

Positioners

SIPART PS2

Technical specifications

Technical specifications

SIPART PS2 (all versions)

Rated conditions		Design
Permissible ambient temperature for operation	See "Technical Specifications" on page 5/9	Mode of operation
Degree of protection ¹⁾	IP66 according to EN 60529/NEMA 4X	<ul style="list-style-type: none"> Range of stroke (linear actuators) 3 ... 130 mm (0.12 ... 5.12 inch) (angle of positioner shaft 16 ... 90°)
Mounting position	Any; pneumatic connections and exhaust opening not facing up in wet environment	<ul style="list-style-type: none"> Angle of rotation range (part-turn actuators) 30 ... 100°
Vibration resistance		Mounting type
<ul style="list-style-type: none"> Harmonic oscillations (sine-wave) according to EN 60068-2-6/10.2008 	3.5 mm (0.14"), 2 ... 27 Hz, 3 cycles/axis 98.1 m/s ² (321.84 ft/s ²), 27 ... 300 Hz, 3 cycles/axis	<ul style="list-style-type: none"> On linear actuators
<ul style="list-style-type: none"> Bumping (half-sine) according to EN 60068-2-27/02.2010 	150 m/s ² (492 ft/s ²), 6 ms, 1000 shocks/axis	Using mounting kit 6DR4004-8V and where necessary with an additional lever arm 6DR4004-8L on actuators according to IEC 60534-6-1 (NAMUR) with ribs, bars or flat face.
<ul style="list-style-type: none"> Noise (digitally controlled) according to EN 60068-2-64/04.2009 	10 ... 200 Hz; 1 (m/s ²) ² /Hz (3.28 (ft/s ²) ² /Hz) 200 ... 500 Hz; 0.3 (m/s ²) ² /Hz (0.98 (ft/s ²) ² /Hz) 4 hours/axis	<ul style="list-style-type: none"> On part-turn actuators
<ul style="list-style-type: none"> Recommended continuous duty range of the complete fitting 	≤ 30 m/s ² (98.4 ft/s ²) without resonance sharpness	Using mounting kit 6DR4004-8D on actuators with mounting plane according to VDI/VDE 3845 and IEC 60534-6-2. The necessary mounting console is fitted on the actuator side.
Climatic class	According to EN 60721-3-4	Weight, basic device
<ul style="list-style-type: none"> Storage 	1K5, but -40 ... +80 °C (1K5, but -40 ... +176 °F)	<ul style="list-style-type: none"> Glass-fiber reinforced enclosure made from polycarbonate
<ul style="list-style-type: none"> Transport 	2K4, but -40 ... +80 °C (2K4, but -40 ... +176 °F)	Approx. 0.9 kg (1.98 lb)
<ul style="list-style-type: none"> Operation²⁾ 	4K3, but -30 ... +80 °C (4K3, but -22 ... +176 °F) ³⁾	<ul style="list-style-type: none"> Aluminum enclosure
Pneumatic data		Approx. 1.3 kg (2.86 lb)
Auxiliary power (air supply)	Compressed air, carbon dioxide (CO ₂), nitrogen (N), noble gases or cleaned natural gas	<ul style="list-style-type: none"> Stainless steel enclosure
<ul style="list-style-type: none"> Pressure 	1.4 ... 7 bar (20.3 ... 101.5 psi)	Approx. 3.9 kg (8.6 lb)
Air quality to ISO 8573-1		<ul style="list-style-type: none"> Pressure-proof aluminum enclosure
<ul style="list-style-type: none"> Solid particulate size and density 	Class 2	Approx. 5.2 kg (11.46 lb)
<ul style="list-style-type: none"> Pressure dew point 	Class 2 (min. 20 K (36 °F) below ambient temperature)	Material
<ul style="list-style-type: none"> Oil content 	Class 2	<ul style="list-style-type: none"> Enclosure
Unrestricted flow (DIN 1945)		<ul style="list-style-type: none"> - 6DR5..0-... (Makrolon)
<ul style="list-style-type: none"> Inlet air valve (ventilate actuator)⁴⁾ 		<ul style="list-style-type: none"> - 6DR5..1-... (aluminum)
<ul style="list-style-type: none"> - 2 bar (29 psi) 	4.1 Nm ³ /h (18.1 USgpm)	<ul style="list-style-type: none"> - 6DR5..2-... (stainless steel)
<ul style="list-style-type: none"> - 4 bar (58 psi) 	7.1 Nm ³ /h (31.3 USgpm)	<ul style="list-style-type: none"> - 6DR5.5-... (aluminum, flame-proof)
<ul style="list-style-type: none"> - 6 bar (87 psi) 	9.8 Nm ³ /h (43.1 USgpm)	<ul style="list-style-type: none"> Pressure gauge block
<ul style="list-style-type: none"> Outlet air valve (vent actuator)⁴⁾ 		Dimensions
<ul style="list-style-type: none"> - 2 bar (29 psi) 	8.2 Nm ³ /h (36.1 USgpm)	See "Dimensional Drawings" on page 5/23
<ul style="list-style-type: none"> - 4 bar (58 psi) 	13.7 Nm ³ /h (60.3 USgpm)	Device versions
<ul style="list-style-type: none"> - 6 bar (87 psi) 	19.2 Nm ³ /h (84.5 USgpm)	<ul style="list-style-type: none"> In Makrolon enclosure
Valve leakage	< 6 · 10 ⁻⁴ Nm ³ /h (0.0026 USgpm)	<ul style="list-style-type: none"> In aluminum enclosure
Restrictor ratio	Adjustable up to ∞ : 1	<ul style="list-style-type: none"> In flameproof aluminium enclosure
Auxiliary power consumption in the controlled state	< 3,6 · 10 ⁻² Nm ³ /h (0.158 USgpm)	<ul style="list-style-type: none"> In stainless steel enclosure
		Gauge
		<ul style="list-style-type: none"> Degree of protection
		<ul style="list-style-type: none"> - Gauge made of plastic
		IP31
		<ul style="list-style-type: none"> - Gauge made of steel
		IP44
		<ul style="list-style-type: none"> - Gauge made of stainless steel 316
		IP54
		<ul style="list-style-type: none"> Vibration resistance
		According to EN 837-1

Technical specifications

Controller	
Controller unit	
• Five-point switch	Self-adjusting
• Deadband	
- dEbA = Auto	Self-adjusting
- dEbA = 0.1 ... 10 %	Can be set as fixed value
Analog-to-digital converter	
• Scan time	10 ms
• Resolution	≤ 0,05 %
• Transmission error	≤ 0,2 %
• Temperature influence effect	≤ 0.1 %/10 K (≤ 0.1 %/18 °F)
Cycle time	
• 20 mA/HART device	20 ms
• PA device	60 ms
• FF device	60 ms (min. loop time)
Certificates and approvals	
Classification according to pressure equipment directive (PED 97/23/EC)	For gases of fluid group 1, complies with requirements of article 3, paragraph 3 (sound engineering practice SEP)
CE conformity	You can find the appropriate directives and standards, including the relevant versions, in the EC Declaration of Conformity on the Internet.
Explosion protection	
Explosion protection according to ATEX/IECEX	
• Flameproof enclosure "d"	II 2 G Ex d IIC T6/T4 Gb
• Intrinsic safety "ia"	II 2 G Ex ia IIC T6/T4 Gb II 2 D Ex ia IIIC 110°C Db
• Intrinsic safety "ic"	II 3 G Ex ic IIC T6/T4 Gc
• Non-sparking "nA"	II 3 G Ex nA IIC T6/T4 Gc
• Dust, protection with "t" enclosure	II 3 D Ex tb IIIC T100°C Dc IP66
Explosion protection according to FM/CSA	
• Explosion-proof "d"	
- FM	XP, Class I, Division 1, ABCD XP, Class I, Zone 1, AEx d, IIC, T6/T4
- CSA	Class I, Division 1, Groups CD Class II/III Div 1, Groups EFG
• Intrinsic safety "ia"	
- FM	IS, Class I, Division 1, ABCD Class I; Zone 1, AEx ib, IIC, T6/T4
- CSA	Class I, Division 1, ABCD Class I; Zone 1, Ex ib, IIC
• Non-sparking "nA"	
- FM	NI, Class I, Division 2, ABCD NI, Class I, Zone 2, IIC, T6/T4
- CSA	Class I, Division 2, ABCD Class I, Zone 2, IIC
Dust, protection with "t" enclosure	
- CSA	Class II, Division 1

Permissible ambient temperature

For operation with and without HART²⁾

Zone 1, 2 and 22
T4: -30 ... +80 °C (-22 ... +176 °F)
T6: -30 ... +50 °C (-22 ... +122 °F)

For operation with PROFIBUS PA or with FOUNDATION Fieldbus²⁾

Zone 1
T4: -30 ... +80 °C (-22 ... +176 °F)
T6: -30 ... +50 °C (-22 ... +122 °F)

Zone 2 and 22
T4: -20 ... +75 °C (-4 ... +103 °F)
T6: -20 ... +50 °C (-4 ... +122 °F)

Natural gas as driving medium

For technical specifications using natural gas as driving medium, see operating instructions.

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

²⁾ At ≤ -10 °C (≤ 14 °F) the display refresh rate of the indicator is limited. For basic devices with Ex protection the following applies: Only T4 permissible when using with Iy module.

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

⁴⁾ With Ex d version (6DR5..5-...) values reduced by approx. 20 %.

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SIPART PS2 with and without HART

	Basic device without Ex protection	Basic device with Ex d explosion protection	Basic device with "ia" explosion protection	Basic device with explosion protection "ic", "nA", "t"
Electrical specifications				
Current input I_W				
• Rated signal range			0/4 ... 20 mA	
• Test voltage			840 V DC, 1 s	
• Binary input BE1 (terminals 9/10; electrically connected to the basic device)		Suitable only for floating contact; max. contact load < 5 μ A at 3 V		
<u>2-wire connection (terminals 6/8)</u>				
6DR50.. and 6DR53.. without HART				
6DR51.. and 6DR52.. with HART				
Current to maintain the auxiliary power supply			≥ 3.6 mA	
Required load voltage U_B (corresponds to Ω at 20mA)				
• Without HART (6DR50..)				
- Typical	6.36 V (= 318 Ω)	6.36 V (= 318 Ω)	7.8 V (= 390 Ω)	7.8 V (= 390 Ω)
- max.	6.48 V (= 324 Ω)	6.48 V (= 324 Ω)	8.3 V (= 415 Ω)	8.3 V (= 415 Ω)
• Without HART (6DR53..)				
- Typical	7.9 V (= 395 Ω)	-	-	-
- max.	8.4 V (= 420 Ω)	-	-	-
• With HART (6DR51..)				
- Typical	6.6 V (= 330 Ω)	6.6 V (= 330 Ω)	-	-
- max.	6.72 V (= 336 Ω)	6.72 V (= 336 Ω)	-	-
• With HART (6DR52..)				
- Typical	-	8.4 V (= 420 Ω)	8.4 V (= 420 Ω)	8.4 V (= 420 Ω)
- max.	-	8.8 V (= 440 Ω)	8.8 V (= 440 Ω)	8.8 V (= 440 Ω)
• Static destruction limit	± 40 mA	± 40 mA	-	-
Effective internal capacitance C_i				
• Without HART	-	-	22 nF	"ic": 22 nF
• With HART	-	-	7 nF	"ic": 7 nF
Effective internal inductance L_i				
• Without HART	-	-	0,12 mH	"ic": 0,12 mH
• With HART	-	-	0,24 mH	"ic": 0,24 mH
For connecting to circuits with the following peak values	-	-	$U_n = 30$ V $I_i = 100$ mA $P_i = 1$ W	"ic": $U_i = 30$ V $I_i = 100$ mA "nA"/"t": $U_n \leq 30$ V $I_n \leq 100$ mA
<u>3-/4-wire connection (terminals 2/4 and 6/8)</u>				
6DR52.. with HART, explosion-protected				
6DR53.. without HART, not explosion-protected				
Load voltage at 20 mA	≤ 0.2 V (= 10 Ω)	≤ 0.2 V (= 10 Ω)	≤ 1 V (= 50 Ω)	≤ 1 V (= 50 Ω)
Power supply U_H	18 ... 35 V DC	18 ... 35 V DC	18 ... 30 V DC	18 ... 30 V DC
Current consumption I_H			$(U_H - 7.5 \text{ V})/2.4 \text{ k}\Omega$ [mA]	
Effective internal capacitance C_i	-	-	22 nF	"ic": 22 nF
Effective internal inductance L_i	-	-	0.12 mH	"ic": 0,12 mH
For connecting to circuits with the following peak values	-	-	$U_n = 30$ V DC $I_i = 100$ mA $P_i = 1$ W	"ic": $U_i = 30$ V $I_i = 100$ mA "nA"/"t": $U_n \leq 30$ V $I_n \leq 100$ mA
Electrical isolation	between U_H and I_W	between U_H and I_W	between U_H and I_W (2 intrinsically safe circuits)	between U_H and I_W

Technical specifications

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

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SIPART PS2 with PROFIBUS PA/with FOUNDATION Fieldbus

	Basic device without Ex protection	Basic device with Ex d explosion protection	Basic device with "ia" explosion protection	Basic device with explosion protection "ic", "nA", "t"
Electrical specifications				
Power supply, bus circuit (terminals 6/7)	Bus-supplied			
Bus voltage	9 ... 32 V	9 ... 32 V	9 ... 24 V	9 ... 32 V
For connecting to circuits with the following peak values				
<ul style="list-style-type: none"> • Bus connection with FISCO supply unit 			$U_i = 17.5 \text{ V}$ $I_i = 380 \text{ mA}$ $P_i = 5.32 \text{ W}$	"ic": $U_i = 17.5 \text{ V}$ $I_i = 570 \text{ mA}$ "nA"/"t": $U_n \leq 32 \text{ V}$
<ul style="list-style-type: none"> • Bus connection with barrier 			$U_i = 24 \text{ V}$ $I_i = 250 \text{ mA}$ $P_i = 1.2 \text{ W}$	"ic": $U_i = 32 \text{ V}$ "nA"/"t": $U_n \leq 32 \text{ V}$
Effective internal capacitance	-	-	$C_i = \text{negligible}$	$C_i = \text{negligible}$
Effective internal inductance	-	-	$L_i = 8 \mu\text{H}$	"ic": $L_i = 8 \mu\text{H}$
Current consumption	11.5 mA \pm 10 %			
Additional error signal	0 mA			
Safety shutdown can be activated with coding bridge (terminals 81/82)	electrically isolated from bus circuit and binary input			
<ul style="list-style-type: none"> • Input resistance 	> 20 k Ω			
<ul style="list-style-type: none"> • Signal state "0" (shutdown active) 	0 ... 4.5 V or unconnected			
<ul style="list-style-type: none"> • Signal state "1" (shutdown not active) 	13 ... 30 V			
For connecting to power supply with the following peak values			$U_i = 30 \text{ V}$ $I_i = 100 \text{ mA}$ $P_i = 1 \text{ W}$	"nA": $U_n \leq 30 \text{ V}$ $I_n \leq 100 \text{ mA}$ "ic": $U_i = 30 \text{ V}$ $I_i = 100 \text{ mA}$
<ul style="list-style-type: none"> • Effective Internal capacitance 	-	-	$C_i = \text{negligibly small}$	$C_i = \text{negligibly small}$
Binary input BE1 for PROFIBUS (terminals 9/10); electrically connected to the bus circuit)	Bridged or connection to switching contact. Suitable only for floating contact; max. contact load < 5 μA at 3 V			
Electrical isolation	Electrical isolation between basic device and the input for safety shutdown, as well as the outputs of the option modules			
<ul style="list-style-type: none"> • For basic device without Ex protection and for basic device with Ex d • For basic device Ex "ia" 	The basic device and the input to the safety shutdown, as well as the outputs of the option modules, are separate, intrinsically safe circuits.			
<ul style="list-style-type: none"> • For basic device Ex "ic", "nA", "t" 	Electrical isolation between basic device and the input for safety shutdown, as well as the outputs of the option modules			
Test voltage	840 V DC, 1 s			
Design				
Connections, electrical	2.5 AWG28-12			
<ul style="list-style-type: none"> • Screw terminals • Cable gland 	M20x1.5 or 1/2-14 NPT	Ex d certified cable gland M20x1.5; 1/2-14 NPT or M25x1.5	M20x1.5 or 1/2-14 NPT	M20x1.5 or 1/2-14 NPT
Connections, pneumatic	Female thread G1/4 or 1/4-18 NPT			
PROFIBUS PA communication				
Communication	Layers 1 and +2 according to PROFIBUS PA, transmission technology according to IEC 61158-2; slave function; layer 7 (protocol layer) according to PROFIBUS DP, EN 50170 standard with the extended PROFIBUS functions (all data acyclic, manipulated variable, feedbacks and status also cyclic)			
C2 connections	Four connections to master class 2 are supported; automatic connection setup 60 s after break in communication			
Device profile	PROFIBUS PA profile B, version 3.0, more than 150 objects			
Response time to master message	Typically 10 ms			
Device address	126 (when delivered)			
PC parameterizing software	SIMATIC PDM; supports all device objects. The software is not included in the scope of delivery.			

Technical specifications

	Basic device without Ex protection	Basic device with Ex d explosion protection	Basic device with "ia" explosion protection	Basic device with explosion protection "ic", "nA", "t"
FOUNDATION Fieldbus communication				
Communications group and class	According to technical specification of the Fieldbus Foundation for H1 communication			
Function blocks	Group 3, Class 31PS (Publisher Subscriber) 1 Resource Block (RB2) 1 Analog Output Function Block (AO) 1 PID Function Block (PID) 1 Transducer Block (Standard Advanced Positioner Valve)			
Execution times of the blocks	AO: 60 ms PID: 80 ms			
Physical layer profile	123, 511			
FF registration	Tested with ITK 5.0			
Device address	22 (when delivered)			

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Option modules

	Without Ex protection/ with Ex protection Ex d	With explosion protection "ia"	With explosion protection "ic", "nA", "t"
Alarm unit	6DR4004-8A	6DR4004-6A	6DR4004-6A
3 binary output circuits		<ul style="list-style-type: none"> Alarm output A1: Terminals 41 and 42 Alarm output A2: Terminals 51 and 52 Alarm output: Terminals 31 and 32 	
<ul style="list-style-type: none"> Power supply U_H Signal state <ul style="list-style-type: none"> - High (not activated) - Low *) (activated) *) Low is also the status when the basic device is faulty or is without additional electrical power supply. For connecting to circuits with the following peak values 	$\leq 35\text{ V}$ Conductive, $R = 1\text{ k}\Omega$, $+3/-1\%$ *) Blocked, $I_H < 60\text{ }\mu\text{A}$ *) When used in the flameproof enclosure the current consumption must be limited to 10 mA per output.	-	-
Effective internal capacitance	-	$C_i = 5.2\text{ nF}$	$C_i = 5.2\text{ nF}$
Effective internal inductance	-	$L_i = \text{negligibly small}$	$L_i = \text{negligibly small}$
1 binary output circuit		Binary input BE2: Terminals 11 and 12, terminals 21 and 22 (bridge)	
<ul style="list-style-type: none"> Electrically connected to the basic device <ul style="list-style-type: none"> - Signal state 0 - Signal state 1 - Contact load Electrically isolated from the basic device <ul style="list-style-type: none"> - Signal state 0 - Signal state 1 - Natural resistance Static destruction limit For connecting to circuits with the following peak values 		Floating contact, open Floating contact, closed $3\text{ V}, 5\text{ }\mu\text{A}$	
Effective internal capacitance	-	$C_i = \text{negligibly small}$	$C_i = \text{negligibly small}$
Effective internal inductance	-	$L_i = \text{negligibly small}$	$L_i = \text{negligibly small}$
Electrical isolation		The 3 outputs, the input BE2 and the basic device are electrically isolated from each other	
Test voltage		840 V DC, 1 s	
I_y module	6DR4004-8J	6DR4004-6J	6DR4004-6J
DC output for position feedback		2-wire connection	
1 current output: Terminals 61 and 62		4 ... 20 mA, short-circuit proof	
Rated signal range		3.6 ... 20.5 mA	
Total operating range			
Power supply U_H	+12 ... +35 V	+12 ... +30 V	+12 ... +30 V
External loads R_B [k Ω]		$\leq (U_H [\text{V}] - 12\text{ V})/I [\text{mA}]$	
Transmission error		$\leq 0,3\%$	
Temperature influence effect		$\leq 0.1\%/10\text{ K}$ ($\leq 0.1\%/18\text{ }^\circ\text{F}$)	
Resolution		$\leq 0,1\%$	
Residual ripple		$\leq 1\%$	
<ul style="list-style-type: none"> For connecting to circuits with the following peak values 		$U_i = 30\text{ V}$ $I_i = 100\text{ mA}$ $P_i = 1\text{ W}$	"ic": $U_i = 30\text{ V}$, $I_i = 100\text{ mA}$ "nA"/"t": $U_n \leq 30\text{ V}$, $I_n \leq 100\text{ mA}$ $P_n \leq 1\text{ W}$
Effective internal capacitance	-	$C_i = 11\text{ nF}$	$C_i = 11\text{ nF}$
Effective internal inductance	-	$L_i = \text{negligibly small}$	$L_i = \text{negligibly small}$
Electrical isolation		Electrically isolated from the alarm option and safely isolated from the basic device	
Test voltage		840 V DC, 1 s	

	Without Ex protection	With explosion protection "ia"	With explosion protection "ic", "nA", "t"
SIA module	6DR4004-8G	6DR4004-6G	6DR4004-6G
Limit transmitter with slot-type initiators and alarm output			
2 slot-type initiators		<ul style="list-style-type: none"> Binary output (limit transmitter) A1: Terminals 41 and 42 Binary output (limit transmitter) A2: Terminals 51 and 52 	
<ul style="list-style-type: none"> Connection Signal state Low (activated) 2 slot-type initiators Function Connecting to circuits with the following peak values 	2-wire system to EN 60947-5-6 (NAMUR), for switching amplifier to be connected on load side	< 1.2 mA Type SJ2-SN NC (normally closed)	
Effective internal capacitance	-	$C_i = 41 \text{ nF}$	$C_i = 41 \text{ nF}$
Effective internal inductance	-	$L_i = 100 \text{ }\mu\text{H}$	$L_i = 100 \text{ }\mu\text{H}$
1 alarm output		Binary output: Terminals 31 and 32	
<ul style="list-style-type: none"> Connection Signal state High (not activated) Signal state Low (activated) Power supply U_H Connecting to circuits with the following peak values 	Rated voltage 8 V current consumption: $\geq 3 \text{ mA}$ (limit value not responded), $\leq 1 \text{ mA}$ (limit value responded)	$U_i = 15 \text{ V}$ $I_i = 25 \text{ mA}$ $P_i = 64 \text{ mW}$	"ic": $U_i = 15 \text{ V}$ $I_i = 25 \text{ mA}$ "nA": $U_n \leq 15 \text{ V}$ $P_n \leq 64 \text{ mW}$
Effective internal capacitance	-	$C_i = 5.2 \text{ nF}$	$C_i = 5.2 \text{ nF}$
Effective internal inductance	-	$L_i = \text{negligibly small}$	$L_i = \text{negligibly small}$
Electrical isolation		The 3 outputs are electrically isolated from the basic device.	
Test voltage		840 V DC, 1 s	

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	Without Ex protection	With explosion protection "ia"	With explosion protection "ic", "nA", "t"
Mechanical limit switch module	6DR4004-8K	6DR4004-6K	6DR4004-6K
Limit transmitter with mechanical switching contacts			
2 limit value contacts			
• Max. switching current AC/DC	4 A		
• Connecting to circuits with the following peak values	-	<ul style="list-style-type: none"> Binary output A1: Terminals 41 and 42 Binary output A2: Terminals 51 and 52 	
Effective internal capacitance	-	$C_i =$ negligibly small	$C_i =$ negligibly small
Effective internal inductance	-	$L_i =$ negligibly small	$L_i =$ negligibly small
• Max. switching voltage AC/DC	250 V/24 V	30 V DC	30 V DC
1 alarm output			
• Connection		On switching amplifier according to EN 60947-5-6: (NAMUR), $U_H = 8.2 \text{ V}$, $R_i = 1 \text{ k}\Omega$.	-
• Signal state High (not activated)	$R = 1.1 \text{ k}\Omega$	$> 2.1 \text{ mA}$	$> 2.1 \text{ mA}$
• Signal state Low (activated)	$R = 10 \text{ k}\Omega$	$< 1.2 \text{ mA}$	$< 1.2 \text{ mA}$
• Auxiliary power	$U_H \leq 35 \text{ V DC}$ $I \leq 20 \text{ mA}$	-	-
• Connecting to circuits with the following peak values	-	$U_i = 15 \text{ V}$ $I_i = 25 \text{ mA}$ $P_i = 64 \text{ mW}$ $C_i = 5.2 \text{ nF}$ $L_i =$ negligibly small	"ic": $U_i = 15 \text{ V}$ $I_i = 25 \text{ mA}$ $C_i = 5.2 \text{ nF}$ $L_i =$ negligibly small
• Connecting to circuits with the following peak values	-	$U_i = 15 \text{ V}$ $I_i = 25 \text{ mA}$ $P_i = 64 \text{ mW}$	"ic": $U_i = 15 \text{ V}$ $I_i = 25 \text{ mA}$
Effective internal capacitance	-	$C_i = 5.2 \text{ nF}$	$C_i = 5.2 \text{ nF}$
Effective internal inductance	-	$L_i =$ negligibly small	$L_i =$ negligibly small
Electrical isolation		The 3 outputs are electrically isolated from the basic device	
Test voltage		3 150 V DC, 2 s	
Rated conditions altitude	Max. 2 000 m NN At altitudes over 2 000 m NN, use a suitable power supply	-	-
EMC filter module	EMC filter module type C73451-A430-L8 is required for NCS sensor or an external potentiometer. External position sensor (potentiometer or NCS; as option) with the following peak values		
Resistance of external potentiometer		10 k Ω	
Peak values when supplied via the PROFIBUS basic device	-	$U_o = 5 \text{ V}$ $I_o = 75 \text{ mA}$ statisch $I_o = 160 \text{ mA}$ kurzfristig $P_o = 120 \text{ mW}$	$U_o = 5 \text{ V}$ $I_o = 75 \text{ mA}$ - $P_o = 120 \text{ mW}$
Peak values when supplied via other basic devices	-	$U_o = 5 \text{ V}$ $I_o = 100 \text{ mA}$ $P_o = 33 \text{ mW}$ $C_o = 1 \mu\text{F}$ $L_o = 1 \text{ mH}$	$U_o = 5 \text{ V}$ $I_o = 75 \text{ mA}$ $P_o = 120 \text{ mW}$ $C_o = 1 \mu\text{F}$ $L_o = 1 \text{ mH}$
Electrical isolation		Electrically connected to the basic device	
Test voltage		840 V DC, 1 s	

Technical specifications

	Without Ex protection	With explosion protection "ia"	With explosion protection "ic", "nA", "t"
NCS sensor			
Position range		3 ... 14 mm (0.12 ... 0.55")	
• Linear actuator 6DR4004-.N.20		10 ... 130 mm (0.39 ... 5.12"); up to 200 mm (7.87") on request	
• Linear actuator 6DR4004-.N.30			
• Part-turn actuator		30° ... 100°	
Linearity (after correction by positioner)			
• Linear actuator		± 1 %	
• Part-turn actuator		± 1 %	
Hysteresis		± 0,2 %	
Continuous working temperature	-40 °C ... +90 °C (-40 °F ... +194 °F)	-	-
Climatic class		Nach DIN EN 60721-3-4	
• Lagerung		1K5, but -40 ... +90 °C (1K5, but -40 ... +176 °F)	
• Transport		2K4, but -40 ... +90 °C (2K4, but -40 ... +176 °F)	
Vibration resistance			
• Harmonic oscillations (sine-wave) according to EN 60068-2-6/05.96		7 mm (0.28"), 5 ... 54 Hz; 500 m/s ² (1640 ft/s ²), 80 ... 200 Hz	
Degree of protection of enclosure		IP68 according to IEC EN 60529; NEMA 4X / Encl. Type 4X	
• Connecting to circuits with the following peak values	-	U _i = 5 V I _i = 160 mA P _i = 120 mW	"ic"/"nA": U _i = 5 V
Effective internal capacitance	-	C _i = 180 nF	C _i = 180 nF
Effective internal inductance	-	L _i = 922 µH	L _i = 922 µH
Explosion protection according to ATEX/IECEX	-	Intrinsic safety "ia": II 2 G Ex ia IIC T6/T4 Gb	Intrinsic safety "ic": II 3 G Ex ic IIC T6/T4 Gc Non-sparking "nA": II 3 G Ex nA IIC T6/T4 Gc
Explosion protection according to FM	-	Intrinsic safety "ia": IS, Class I, Division 1, ABCD IS, Class I, Zone 1, AEx ib, IIC	Non-sparking, "nA": NI, Class I, Division 2, ABCD NI, Class I, Zone 2, AEx nA, IIC
Permissible ambient temperature			
• ATEX/IECEX	-	T4: -40 ... +90 °C (-40 ... +194 °F) T6: -40 ... +70 °C (-40 ... +158 °F)	
• FM	-	T4: -40 ... +85 °C (-40 ... +185 °F) T6: -40 ... +70 °C (-40 ... +158 °F)	