the rear of the positioner housing and fix it with the 4 hexagonal bolts (11), the washers (12) and the retaining washers (13).
- Stick the pointer marker (4.2) on the edge of the long side of the mounting console (9) and centred on the centering hole.
- Place the mounting console (9) on the centering flange in such a way that the pointer marker is located at the side which is turned away from the piezo-electric valves. Fix the mounting console to the rear panel adapter (1) using the 4 hexagonal bolts (14) and the retaining washers (15).
- Move the coupling wheel (2) onto the positioner shaft as far as it will go so that the levelled-off part points in the direction of the socket-head cap screw (18). Tighten the socket-head cap screw.
- The coupling wheel and driver pin have markings (19) which are aligned when the pin is correctly positioned. These ensure that the positioner is placed on the actuator in such a way that the coupling wheel locks into the driver pin.
  Turn the coupling wheel so that the marking on the side turned away from the pointer indicator (4.2) is visible. Place the pre-mounted positioner carefully onto the actuator so that the markings (19) of the coupling wheel and the driver pin are aligned. The pin now locks into the driver pin. (Caution! Do not damage the driver pin spring.).
  If necessary, now turn the mounting console in such a way that it is possible to screw it onto the rotary actuator.

2.3 Restrictors

Sipart PS is equipped with an inlet air and outlet air restrictors (in case of double acting equipment there are two of each) with which the positioning times for directions "up" and "down" can be prolonged especially for small actuators. Turning the restrictor screw clockwise in the valve manifold will prolong the positioning time which should not be less than 2.5 s. The circuit configuration of the restrictors can be seen on the block diagram.

⚠ WARNING

The relevant national regulations are to be observed during electrical installation.
During the electrical installation and commissioning of ex-proof instruments, conformance certificate data and the relevant national regulations for the installation of electrical systems in hazardous areas must be observed.
The degree of electrical safety will depend solely on the devices supplying the power as the positioner, even internally, only uses very low voltages during operation.

Operation with the option module

The option module (order number 6DR3*04-8N/-8E) must be installed as follows before the electrical connections are made.

The option module is located in a removable cover that can be exchanged in its entirety for the existing one. To do this, fit the hinges as shown in Figure 7 between the housing and the cover and push the connecting cable and plug into the plug connector on the mother board.

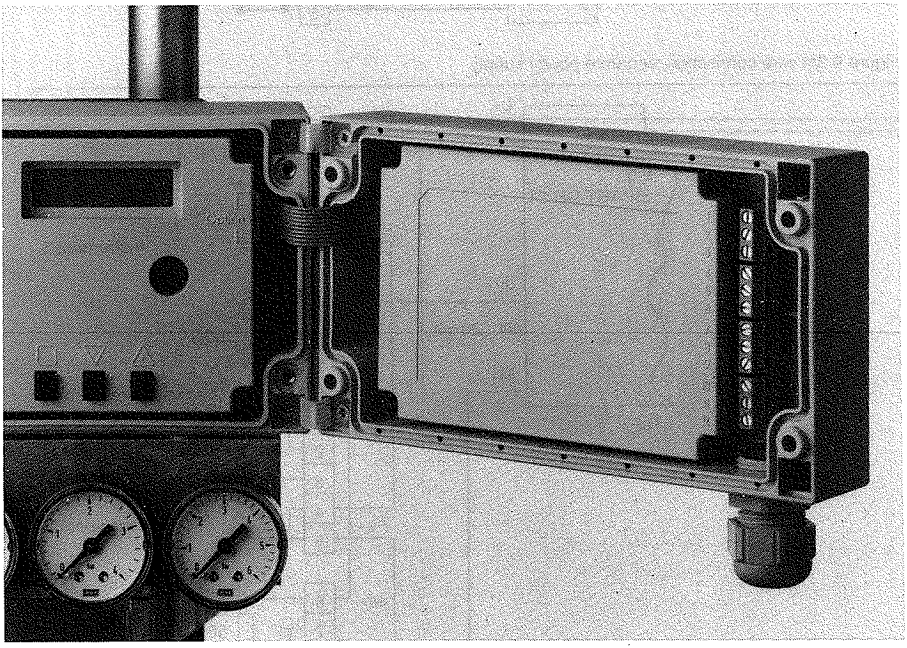


Figure 7 Basic instrument with option module

3.1 Basic instrument not ex-proof 6DR3*01-1N/2N

Important: set i to ≥ 3.6 mA in order to maintain the power supply

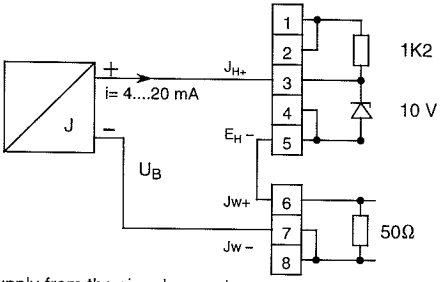


Figure 8 2-wire connection, power supply from the signal current

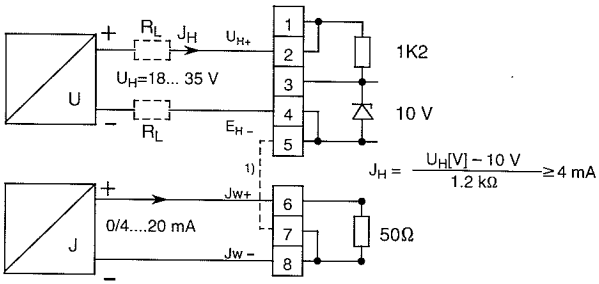


Figure 9 3/4 wire connection, separate power supply

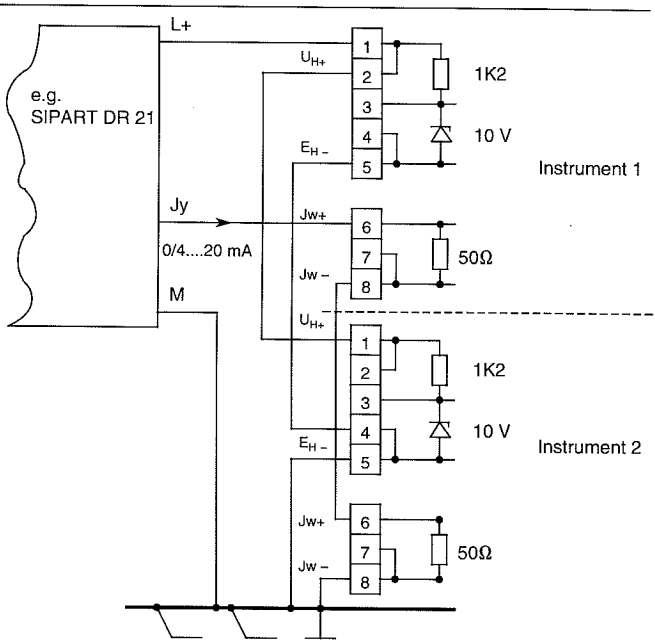


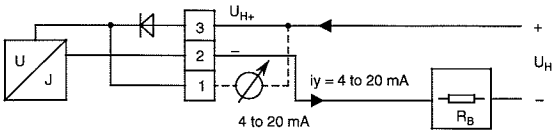
Figure 10 Series connection of 2 positioners e.g. Split-Range power supplied separately

E_{H-} negative terminal of power supply

1) 3-wire connection, -ve poles of the current and power sources are connected

3.2 Option module not ex-proof 6DR3*04-8N

• Current output Jy = 4 to 20 mA



$$R_B = \frac{U_H\,[V] - 12\ V}{iy_{max\,[mA]}}\ [k\Omega]$$

Figure 11 Current signal of position feedback

• Digital outputs $\overline{A2}$, $\overline{A1}$, $\overline{\lrcorner}$

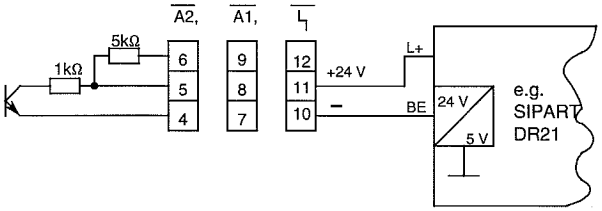


Figure 12 Production of a low-signal for positive active logic (e.g. when activated, A1 produces a low-signal on the SIPART DR21)

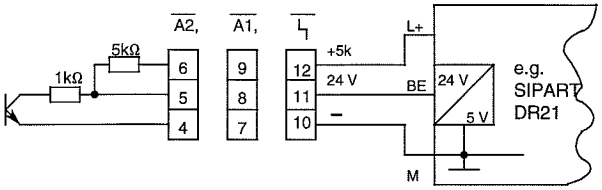
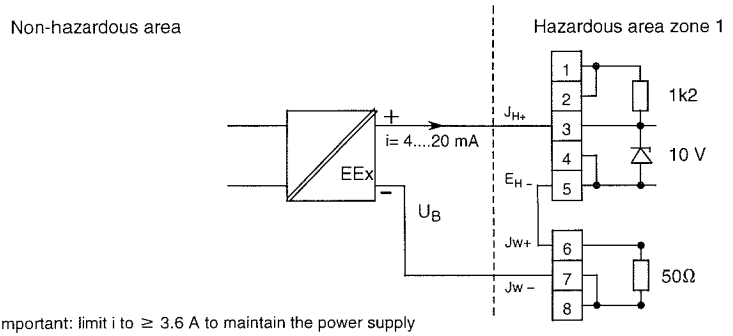


Figure 13 Production of a high-signal for positive active logic (e.g. when activated, A1 produces a high-signal on the SIPART DR21) (High ≥ 13 V, input resistance > 10 kΩ)

3.3 Basic instrument ex-proof 6DR3*01-1E/2E



Important: limit i to ≥ 3.6 A to maintain the power supply

Figure 14 2-wire connection, power supply from signal current; intrinsically safe current output through a safety isolation amplifier.

3.4 Option ex-proof 6DR3*04-8E

• Current output JY 4 to 20 mA

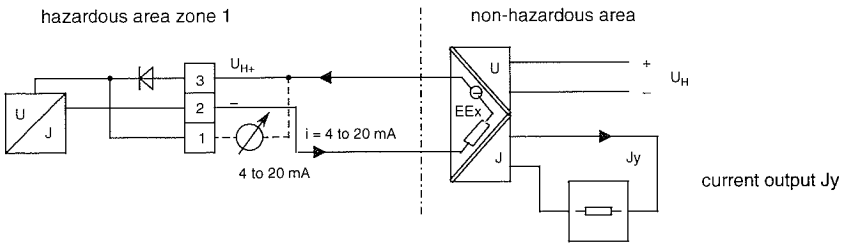


Figure 16 Intrinsically safe supply with retransmission of current signal

WARNING

Ex-proof instruments installed in zone 1 (Figures 16) may only have one non-earthed device with no power supply (battery or mains) connected to their terminals.

• Digital outputs $\overline{A2}$, $\overline{A1}$, $\overline{\lrcorner}$

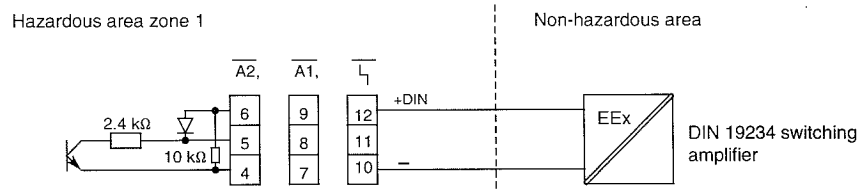


Figure 18 Signal level conversion through intrinsically safe DIN19234 switching amplifier

4 Pneumatic connection

WARNING

Pneumatic power may only be provided for the initialisation phase if an electrical supply is also present. Make sure as well that the positioner is in init non manual mode (factory setting, see Figure 21) (Display P xx.x see Figure 21), as only in this mode will the valves not be controlled, neither will the actuator perform any movements.
If pneumatic power is present but no electrical supply, then the actuator will go into the safety position. If pneumatic power is present and the electrical supply is connected later once the instrument has been initialised (init oCAY, see Figure 21), the positioner will operate in automatic mode. This can lead to uncontrolled movements, as the lever mechanisms would not yet have been adjusted to suit the actuator.

- If the display is blank or shows xxx.x when the power supply is on, execute the PrSt function (see Figure 21) and switch to init non manual mode.
- Set restrictors (see Figure 29) 2 and 3 (4 and 5 as well in the case of double acting actuators) to maximum (factory setting) if necessary.
- If necessary, connect the manometers for inlet air pressure (connection ○- 1) and positioning pressure (connections 2 and 4).
- Set positioning pressure connection 2 or 4 to the desired safety position (Figure 20). The connections on the front and bottom of the valve manifold both have equal significance.
- Connect inlet air 1

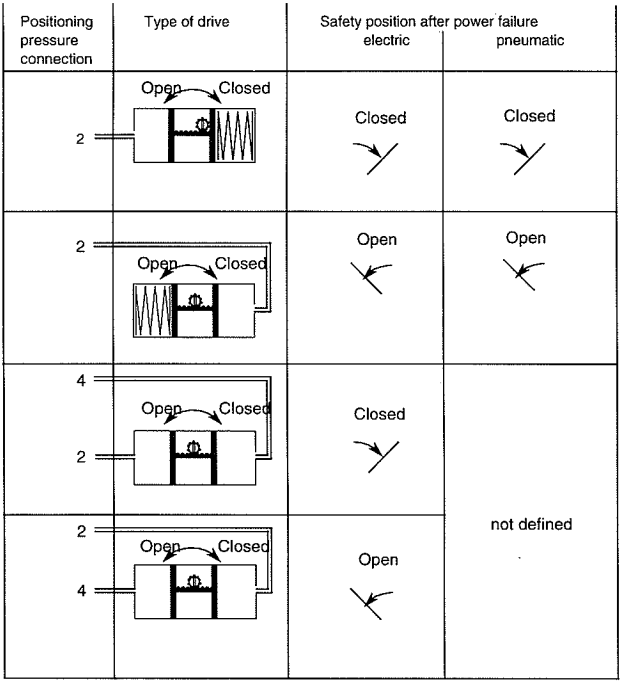


Figure 20 Pneumatic terminal/positioning action

5 SIPART PS operating levels

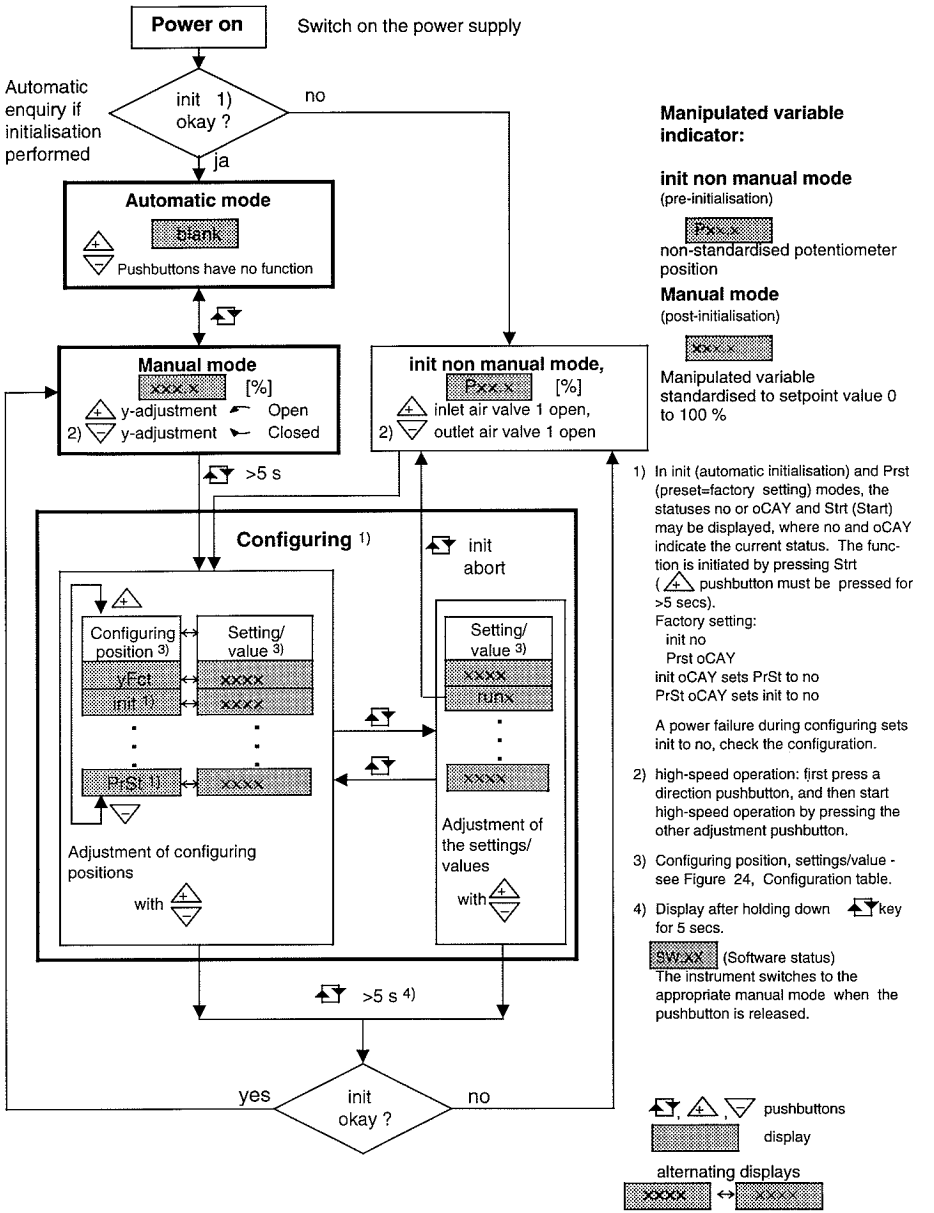


Figure 21 Operating levels: automatic, manual and configuring

6 Checking the mechanical mounting

In the init non-manual mode, carefully move the actuator in short-step operation to the end position of the Closed direction ↷, using the △ and ▽ pushbuttons. (The △ pushbutton feeds inlet air to valve 1). When doing so, please check that the clutch is functioning properly. With the help of the clutch, adjust the potentiometer (Figure 29 and Figure 4) to the initial value of 9 % ± 1 % (P8 ... P10). Then move the actuator carefully to the opposite end position ↶ . The display should now indicate values between P54 and P97.

If the display indicates P– – – when adjusting the clutch, the wiper of the feedback potentiometer is out of limits (overload of the A/D converter).

After checking the total range of the manipulated variables, one of the enclosed scales (4.1 Figure 3) can be adhered to the coupling wheel as a marker scale (in % or) (e.g. in the closed end position starting with 0 at the pointer marker).

Before initialization is carried out, the actuator **must** be moved about 20 % from the end position.

7 Automatic initialisation

The checks described in section 6 must have been performed.

> **CAUTION**
>
> During initialisation, actuator adjustments occur automatically. Adjustments may be necessary to the feedback loop. If this is the case, do not risk injuring yourself by touching moving parts.

In emergencies, initialisation can be halted by pressing the pushbutton. The positioner then goes into init non manual mode and the actuator stops (Figure 21).

Initialisation sequence

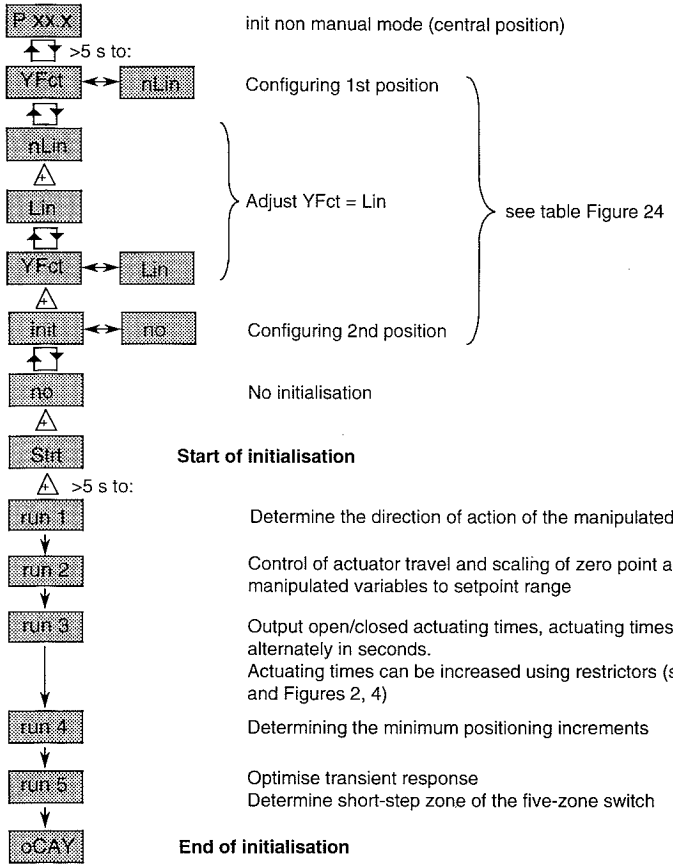


Figure 22 Initialisation of SIPART PS

In rare instances, initialisation does not complete. Initialisation will then stop when the upper and lower position is checked (run 2).
See the initialisation flowchart (Figure 28 Index 2) for how to proceed.

8 Configuring

After initialisation, the positioner can be configured to meet the requirements of the task in hand. The factory setting permits an immediate switch over from manual into automatic mode (Figure 6), as it corresponds to that required for a typical application and is set up in such a way that normally only a few parameters will need to be changed.

The effect of the individual parameters can be seen in the configuration block diagram - Figure 25. Each parameter is described in some detail.

yFct **Function of position feedback**
The conversion of the rotary motion is linear, so the factory setting of "nLin" **must** be changed to "Lin".

Sdir **Setpoint direction**
SPrA/ SprE **Setpoint split range, start/end**

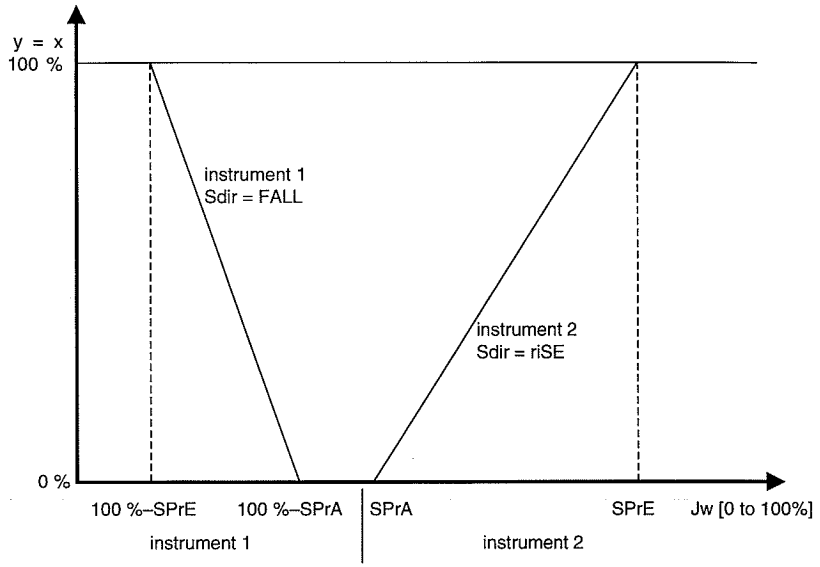


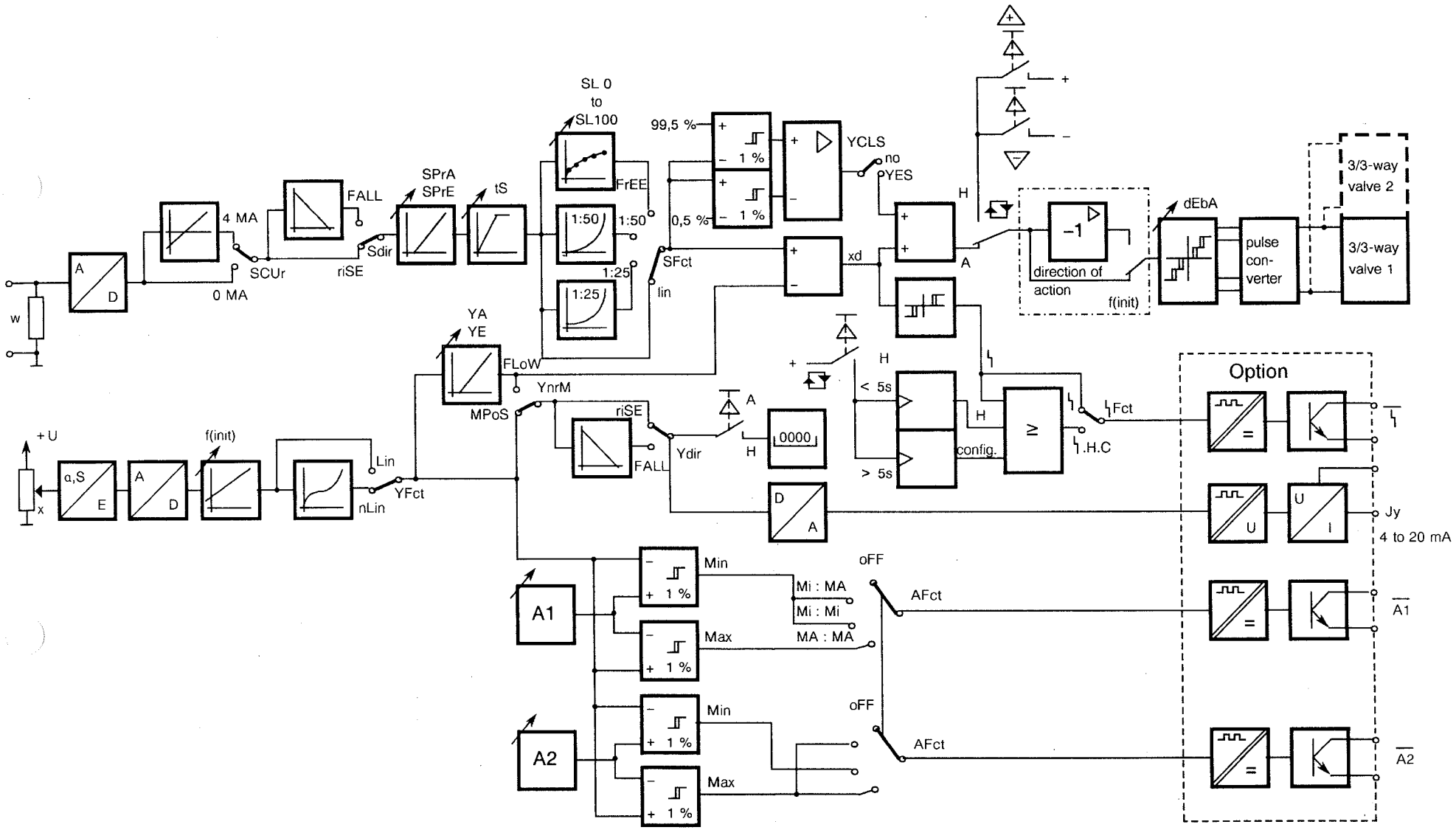
Figure 23 Example: Split-range operation with two instruments

Display		Factory setting	Resolution	Dimension	Meaning
Configuring position	Settings/value				
YFct	Lin, nLin	nLin	–	–	Position feedback function linear/non-linear
init	no/oCAY [2], Strt [1]	no	–	–	Initialisation
SCUr	0 MA, 4 MA	4 MA	–	–	Setpoint, current range 0 to 20 mA or 4 to 20 mA
Sdir	riSE, FALL	riSE	–	–	Setpoint direction
SPrA	0,0 to 100,0	0,0	0,1	%	Setpoint split range Start
SPrE	0,0 to 100,0	100,0	0,1	%	End
tS	AUto, 0 to 40	0	1	s	Setpoint ramp
SFct	Lin 1 : 25 1 : 50 FrEE	Lin	–	–	Setpoint function linear equal-percentage 1 : 25 equal-percentage 1 : 50 freely adjustable [4]
SL 0 SL 1 SL 2 SL 3 SL 4 SL 5 SL 6 SL 7 SL 8 SL 9 SL 10	0,0 to 100,0	0,0 28,5 50,0 62,6 71,5 78,5 84,1 88,9 93,1 96,7 100 [4]	0,1	%	Setpoint vertices for freely adjustable setpoint function 0 % 10 % 20 % 30 % 40 % 50 % 60 % 70 % 80 % 90 % 100 % Vertices only displayed when SFct = FrEE
dEbA	AUto, 0,1 to 10,0	AUto	0,1	%	Positioner dead band
Ydir	riSE, FALL	riSE	–	–	Direction of action of manipulated variable
YnrM	MPoS, FLoW	MPoS	–	–	Manipulated variable standardisation, mechanical travel, flow
YA	0,0 to 100,0	0,0	0,1	%	Manipulated variable limit Start
YE	0,0 to 100,0	100,0	0,1	%	End
YCLS	YES, no	no	0,1	%	Tight shut-off of valve
AFct	oFF Mi : MA Mi : Mi MA : MA	oFF	– – – –	– – – –	Alarms function: not present A1 Min, A2 Max A1 Min, A2 Min A1 Max, A2 Max
A1	0,0 to 100,0	10,0	0,1	%	Alarm 1 threshold
A2	0,0 to 100,0	90,0	0,1	%	Alarm 2 threshold
↳ Fct	↳ ↳.H.C	↳	–	–	Fault alarm output function ↳ ↳+H+C
PrSt	no/oCAY [3], Strt [1]	no	–	–	Preset (factory setting)

Figure 24 Configuration table

Settings (values) are flashed on and off.

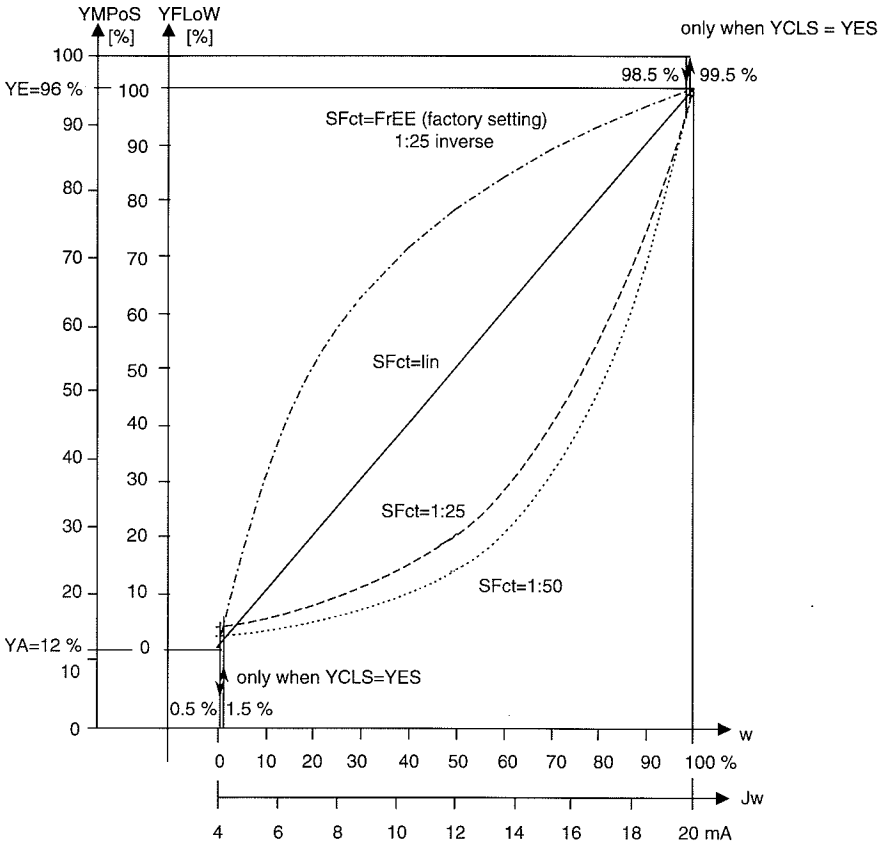
1) Displayed for 5 secs and permits return to no or oCAY if wrongly entered. The function is only initiated after the 5 secs have elapsed.
2) or no if initialisation has not yet been performed, oCAY if initialisation completed successfully.
3) or no if the configuration has been changed from the factory setting; oCAY if the factory setting has not been altered.
4) The inverse function 1:25 is stored as the factory setting of the setpoint function (SFct = FrEE).



f(init) = setting determined during initialisation

Figure 25 SIPART PS - Configuration block diagram

SFct Setpoint function
YnrM Standardisation of manipulated variables
YCLS Tight shut-off valve



Y MPoS mechanical actuator travel standardised to the setpoint value during initialisation
Y Flow actuator travel limited to actual rate of flow using YA and YE

Figure 26 Setpoint characteristics, standardisation of the manipulated variables and sealing function

tS **Setpoint ramp (restriction of actuating speed)**
When tS = AUto, the larger of the actuating times determined during initialisation is used as a parameter.

dEbA **Positioner dead band**
If dEbA = AUto, the dead band, when in automatic mode, is constantly adapted to the conditions. Other adaptations use the fixed value for the dead band.

ϟFct **Function of the fault signal output**
If ϟ Fct = ϟ only the monitoring of the control difference in automatic operation (maintained contact too long) is switched to the output:
If ϟ Fct= ϟ .H.C, the fault signal is ORed with the manual mode and configuring signals to block or track, if necessary, the output signal from the supplying controller. This will prevent integral saturation and ensure bumpless transfer.

9 Technical data

- **General data: basic instrument 6DR3*01-XX and option 6DR3*04-XX**

Climatic category according to ICE 721

Storage		1k5 but –40 to 80 °C [1]
Transport		2k4 but –40 to 80 °C [1]
Operation	without purging air	3k3 but –20 to +80 °C [2]
	with purging air	3k4 but –20 to +80 °C [2]

Degree of protection	IP54 according to EN 60529 IP65 according to EN 60529 with outlet air adapter accessory 6DR3004-8C
Dimensions	see Figure 27

Weight:	basic instrument	6DR3*01-XX	1.3 kg
	option	6DR3*04-XX	0.4 kg
	accessories	6DR3*04-8D	1.3 kg

Resistance to vibration	2 g according to IEC 68-2-6 with NAMUR[3] 6 g according to IEC 68-2-6 with ARCA accessory
Termination system	
electrical signals	Screw terminals 1.5□ AWG14 Cable gland PG 13
pneumatic signals	Internal female thread G 1/8 DIN 45141
Material housing	Fibre-glass reinforced polyester
pneumatic terminal block	Anodised aluminium AL Mg Si
CE sign for units 6 DR31xx	Conforms to EMC guideline 89/336 EWG in accordance with the following standards
Emmitted interference	EN 50 5081-1
Immunity to interfence	EN 50 082-2 and NAMUR NE 21 May 93

1) when commissioning at ≤0 °C, ensure the valves are purged with the dry medium for a sufficiently long period.
2) –25 to +80 °C on request. See technical data for basic instrument and option for ex-proof instruments.
3) up to 100 Hz

- **Pneumatic and mechanical data basic instrument 6DR3*01-XX**

Power supply (inlet air)	
Medium	Instrument air, free of oil, water and dust[4]
Pressure	1.4 to 6 bar
Solids content	< 30 µm
Dewpoint	20 k below the lowest ambient temperature
Unrestricted flow	
Inlet air valve	5.5 m^3/h under normal conditions
Outlet air valve	5 m^3/h with a drop in pressure from 1 to 0 bar
Valve leakage	< $6 \cdot 10^{-4}$ m^3/h
Restrictor ratio	adjustable up to 1:10 (∞)
Air consumption in settled state	< $3.6 \cdot 10^{-2}$ m^3/h, single acting < $6 \cdot 10^{-2}$ m^3/h, double acting
Types of actuator	Single and double acting
Positioning times	2.5 to 40 s
Rotary actuators	
Mounting kit 6DR3004-8D	To VDI/VDE 3845 Angle of rotation 54 to 97
Mounting position	any, outlet air opening not upwards

[4] oxygen on request

- **Electrical data: basic instrument**

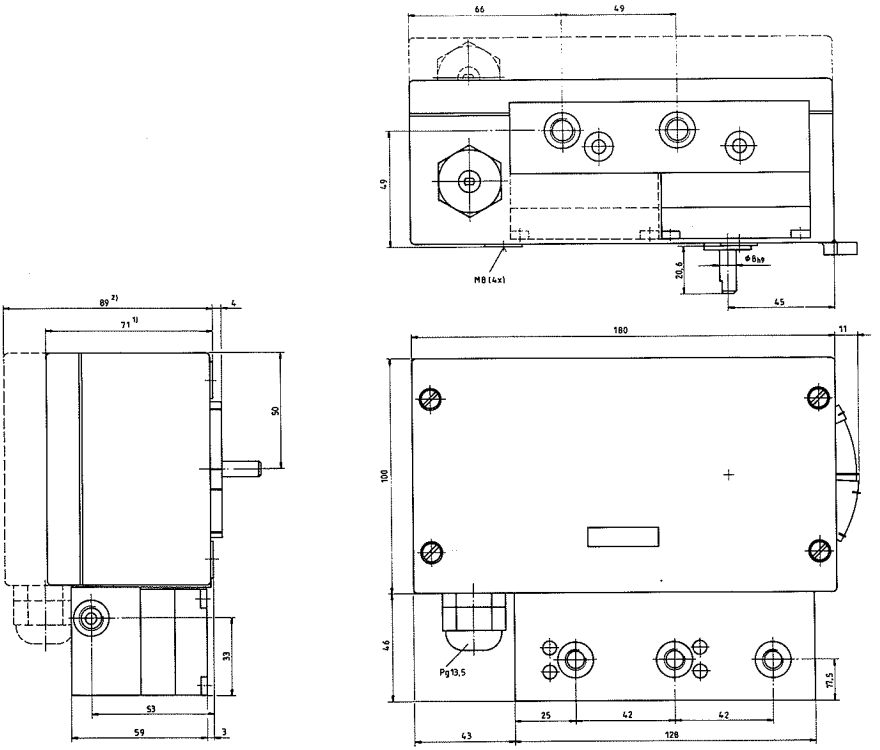
		6DR3*01-1N/2N	6DR3*01-1E/2E
degree of protection to EN 50014 and EN 50020		–	EEx ib II C T4/T5/T6
conformance certificate		–	see chapter 11
place of installation		–	Zone 1
ambient temperature		–20 to 80 °C [1]	T4 –20 to +80 °C [1] T5 –20 to +65 °C [2] T6 –20 to +50 °C [3]
2-wire circuit		Figure 8	Figure 14
nominal signal range i		4 to 20 mA	
current for maintenance of power supply		≤ 3.6 mA	
load voltage		$U_B \geq 11$ V	
static destruction limit		± 40 mA	–
dynamic destruction limit 1.2/50 µs, 82 Ω		± 500 V	–
internal capacitance	Ci	–	negligible
internal inductance	Li	–	negligible
for connection to intrinsically safe current sources with	Uo	–	≤ 30 V
	J_k	–	≤ 100 mA
	P	–	≤ 1 W
3/4-wire circuit		Figure 9, 10	Figure 15
power supply U_H			
range		+ 18 to + 35 V	+ 18 to + 30 V
power consumption J_H		$J_H = \frac{U_H\,[V] - 10V}{1.2\,k\Omega}$	≥ 4 mA [4]
static destruction limit		± 35 V	–
dynamic destruction limit 1.2/50 µs, 82 Ω		± 500 V	–
internal capacitance	Ci	–	negligible
internal inductance	Li	–	negligible
for connection to intrinsically safe voltage sources with	Uo	–	30 V
	J_k	–	100 mA
	P		1 W
current input iw			
nominal signal range		0 or 4 to 20 mA	
load		50 Ω ± 2 %	
static destruction limit		± 40 mA	
dynamic destruction limit 1.2/50 µs, 82 Ω		± 500 V	–
internal capacitance	Ci	–	–
internal inductance	Li	–	negligible
for connection to intrinsically safe current source with	Uo		negligible
	J_K	–	≤ 30 V
	P		≤ 100 mA
			≤ 1 W
electrical isolation		between U_H and J_w	between U_H and J_w ·
test voltage 50 Hz 1 Min.			500 V (2 intrinsically safe circuits)
AD converter			
sampling time		12.5 ms	
resolution		≤ 0.05 %	
transfer error		≤ 0.2 %	
effect of temperature		≤ 0.1 % /10K	
positioner data			
5-zone switch		adaptive	
dead band dEbA = Auto		adaptive or	
dEbA = 0.1 to 10 %		user selectable	
controllable actuating times		≥ 2.5 s	

1) –25 to +80 °C on request
2) –25 to +65 °C on request
3) –25 to +50 °C on request
4) ΣR_L The sum of all (line) resistances present in the circuit

- **Electrical data: option**

		6DR3*04-8N	6DR3*04-8E
degree of protection to EN 50014 and EN 50020		–	EEx ib II C T4 /T5/T6 [5]
conformance certificate		–	see chapter 11
place of installation		–	Zone 1
ambient temperature		–20 to 80 °C [1]	T4 –20 to +80 °C [1] T5 –20 to +65 °C [2] T6 –20 to +50 °C [3]
current output Jy		Figure 11	Figure 16, 17
nominal signal range	i	2-wire circuit 4 to 20 mA short circuit proof	
control range		3.6 to 21.6 mA	
power supply	U_H	+12 to +35 V	+12 to +30 V
external load		$R_B\,[k\Omega] \leq \frac{[U_H]\,V - 12\,V}{i[mA]}$	
transfer error		≤ 0.3 %	
effect of temperature		≤ 0.1 % / 10 K	
resolution		≤ 0.05 %	
residual ripple		≤ 1 %	
dynamic destruction limit 12/50 µs, 82 Ω		500 V	–
internal capacitance	Ci	–	≤ 6 nF
internal inductance	Li	–	≤ 1 mH
for connection to intrinsically safe voltage sources with	U_o	–	≤ 30 V
	I_K	–	≤ 100 mA
	P	–	≤ 1 W
digital outputs $\overline{A1}$, $\overline{A2}$, $\overline{\lrcorner}$		Figure 12	Figure 18, 19
terminals +24 V and –			
signal state High (not activated)		conductive: R = 1 k +3% –1%	conductive: R = 2.43 k +2% –1%
signal state Low (activated) [6]		blocked: J_R < 60 µA	blocked: J_R < 60 µA
power supply U_H		≤ +35 V	≤ +30 V
static destruction limit		± 35 V	–
dynamic destruction limit 1.2/50 µs, 82 Ω		± 500 V	–
internal capacitance	Ci	–	negligible
internal inductance	Li	–	negligible
for connection to intrinsically safe voltage sources with	U_0	–	≤ + 30 V
terminals + 5 K and +24 V		Figure 14	–
auxiliary resistance for reversal of direction of action		R = 5 K11 ± 1 %, 0.25 W	
terminals + DIN and –			Figure 23
signal status High (not activated)			≥ 2.1 mA [4]
signal status Low (activated) [6]			≤ 1.2 mA [4]
internal capacitance	Ci	–	
internal inductance	Li	–	
for connection to intrinsically safe switching amplifiers to DIN 19234 with	U_o	–	≤30 V
electrical isolation		to the basic instrument and the 4 outputs among themselves	$\overline{A1}$, $\overline{A2}$, $\overline{\lrcorner}$, Jy and the basic instrument are isolated intrinsically safe circuits
test voltage 50 Hz 1 Min.		500 V	500 V

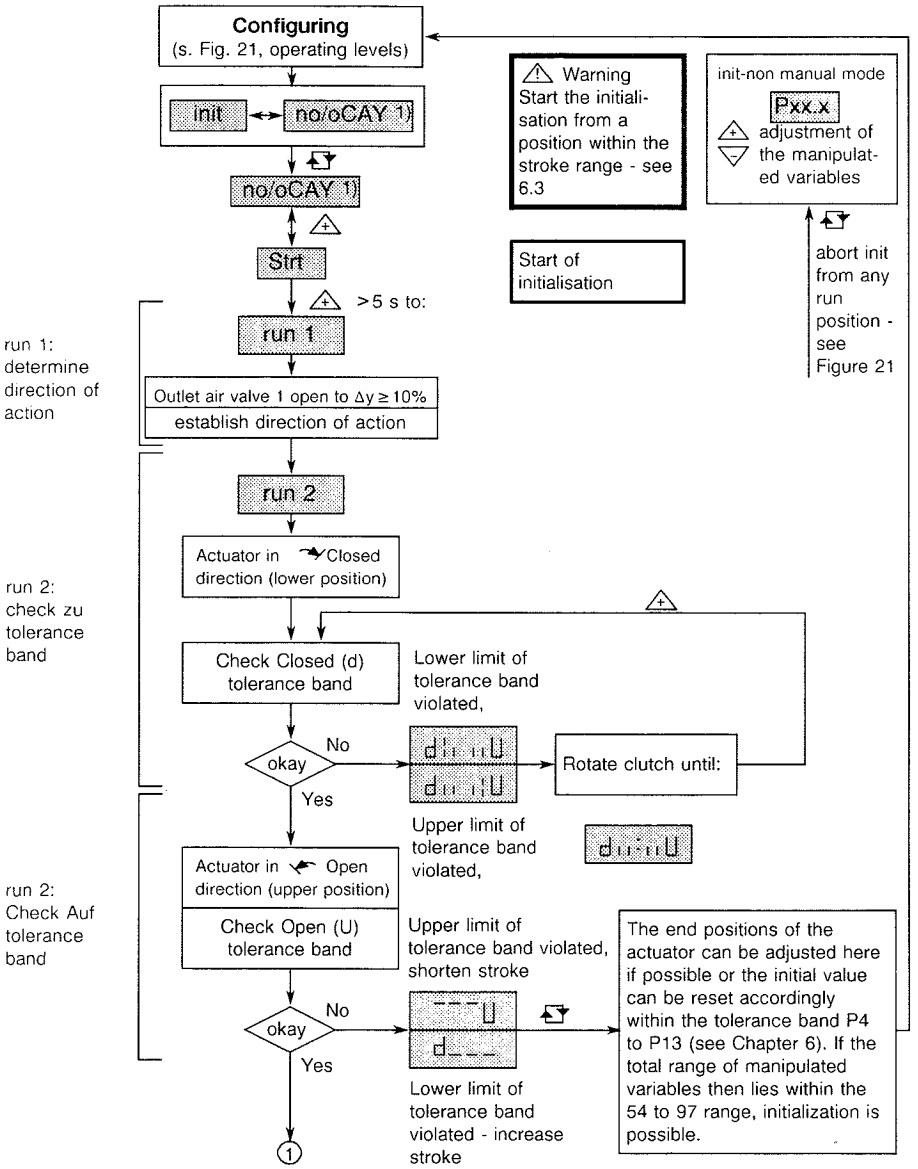
1) –25 to +80°C on request
2) –25 to +65°C on request
3) –25 to +50°C on request
4) operating points with supply to DIN 19234 U_H =8.2 V, Ri = 1 kΩ
5) only with the basic instrument 6DR3*01-1E/2E
6) The status is also Low if the basic instrument is faulty or without auxiliary power supply.



1) basic instrument
2) basic instrument with option

Figure 27 Dimensions

10 Initialisation flowchart



1) oCAY: Initialisation already complete (e.g. by repeating the initialisation without mechanical changes)

Figure 28 Initialisation flowchart

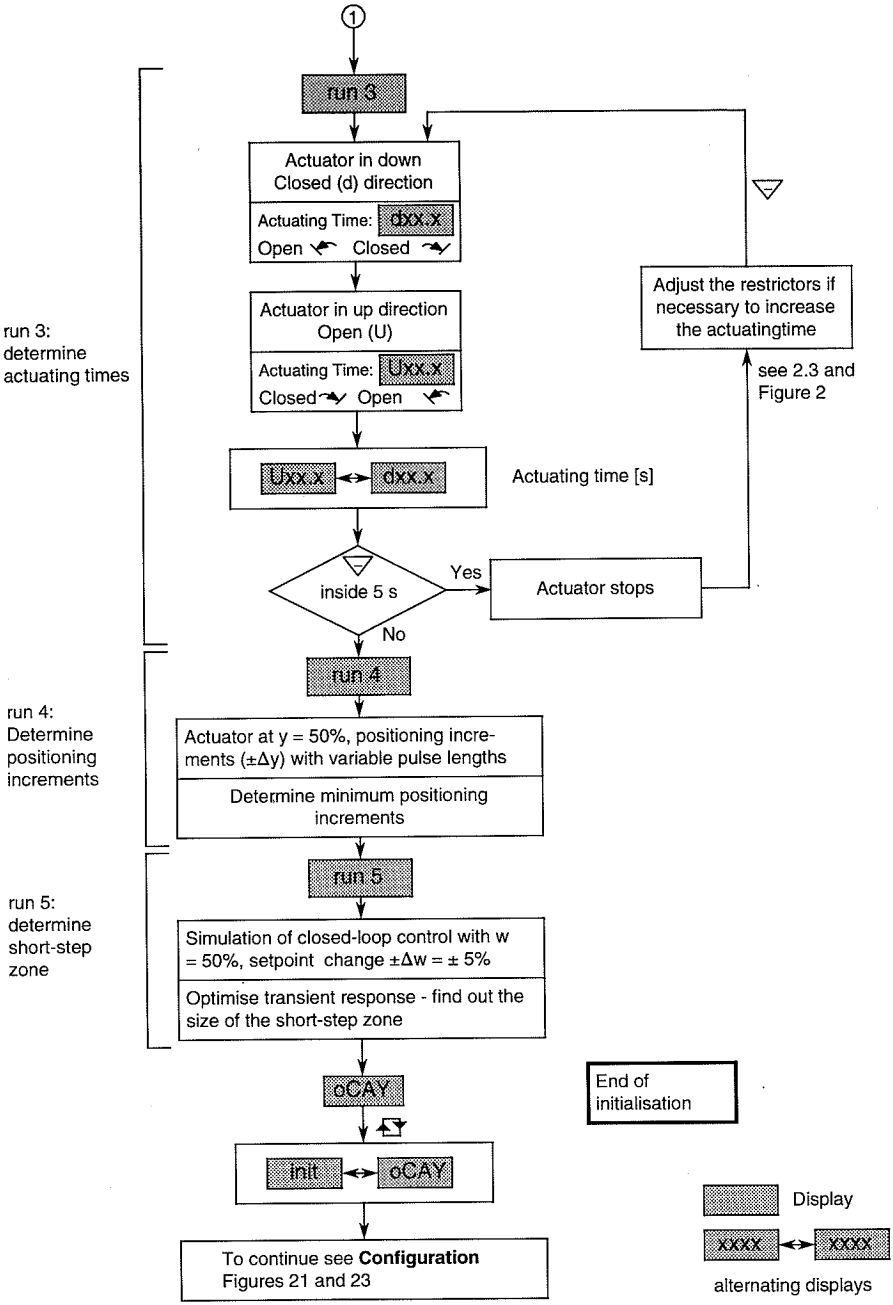


Figure 28 continued

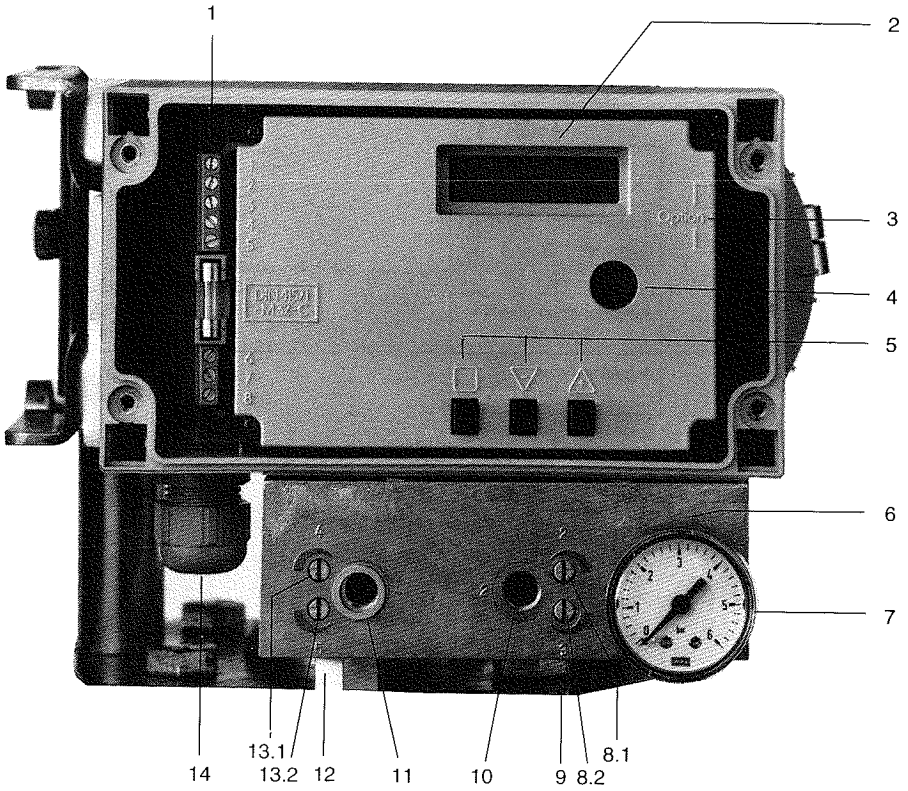


Figure 29 View of controls and connections

1 Terminals
2 Display
3 Plug for option
4 Clutch
5 Control pushbuttons
6 Connection 1 inlet air
7 Inlet air manometer
8.1 Restrictor 2 inlet air positioning pressure 1
8.2 Restrictor 3 outlet air positioning pressure 1
9 Connection positioning pressure 1
10 Connection manometer positioning pressure 1
11 Connection manometer positioning pressure 2
12 Connection positioning pressure 2
13.1 Restrictor 4 inlet air positioning pressure 2
13.2 Restrictor 5 outlet air positioning pressure 2
14 PG screwed gland

Restrictors are delivered fully opened. Turning them clockwise will reduce the flow to 0.

➽ Note: Do not use excessive force when turning the restrictors.

11 Konformitätsbescheinigung/Conformance certificate/Certificat de conformité/ Certificato di conformità/Certificado de conformidad

Physikalisch-Technische Bundesanstalt

(1) KONFORMITÄTSBESCHEINIGUNG

(2) **PTB Nr. Ex-91.C.2138**

(3) Diese Bescheinigung gilt für das elektrische Betriebsmittel
elektropneumatischer Stellungsregler
SIPART PS Typ 6DR3000-*E mit Optionsmodul 6DR3004-8E

(4) der Firma Siemens AG
7500 Karlsruhe

(5) Die Bauart dieses elektrischen Betriebsmittels sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Konformitätsbescheinigung festgelegt.

(6) Die Physikalisch-Technische Bundesanstalt bescheinigt als Prüfstelle nach Artikel 14 der Richtlinie des Rates der Europäischen Gemeinschaften vom 18. Dezember 1975 (76/117/EWG) die Übereinstimmung dieses elektrischen Betriebsmittels mit den harmonisierten Europäischen Normen

Elektrische Betriebsmittel für explosionsgefährdete Bereiche

EN 50 014:1977 + A1 ..A5 (VDE 0170/0171 Teil 1/1.87) Allgemeine Bestimmungen
EN 50 020:1977 + A1 ..A2 (VDE 0170/0171 Teil 7/1.87) Eigensicherheit „i"

nachdem das Betriebsmittel mit Erfolg einer Bauartprüfung unterzogen wurde. Die Ergebnisse dieser Bauartprüfung sind in einem vertraulichen Prüfprotokoll festgelegt.

(7) Das Betriebsmittel ist mit dem folgenden Kennzeichen zu versehen:

EEx ib IIC T6

(8) Der Hersteller ist dafür verantwortlich, daß jedes derart gekennzeichnete Betriebsmittel in seiner Bauart mit den in der Anlage zu dieser Bescheinigung aufgeführten Prüfungsunterlagen übereinstimmt und daß die vorgeschriebenen Stückprüfungen erfolgreich durchgeführt wurden.

(9) Das elektrische Betriebsmittel darf mit dem hier abgedruckten gemeinschaftlichen Unterscheidungszeichen gemäß Anhang II der Richtlinie des Rates vom 6. Februar 1979 (79/196/EWG) gekennzeichnet werden.

Im Auftrag

Dr.-Ing. Schebsdat
Regierungsdirektor

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT 24

Braunschweig, 21.01.1992

Prüfbescheinigungen ohne Unterschrift und ohne Dienststempel haben keine Gültigkeit.
Die Bescheinigungen dürfen nur unverändert weiterverbreitet werden.
Auszüge oder Änderungen bedürfen der Genehmigung der Physikalisch-Technischen Bundesanstalt, Bundesallee 100, Postfach 33 45, D-3300 Braunschweig.

V 15 - 320 007 - 12.85

Physikalisch-Technische Bundesanstalt

A N L A G E

zur Konformitätsbescheinigung PTB Nr. Ex-91.C.2138

Der elektropneumatische Stellungsregler SIPART PS dient als Kopplungsbaugruppe zwischen elektrischen Reglern und pneumatischen Stellantrieben.

Die höchstzulässige Umgebungstemperatur in Abhängigkeit von der Temperaturklasse ist der folgenden Tabelle zu entnehmen:

Temperaturklasse	Umgebungstemperatur
T6	50°C
T5	65°C
T4	80°C

Elektrische Daten

SIPART PS Grundgerät in 2L-Schaltung

Hilfsenergie-/Steuerstromkreis ..... (Klemmen 3, 7)
in Zündschutzart Eigensicherheit EEx ib IIC nur zum Anschluß an bescheinigte eigensichere Stromkreise mit folgenden Höchstwerten:

U_o = 30 V
I_k = 100 mA
P = 1 W

Die innere Induktivität und Kapazität sind vernachlässigbar klein.

SIPART PS Grundgerät in 3/4L-Schaltung

Hilfsenergiestromkreis .. (Klemmen 1,2 und 4,5)
in Zündschutzart Eigensicherheit EEx ib IIC nur zum Anschluß an bescheinigte eigensichere Stromkreise mit folgenden Höchstwerten:

U_o = 30 V
I_k = 100 mA
P = 1 W

Die innere Induktivität und Kapazität sind vernachlässigbar klein.

Steuerstromkreis ..... (Klemmen 6 und 7,8)
in Zündschutzart Eigensicherheit EEx ib IIC nur zum Anschluß an bescheinigte eigensichere Stromkreise mit folgenden Höchstwerten:

U_o = 30 V
I_k = 100 mA
P = 1 W

Die innere Induktivität und Kapazität sind vernachlässigbar klein

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Physikalisch-Technische Bundesanstalt

Anlage zur Konformitätsbescheinigung PTB Nr. Ex-91.C.2138

SIPART PS Option

Hilfsenergie-/Eingangs-signalstromkreise ..... (Steckverbinder)	in Zündschutzart Eigensicherheit EEx ib IIC nur zum Anschluß an zugehöriges Grundgerät Typ 6DR3000-*E
Analogausgangssignal-stromkreis ..... (Klemmen 1, 2, 3)	in Zündschutzart Eigensicherheit EEx ib IIC nur zum Anschluß an bescheinigte eigensichere Stromkreise mit folgenden Höchstwerten: U_o = 30 V, I_k = 100 mA, P = 1 W Die innere Induktivität beträgt 1 mH Die innere Kapazität beträgt 6 nF
Binärausgangsstromkreise (Klemmen 4, 5, 6; 7, 8, 9; 10, 11, 12)	in Zündschutzart Eigensicherheit EEx ib IIC nur zum Anschluß an bescheinigte eigensichere Stromkreise mit folgendem Höchstwert je Stromkreis: U_o = 30 V Die innere Induktivität und Kapazität aller drei Stromkreise sind vernachlässigbar klein.

Beim SIPART PS Grundgerät in 3L-Schaltung sind der Hilfsenergie- und Steuerstromkreis galvanisch verbunden.

Beim SIPART PS Grundgerät in 4L-Schaltung sind der Hilfsenergie- und Steuerstromkreis galvanisch getrennt.

Bei der SIPART PS Option sind die einzelnen Ausgangsstromkreise untereinander und von den Steuerstromkreisen des Grundgerätes galvanisch getrennt.

Prüfungsunterlagen sind unterschrieben

1. Beschreibung (14 Blatt)
2. Zeichnung Nr.: C73451-A330-X101-*-26 (11 Blatt)
   C73451-A330-X100-*-26 (8 Blatt)

Im Auftrag

Braunschweig, 21.01.1992

Dr.-Ing. Schendel
Regierungsdirektor

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT

Blatt 2/2

V 13-7SS 320 17-9.88

Physikalisch-Technische Bundesanstalt

1. N A C H T R A G

zur Konformitätsbescheinigung PTB Nr. Ex-91.C.2138

der Firma Siemens AG
D-7500 Karlsruhe

Der elektropneumatische Stellungsregler SIPART PS mit Optionsmodul darf künftig auch mit den Änderungen entsprechend den unten aufgeführten Prüfungsunterlagen gefertigt werden.

Die Änderungen betreffen den inneren und äußeren Aufbau sowie die Typenbezeichnung.

Die Typenbezeichnung lautet künftig 6DR300*-*E.

Die elektrischen Daten bleiben unverändert.

Prüfungsunterlagen

Beschreibung (2 Blatt) unterschrieben am 02.03.1992

Im Auftrag

Braunschweig, 30.04.1992

Dr.-Ing. Schebstadt
Regierungsdirektor

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT

EEx ib IIC T6

Blatt 1/1

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Physikalisch-Technische Bundesanstalt

2. NACHTRAG
zur Konformitätsbescheinigung PTB Nr. Ex-91.C.2138

der Firma Siemens AG
D-Karlsruhe

Der elektropneumatische Stellungsregler SIPART PS mit Optionsmodul 6DR300*-*E darf künftig auch nach den unten aufgeführten Prüfungsunterlagen gefertigt werden.

Die Änderungen betreffen den inneren Aufbau des Gerätes. Die "Elektrischen Daten" bleiben unverändert.

Die Typenbezeichnung für diese geänderte Ausführung lautet:

6DR3*0*-*E (SIPART PS) bzw. 6DR3*0*-8E (Optionsmodul)

Prüfungsunterlagen		unterschrieben am
1. Beschreibung (3 Blatt)		29.11.1993 und 28.02.1994
2. Zeichnung Nr.	C73451-A330-X111-*-26, Bl. 0	28.02.1994
	C73451-A330-X111-*-26, Bl. 1+	29.11.1993
	C73451-A330-X111-*-26, Bl. 2+	28.02.1994
	C73451-A330-X111-*-26, Bl. 3+	29.11.1993
	C73451-A330-X111-*-26, Bl. 4+	29.11.1993
	C73451-A330-X111-*-26, Bl. 5+	28.02.1994
	C73451-A330-X111-*-26, Bl. 6+	28.02.1994
	C73451-A330-X111-*-26, Bl. 7+ bis Bl. 12+	29.11.1993
	C73451-A330-X110-*-26, Bl. 0+ bis Bl. 8+	29.11.1993

Im Auftrag

Braunschweig, 16.05.1994

Dr.-Ing. Johannsmeyer
Oberregierungsrat

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT

EEx ib IIC T6

Blatt 1/1

Siemens AG
Bereich Automatisierungstechnik
Geschäftsgebiet Meß-, Prüf- und
Prozeßtechnik
AUT 34
D-76181 Karlsruhe

Siemens Aktiengesellschaft

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