

**Technical specifications**

**SIPART PS2 (all versions)**

**General data**

Travel range (linear actuators)	3 ... 130 mm (0.12 ... 5.12 inch) (angle of feedback shaft 16 ... 90°)
Angle of rotation (part-turn actuators)	30 ... 100°
Installation	
• On linear actuators	Using attachment set 6DR4004-8V and where necessary with an additional lever arm
• On part-turn actuators	Using attachment set 6DR4004-8L on actuators according to IEC 534-6 (NAMUR) with ribs, bars or flat face
Controller	
• Five-point switch	Self-adjusting
• Dead zone	
- dEbA = Auto	Self-adjusting or can be set as fixed value
- dEbA = 0.1 ... 10%	Self-adjusting or can be set as fixed value
A/D converter	
• Scan time	10 ms
• Resolution	≤ 0.05%
• Transmission error	≤ 0.2%
• Temperature 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)
Binary input BE1 (terminals 9/10; electrically connected to the basic device)	Suitable only for floating contact; max. contact load < 5 mA with 3 V device)
Degree of protection <sup>1)</sup>	IP66 to EN 60 529/NEMA 4x
Mounting position	Any; pneumatic connections and exhaust opening not facing up in wet environment
CE marking	Conformity as regards EMC Directive 89/336 EC in accordance with the following standards
EMC requirements	EN 61326/A1 Appendix A.1 and NAMUR NE21 August 98
Material	
• Housing	
- 6DR5..0-... (plastic)	Glass-fiber-reinforced Macrolon
- 6DR5..1-... (metal)	GD AISi12
- 6DR5..2-... (stainless steel)	Austenitic stainless steel mat. No. 1.4581
- 6DR5..5-... (metal, pressure-proof)	GK AISi12
• Pressure gauge block	Aluminium AIMgSi, anodized
Vibration resistance	
• Harmonic oscillations (sine-wave) according to DIN EN 60062-2-6/05.96	3.5 mm (0.14 inch), 2 ... 27 Hz 3 cycles/axis 98.1 m/s <sup>2</sup> (321.84 ft/s <sup>2</sup> ), 27 ... 300 Hz, 3 cycles/axis

• Bumping (half-sine) to DIN EN 60068-2-29/03.95	150 m/s <sup>2</sup> (492 ft/s <sup>2</sup> ), 6 ms, 1000 shocks/axis
• Noise (digitally controlled) to DIN EN 60068-2-64/08.95	10 ... 200 Hz; 1 (m/s <sup>2</sup> ) <sup>2</sup> /Hz (3.28 (ft/s <sup>2</sup> ) <sup>2</sup> /Hz) 200 ... 500 Hz; 0.3 (m/s <sup>2</sup> ) <sup>2</sup> /Hz (0.98 (ft/s <sup>2</sup> ) <sup>2</sup> /Hz) 4 hours/axis
• Recommended continuous duty range of the complete fitting	≤ 30 m/s <sup>2</sup> (≤ 98.4 ft/s <sup>2</sup> ) without resonance sharpness
Weight, basic device	
• Plastic casing	Approx. 0.9 kg (0.90 kg)
• Metal casing, aluminium	Approx. 1.3 kg (1.30 kg)
• Metal casing, stainless steel	Approx. 3.9 kg (3.90 kg)
• Metal casing EEx d version	Approx. 5.2 kg (11.46 lb)
Dimensions	See Dimensional drawings
Climate class 4	To DIN EN 60721-3-4
• Storage <sup>2)</sup>	1K5, but -40 ... +80 °C (1K5, but -40 ... +176 °F)
• Transport <sup>2)</sup>	2K4, but -40 ... +80 °C (2K4, but -40 ... +176 °F)
• Operation <sup>3)</sup>	4K3, but -30 ... +80 °C (4K3, but -22 ... +176 °F)

**Certificate and approvals**

Classification according to pressure equipment directive (DRGL 97/23/EC)	For gases of fluid group 1, complies with requirements of article 3, paragraph 3 (sound engineering practice SEP)
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**Pneumatic data**

Power supply (inlet air)	
• Pressure	1.4 ... 7 bar (20.3 ... 101.5 psi): Sufficiently greater than max. drive pressure (actuating pressure)
Air quality to ISO 8573-1	
• Solid particle size and density	Class 2
• Pressure dew point	Class 2 (min. 20 K (36 °F) below ambient temperature)
• Oil content	Class 2
Unthrottled flow	
• Inlet air valve (ventilate actuator) <sup>4)</sup>	
- 2 bar (29 psi)	4.1 Nm <sup>3</sup> /h (18.1 USgpm)
- 4 bar (58 psi)	7.1 Nm <sup>3</sup> /h (31.3 USgpm)
- 6 bar (87 psi)	9.8 Nm <sup>3</sup> /h (43.1 USgpm)
• Outlet air valve (ventilate actuator) <sup>4)</sup>	
- 2 bar (29 psi)	8.2 Nm <sup>3</sup> /h (36.1 USgpm)
- 4 bar (58 psi)	13.7 Nm <sup>3</sup> /h (60.3 USgpm)
- 6 bar (87 psi)	19.2 Nm <sup>3</sup> /h (84.5 USgpm)
Valve leakage	< 6·10 <sup>-4</sup> Nm <sup>3</sup> /h (0.0026 USgpm)
Throttle ratio	Adjustable up to ∞ : 1
Power consumption in the controlled state	< 3.6·10 <sup>-2</sup> Nm <sup>3</sup> /h (0.158 USgpm)
Types of actuators	
• In plastic casing	Single-action and double-action
• In aluminium casing	Single-action
• In flameproof casing	Single-action and double-action
• In stainless steel casing	Single-action and double-action

<sup>1)</sup> Impact energy max. 1 Joule for plastic/aluminium casing.  
<sup>2)</sup> During commissioning at ≤ 0 °C (≤ 32 °F) make sure that the valves are flushed long enough with the dry medium.  
<sup>3)</sup> At ≤ -10 °C (14 °F) the display refresh rate of the LCD is limited. Only T4 is permissible when using I<sub>y</sub> module.  
<sup>4)</sup> With EEx d version (6DR5..5-...) the values are reduced by approx. 20%

## Technical specifications

SIPART PS2	Basic device without Ex protection	Basic device with EEx-d protection (flameproof casing)	Basic device with EEx ia/ib protection	Basic device with EEx n protection
Explosion protection to EN 50014, EN 50020 and EN 50021	Without	EEx d II 2 G EEx d II C T6	EEx ia/ib II 2 G EEx ia/ib II C T6	EEx n II 3 G EEx nA L [L] II C T6
Mounting location		Zone 1	Zone 1	Zone 2
Permissible ambient temperature for operation	-30 ... +80 °C (-22 ... +176 °F)		T4: -30 ... +80 °C (-22 ... +176 °F) T5: -30 ... +65 °C (-22 ... +149 °F) T6: -30 ... +50 °C (-22 ... +122 °F)	
At ≤ -10 °C (+14 °F) the display refresh rate of the LCD is limited. (for basic devices with EEX ia/ib and EEx n protection the following applies: Only T4 is permissible when using I <sub>y</sub> module.)				

## Electrical data

Input

## 2-wire connection (terminals 6/8)

Rated signal range	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA	4 ... 20 mA
Current to maintain the power supply	≥ 3.6 mA	≥ 3.6 mA	≥ 3.6 mA	≥ 3.6 mA
Required load voltage U <sub>B</sub> (corresponds to Ω at 20 mA)				
• Without HART (6DR50..)				
- Typical	6.36 V (corresponds to 318 Ω)	6.36 V (corresponds to 318 Ω)	7.8 V (corresponds to 390 Ω)	7.8 V (corresponds to 390 Ω)
- Max.	6.48 V (corresponds to 324 Ω)	6.48 V (corresponds to 324 Ω)	8.3 V (corresponds to 415 Ω)	8.3 V (corresponds to 415 Ω)
• Without HART (6DR53..)				
- Typical	7.9 V (corresponds to 395 Ω)	–	–	–
- Max.	8.4 V (corresponds to 420 Ω)	–	–	–
• With HART (6DR51..)				
- Typical	6.6 V (corresponds to 330 Ω)	6.6 V (corresponds to 330 Ω)	–	–
- Max.	6.72 V (corresponds to 336 Ω)	6.72 V (corresponds to 336 Ω)	–	–
• With HART (6DR52..)				
- Typical	–	8.4 V (corresponds to 420 Ω)	8.4 V (corresponds to 420 Ω)	8.4 V (corresponds to 420 Ω)
- Max.	–	8.8 V (corresponds to 440 Ω)	8.8 V (corresponds to 440 Ω)	8.8 V (corresponds to 440 Ω)
• Static destruction limit	± 40 mA		–	–
Internal capacitance C <sub>i</sub>				
• Without HART	–	–	≤ 22 nF	–
• With HART	–	–	≤ 7 nF	–
Internal inductance L <sub>i</sub>				
• Without HART	–	–	≤ 0.12 mH	–
• With HART	–	–	≤ 0.24 mH	–
For connection to power circuits with	–	–	intrinsically safe U <sub>o</sub> ≤ 30 V DC I <sub>k</sub> ≤ 100 mA P ≤ 1 W	U <sub>i</sub> ≤ 30 V DC I <sub>i</sub> ≤ 100 mA

SIPART PS2	Basic device without Ex protection	Basic device with EEx-d protection (flameproof casing)	Basic device with EEx ia/ib protection	Basic device with EEx n protection
3-/4-wire device (terminals 2/4 and 6/8) (6DR52.. and 6DR53..)				
• 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]	$(U_H - 7.5 \text{ V})/2.4 \text{ k}\Omega$ [mA]	$(U_H - 7.5 \text{ V})/2.4 \text{ k}\Omega$ [mA]	$(U_H - 7.5 \text{ V})/2.4 \text{ k}\Omega$ [mA]
• Internal capacitance $C_i$	–	–	$\leq 22 \text{ nF}$	–
• Internal inductance $L_i$	–	–	$\leq 0.12 \text{ mH}$	–
• For connection to power circuits with	–	–	intrinsically safe $U_o \leq 30 \text{ V DC}$ $I_k \leq 100 \text{ mA}$ $P \leq 1 \text{ W}$	$U_i \leq 30 \text{ V DC}$ $I_i \leq 100 \text{ mA}$
Current input $I_W$				
Rated signal range	0/4 ... 20 mA	0/4 ... 20 mA	0/4 ... 20 mA	0/4 ... 20 mA
Load voltage at 20 mA	$\leq 0.2 \text{ V}$ (corresponds to $10 \Omega$ )	$\leq 0.2 \text{ V}$ (corresponds to $10 \Omega$ )	$\leq 1 \text{ V}$ (corresponds to $50 \Omega$ )	$\leq 1 \text{ V}$ (corresponds to $50 \Omega$ )
Internal capacitance $C_i$	–	–	$\leq 22 \text{ nF}$	–
Internal inductance ( $L_i$ )	–	–	$\leq 0.12 \text{ mH}$	–
For connection to power circuits with	–	–	intrinsically safe $U_o \leq 30 \text{ V DC}$ $I_k \leq 100 \text{ mA}$ $P \leq 1 \text{ W}$	$U_i \leq 30 \text{ V DC}$ $I_i \leq 100 \text{ mA}$
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 $I_W$
Test voltage	840 V DC (1 s)	840 V DC (1 s)	840 V DC (1 s)	840 V DC (1 s)
<b>Connections</b>				
• Electric	Screw terminals 2.5 AWG28-12 Cable gland M20 x 1.5 or 1/2-14 NPT	Screw terminals 2.5 AWG28-12 EEx d certified cable gland M20 x 1.5, 1/2-14 NPT or M25 x 1.5	Screw terminals 2.5 AWG28-12 Cable gland M20 x 1.5 or 1/2-14 NPT	Screw terminals 2.5 AWG28-12 Cable gland M20 x 1.5 or 1/2-14 NPT
• Pneumatic	Female thread G1/4 DIN 45141 or 1/4-18 NPT	Female thread G1/4 DIN 45141 or 1/4-18 NPT	Female thread G1/4 DIN 45141 or 1/4-18 NPT	Female thread G1/4 DIN 45141 or 1/4-18 NPT
External position sensor (potentiometer or NCS; as option)				
• $U_o$	–	–	$< 5 \text{ V}$	$< 5 \text{ V}$
• $I_o$	–	–	$< 75 \text{ mA}$	$< 75 \text{ mA}$
• $I_s$	–	–	$< 160 \text{ mA}$	$< 160 \text{ mA}$
• $P_o$	–	–	$< 120 \text{ mW}$	$< 120 \text{ mW}$
Maximum permissible external capacitance $C_o$	–	–	$< 1 \mu\text{F}$	$< 1 \mu\text{F}$
Maximum permissible external inductance $L_o$	–	–	$< 1 \text{ mH}$	$< 1 \text{ mH}$