

Pressure transmitters

for applications with advanced requirements

SITRANS P320/P420 / Gauge pressure (differential pressure series)

Selection and ordering data

Pressure transmitters for gauge pressure (differential pressure series)										Article No.									
SITRANS P320										7MF031	●	-	●	●	●	●	●	●	●
SITRANS P420										7MF041	●	-	●	●	●	●	●	●	●
Click the article number for online configuration in the PIA Life Cycle Portal.																			
Communication																			
HART, 4 ... 20 mA												0							
PROFIBUS PA												1							
FOUNDATION Fieldbus (FF)												2							
Measuring cell filling																			
Silicone oil													1						
Inert filling liquid													3						
Maximum measuring span																			
20 mbar (8.037 inH ₂ O)														B					
60 mbar (24.11 inH ₂ O)														D					
250 mbar (1005 inH ₂ O)														G					
600 mbar (241.1 inH ₂ O)														H					
1 600 mbar (643 inH ₂ O)														M					
5 000 mbar (2009 inH ₂ O)														P					
30 bar (435 psi)														R					
160 bar (2 320 psi)														Y					
Process connection																			
Oval flange, fastening thread: 7/16-20 UNF (IEC 61518)														L					
Oval flange, fastening thread: M10 (PN 160), (DIN 19213)														M					
Oval flange, fastening thread: 7/16-20 UNF (IEC 61518) with lateral ventilation														N					
Oval flange, fastening thread: M10 (PN 160) (DIN 19213) with lateral ventilation														P					
Material of wetted parts: Sensor body, seal diaphragm, process flange																			
Stainless steel 316L/1.4404, stainless steel 316L/1.4404, process flange stainless steel 316/1.4408															0				
Stainless steel 316L/1.4404, alloy C276/2.4819, process flange stainless steel 316/1.4408															1				
Alloy C22/2.4602, alloy C276/2.4819, process flange stainless steel 316/1.4408															2				
Tantalum/tantalum, process flange stainless steel 316/1.4408 (not in combination with maximum measuring span 20 mbar (0.29 psi) and 60 mbar (0.87 psi))															4				
Monel 400/2.4360, Monel 400/2.4360, process flange stainless steel 316/1.4408 (not in combination with maximum measuring span 20 mbar (0.29 psi) and 60 mbar (0.87 psi))															6				
Stainless steel 316L/1.4404 gold-plated, process flange stainless steel 316/1.4408 (not in combination with maximum measuring span 20 mbar (0.29 psi) and 60 mbar (0.87 psi))															8				
Material of non-wetted parts																			
Die-cast aluminum															1				
Stainless steel precision casting CF3M/1.4409 similar to 316L															2				
Enclosure																			
Dual chamber device																5			
Type of protection																			
Without Ex																		A	
Intrinsic safety																		B	
Flameproof enclosure																		C	
Flameproof enclosure, intrinsic safety																		D	
Dust protection by enclosure Zone 21/22 (DIP), increased safety Zone 2																		L	
Intrinsic safety, dust protection by enclosure Zone 20/21/22 (DIP), increased safety Zone 2																		M	
Combination of options B, C and L (Zone model)																		S	
Combination of options B, C and L (Zone model, Class Division)																		T	
Electrical connections/cable entries																			
Thread for cable gland: Cable gland must be ordered separately as option (Axx)																			
• 2 × M20 × 1.5																		F	
• 2 × ½-14 NPT																		M	
Local operation/display																			
Without local display (lid closed)																			0
With local display (lid closed)																			1
With local display (lid with glass pane)																			2

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Options	Order code
Add "-Z" to article No., add order code and plain text or entry from drop-down list.	
Cable glands included	
Plastic	A00
Metal	A01
Stainless steel	A02
Stainless steel 316L/1.4404	A03
CMP, for XP devices	A10
CAPRI ADE 4F, CuZn, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A11
CAPRI ADE 4F, stainless steel, cable inner diameter 7 ... 12 mm, cable outer diameter 10 ... 16 mm	A12
Sealing plug included, plastic	A20
Sealing plug included, metal	A21
Sealing plug included, stainless steel	A22
Sealing plug included, stainless steel 316L/1.4404	A23
Device plug Han mounted left	
Device plug Han 7D (plastic, straight)	A30
Device plug Han 7D (plastic, angled)	A31
Device plug Han 7D (metal, straight)	A32
Device plug Han 7D (metal, angled)	A33
Device plug Han 8D (plastic, straight)	A34
Device plug Han 8D (plastic, angled)	A35
Device plug Han 8D (metal, straight)	A36
Device plug Han 8D (metal, angled)	A37
Cable socket included	
Plastic, for device plug Han 7D and Han 8D	A40
Metal, for device plug Han 7D and Han 8D	A41
Device plug M12 mounted left	
Stainless steel, without cable socket	A62
Stainless steel, with cable socket	A63
Cable entry/device plug mounting	
2× sealing plugs M20 × 1.5, IP66/68 installed on both sides (no explosion protection approval)	A90
2× sealing plugs ½-14 NPT, IP66/68 installed on both sides (no explosion protection approval)	A91
Cable gland/device plug mounted left	A97
Plug mounted right	A98
Cable gland/device plug mounted right	A99
Nameplate labeling (standard labeling: English, unit bar)	
German (bar)	B11
French (bar)	B12
Spanish (bar)	B13
Italian (bar)	B14
Chinese (bar)	B15
Russian (bar)	B16
English (psi)	B20
English (Pa)	B30
Chinese (Pa)	B35
Certificates	
Quality inspection certificate - 5-point factory calibration (IEC 62828-2)	C11
Inspection certificate (EN 10204-3.1) - Material of pressurized and wetted parts	C12

Options	Order code
Add "-Z" to article No., add order code and plain text or entry from drop-down list.	
Factory certificate - NACE (MR 0103-2012 and MR 0175-2009)	C13
Factory certificate (EN 10204-2.2) - Wetted parts	C14
Inspection certificate (EN 10204-3.1) - PMI test of pressurized and wetted parts	C15
Certificates for functional safety	
Functional Safety (IEC 61508) - SIL2/3	C20
Device options	
Double layer coating (epoxy resin and polyester) 120 µm of enclosure and lid	D20
FVMQ enclosure sealing	D21
Degree of protection IP66/IP68 (not for device plug M12 and Han)	D30
Unlabeled TAG plate	D40
Without labeling of the measuring range on the TAG plate	D41
Stainless steel Ex plate 1.4404/316L	D42
Extension of the medium temperature to -40 °C for measuring cell filling with inert filling liquid	D52
Please note step response time T63: 5.5 s (20 and 60 mbar); 1.4 s (250 and 600 mbar); 0.3 s (1.6 and 5 bar)	
Transmitter packaged in foil	D60
Cleaning the measuring cell, grease-free as per cleanliness level 2, DIN 25410; transmitter packaged in foil	D61
Cleaning the measuring cell, grease-free (for oxygen version) and transmitter packaged in foil; (particles < 50 mg/m ² ; oil and residual grease content HC < 100 mg/m ²)	D62
Overvoltage protection up to 6 kV (internal)	D70
Overvoltage protection up to 6 kV (external)	D71
Labels on transport packaging (provided by customer)	D90
General approval without Ex approval	
Worldwide (CE, UKCA, RCM) except EAC, FM, CSA, KC	E00
Worldwide (CE, UKCA, RCM, EAC, FM, CSA, KC)	E01
CSA (USA and Canada)	E06
EAC	E07
FM	E08
KC	E09
Explosion protection approvals	
ATEX (Europe)	E20
CSA (USA and Canada) ¹⁾	E21
FM (USA and Canada) ¹⁾	E22
IECEX (Worldwide)	E23
EACEx (GOST-R, -K, -B)	E24
INMETRO (Brazil)	E25
KCs (Korea)	E26
NEPSI (China)	E27
PESO (India)	E28
CSA (Japan)	E29
ECASEX (UAE)	E32
UKEX (United Kingdom)	E33
ATEX (Europe), IECEX (Worldwide) and UKEX (UK)	E47
CSA (Canada) and FM (USA) ¹⁾	E48
ATEX (Europe) and IECEX (Worldwide) + CSA (Canada) and FM (USA) ¹⁾	E49

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Marine approvals	
DNV-GL (Det Norske Veritas/Germanischer Lloyd)	E50
LR (Lloyds Register)	E51
BV (Bureau Veritas)	E52
ABS (American Bureau of Shipping)	E53
RMR (Russian Maritime Register)	E55
KR (Korean Register of Shipping)	E56
RINA (Registro Italiano Navale)	E57
CCS (China Classification Society)	E58
Country-specific approvals	
CRN approval Canada (Canadian Registration Number)	E60
Special approvals	
Oxygen application (with inert liquid, max. 160 bar (2 320 psi) at 100 °C (212 °F))	E80
Dual Seal	E81
WRC/WRAS (drinking water); only with process flange O-rings made of EPDM	E83
NSF61 (drinking water)	E84
ACS (drinking water)	E85
Mounting bracket	
Zinc-plated steel	H01
Stainless steel 1.4301/304	H02
Stainless steel 1.4404/316L	H03
Mounting bracket, zinc-plated steel, reinforced (KTA)	H05
Process flanges; screw plug with vent valve	
Welded in on right	J08
Welded in on left	J09
Glued in on right	J10
Glued in on left	J11
Flange connections with flange EN 1092-1	
Form B1	
• DN 25 PN 40, stainless steel 1.4571/316Ti	J70
• DN 50 PN 40, stainless steel 1.4571/316Ti	J71
• DN 80 PN 40, stainless steel 1.4571/316Ti	J72
• DN 15 PN 40, stainless steel 1.4571/316Ti	J78
Form C	
• DN 25 PN 40, stainless steel 1.4571/316Ti	J73
• DN 50 PN 40, stainless steel 1.4571/316Ti	J74
• DN 80 PN 40, stainless steel 1.4571/316Ti	J75
Flange connection options	
Flange connection and temperature extension	J76
Flange connection with epoxy resin coating	J77
Process flanges; special materials	
Reserved for 7MF7: without process flanges, without screws, without gaskets	K00
Process flange material alloy C22/2.4602	K01
Process flange material Monel 400/2.4360	K02
Process connection material PVDF, on the side ½-14 NPT	K05
Process flanges chambered with gaskets	
1 × chambered, graphite	K40
1 × chambered, PTFE (FDA compliant), recommended for gas measurements	K41

Options Add "-Z" to article No., add order code and plain text or entry from drop-down list.	Order code
Process flanges, gaskets (instead of standard gaskets FKM (FPM))	
O-ring, process flanges, PTFE (Not permitted with remote seal attachment on both sides)	K50
O-ring, process flanges, FEP (with silicone core, approved for food, FDA compliant) (Not permitted with remote seal attachment on both sides)	K51
O-ring, process flanges, FFKM (FFPM) (Not permitted with remote seal attachment on both sides)	K52
O-ring, process flanges, NBR (Not permitted with remote seal attachment on both sides)	K53
O-ring, process flanges, EPDM (Not permitted with remote seal attachment on both sides)	K54
Process flange options	
Process flanges for vertical differential pressure lines (half process flange)	K81
Process flanges (+) - side front	K82
Process flange screws, process flange nuts, material Monel 400/2.4360	K83
Valve ¼-18 NPT, material same as process flanges	K84
Valve mounted on the side, measuring medium: Gas	K85
Oval flange attached, PTFE seal + fixing screws	K86
Valve manifolds	
With mounted valve manifold (3-way) 7MF9411-5BA, PTFE sealing rings, chrome-plated steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U01
With mounted valve manifold (3-way) 7MF9411-5BA, PTFE sealing rings, stainless steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U02
With mounted valve manifold (5-way) 7MF9411-5CA, PTFE sealing rings, chrome-plated steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U03
With mounted valve manifold (5-way) 7MF9411-5CA, PTFE sealing rings, stainless steel screws and pressure test certified in factory certificate (EN 10204-2.2)	U04
Device settings	
Measuring span: Lower range value (max. 5 characters), upper range value (max. 5 characters), unit [mbar, bar, kPa, MPa, psi, ...], example: -0.5 ... 10.5 psi	Y01
TAG (on stainless steel plate and device parameters, max. 32 characters)	Y15
Measuring point description (on stainless steel plate and device parameters, max. 32 characters)	Y16
TAG short (device parameters, max. 8 characters)	Y17
Local display: [Pressure, Percent], reference [None, Absolute, Gauge], example: Pressure gauge	Y21
Local display: Scaling with standard units [m³/s, l/s, m, inch, ...]; example 1 ... 5 m	Y22
Local display: Scaling with user-specific units (max. 12 characters), example 1 ... 5 m	Y23
Set PROFIBUS PA device address (1 ... 126)	Y25
Saturation limits instead of 3.8 ... 20.5 mA, example: 3.8 ... 22.0 mA	Y30
Fault current instead of 3.6 mA [22.5 mA, 22.8 mA]	Y31
Damping in seconds instead of 2 s (0.0 ... 100.0 s)	Y32
ID number of special design	Y99

¹⁾ Explosion protection acc. to FM/CSA: suitable for installation according to NEC 500/505.

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Technical specifications

SITRANS P320 / SITRANS P420 for gauge pressure (differential pressure series)

Input			
Measured variable	Gauge pressure		
Measuring span (continuously adjustable) or measuring range and max. permissible operating pressure (pursuant to Pressure Equipment Directive 2014/68/EU)	Measuring span	Max. permissible operating pressure MAWP (PS)	Maximum permissible test pressure
	1 ... 20 mbar	160 bar	240 bar
	0.1 ... 2 kPa	16 MPa	24 MPa
	0.4019 ... 8.037 inH ₂ O	2 320 psi	3 481 psi
	1 ... 60 mbar	160 bar	240 bar
	0.1 ... 6 kPa	16 MPa	24 MPa
	0.4019 ... 24.11 inH ₂ O	2 320 psi	3 481 psi
	2.5 ... 250 mbar	160 bar	240 bar
	0.2 ... 25 kPa	16 MPa	24 MPa
	1.005 ... 100.5 inH ₂ O	2 320 psi	3 481 psi
	6 ... 600 mbar	160 bar	240 bar
	0.6 ... 60 kPa	16 MPa	24 MPa
	2.41 ... 241.1 inH ₂ O	2 320 psi	3 481 psi
	16 ... 1 600 mbar	160 bar	240 bar
	1.6 ... 160 kPa	16 MPa	24 MPa
	6.43 ... 643 inH ₂ O	2 320 psi	3 481 psi
	50 ... 5 000 mbar	160 bar	240 bar
	5 ... 500 kPa	16 MPa	24 MPa
	20.09 ... 2 009 inH ₂ O	2 320 psi	3 481 psi
	0.3 ... 30 bar	160 bar	240 bar
0.03 ... 3 MPa	16 MPa	24 MPa	
4.35 ... 435 psi	2 320 psi	3 481 psi	
8 ... 160 bar	160 bar	240 bar	
0.8 ... 16 MPa	16 MPa	24 MPa	
116 ... 2 320 psi	2 320 psi	3 481 psi	
Measuring limits			
• Lower measuring limit			
- Measuring cell with silicone oil filling	30 mbar a/3 kPa a/0.44 psi a		
- Measuring cell with inert fill oil	30 mbar a/3 kPa a/0.44 psi a		
• Upper measuring limit	100% of the max. measuring span (for oxygen measurement max. 100 bar/10 MPa/1450 psi and 60 °C (140 °F) ambient temperature/medium temperature)		
• Lower range value	Between the measuring limits (continuously adjustable)		
Output			
Output signal	HART		
	4 ... 20 mA		
• Lower saturation limit (continuously adjustable)	3.55 mA, factory set to 3.8 mA		
• Upper saturation limit (continuously adjustable)	22.8 mA, factory-set to 20.5 mA or optionally 22.0 mA		
• Ripple (without HART communication)	I _{pp} ≤ 0.5% of max. output current		
Adjustable damping	0 ... 100 s, continuously adjustable over remote operation 0 ... 100 s, in increments of 0.1 s, adjustable over local display		
• Current simulator	3.55 ... 22.8 mA		
• Failure signal	3.55 ... 22.8 mA		
Load	Resistance R [Ω]		
• Without HART communication	R = (U _H - 10.5 V) /22.8 mA, U _H : Auxiliary power in V		
• With HART communication	R = 230 ... 1100 Ω		
Characteristic curve	• Linearly increasing or linearly decreasing		
Physical bus	-		
Polarity-independent	-		

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Technical specifications (continued)

SITRANS P320 / SITRANS P420 for gauge pressure (differential pressure series)

Measuring accuracy

Reference conditions

- According to IEC 62828-1
- Rising characteristic curve
- Lower range value 0 bar/kPa/psi
- Seal diaphragm stainless steel
- Measuring cell with silicone oil filling
- Room temperature 25 °C (77 °F)

Characteristic curve deviation at limit point setting, including hysteresis and repeatability

Measuring span ratio r (spread, turn-down)

r = max. measuring span/set measuring span and nominal measuring range

- Linear characteristic curve

- 20 mbar/2 kPa/8.031 inH₂O

r ≤ 5: ≤ 0.075%
5 < r ≤ 20: ≤ (0.005 · r + 0.05)%

- 60 mbar/6 kPa/24.09 inH₂O

r ≤ 5: ≤ 0.075%
5 < r ≤ 60: ≤ (0.005 · r + 0.05)%

- 250 mbar/25 kPa/3.6 psi
600 mbar/60 kPa/240.9 inH₂O
1 600 mbar/160 kPa/642.4 inH₂O
5 000 mbar/500 kPa/2008 inH₂O
30 bar/3 MPa/435 psi

r ≤ 5: ≤ 0.065% (SITRANS P320)
≤ 0.04% (SITRANS P420)
5 < r ≤ 100: ≤ (0.004 · r + 0.045)%

- 160 bar/16 MPa/2 320 psi

r ≤ 5: ≤ 0.065% (SITRANS P320)
≤ 0.04% (SITRANS P420)
5 < r ≤ 20: ≤ (0.004 · r + 0.045)%

Influence of ambient temperature
in % per 28 °C (50 °F)

• 20 mbar/2 kPa/8.031 inH₂O

≤ (0.15 · r + 0.1)%

• 60 mbar/6 kPa/24.09 inH₂O

≤ (0.075 · r + 0.1)%

• 250 mbar/25 kPa/3.6 psi
600 mbar/60 kPa/240.9 inH₂O
1 600 mbar/160 kPa/642.4 inH₂O
5 000 mbar/500 kPa/2008 inH₂O
30 bar/3 MPa/435 psi
160 bar/16 MPa/2 320 psi

≤ (0.025 · r + 0.125)% (SITRANS P320)

• 250 mbar/25 kPa/3.6 psi
5 000 mbar/500 kPa/2008 inH₂O

≤ (0.025 · r + 0.0625)% (SITRANS P420)

• 600 mbar/60 kPa/240.9 inH₂O
1 600 mbar/160 kPa/642.4 inH₂O
30 bar/3 MPa/435 psi
160 bar/16 MPa/2 320 psi

≤ (0.0125 · r + 0.0625)% (SITRANS P420)

Long-term stability at ±30 °C (± 54 °F)

• 20 mbar/2 kPa/8.031 inH₂O

≤ (0.2 · r)% per year

• 60 mbar/6 kPa/24.09 inH₂O

In 5 years ≤ (0.25 · r)%

• 250 mbar/25 kPa/3.6 psi
600 mbar/60 kPa/240.9 inH₂O
1 600 mbar/160 kPa/642.4 inH₂O
5 000 mbar/500 kPa/2008 inH₂O
30 bar/3 MPa/435 psi
160 bar/16 MPa/2 320 psi

In 5 years ≤ (0.125 · r)%
In 10 years ≤ (0.15 · r)%

Step response time T₆₃ (without electrical damping)

• 20 mbar/2 kPa/8.031 inH₂O

Approx. 0.160 s

• 60 mbar/6 kPa/24.09 inH₂O

Approx. 0.150 s

• 250 mbar/25 kPa/3.6 psi
600 mbar/60 kPa/240.9 inH₂O
1 600 mbar/160 kPa/642.4 inH₂O
5 000 mbar/500 kPa/2008 inH₂O
30 bar/3 MPa/435 psi
160 bar/16 MPa/2 320 psi

Approx. 0.135 s

Effect of mounting position (in pressure per change of angle)

≤ 0.7 mbar/0.07 kPa/0.010 psi per 10° incline
(zero offset is possible with position error compensation)

Effect of auxiliary power (in % per voltage change)

0.005% per 1 V

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Technical specifications (continued)

SITRANS P320 / SITRANS P420 for gauge pressure (differential pressure series)	
Operating conditions	
Medium temperature	
• Measuring cell with silicone oil filling	-40 ... +100 °C (-40 ... +212 °F)
- Measuring cell 30 bar (435 psi)	-20 ... +100 °C (-4 ... +212 °F)
- Measuring cell 160 bar (2 320 psi)	-20 ... +100 °C (-4 ... +212 °F)
• Measuring cell with inert fill oil	-20 ... +100 °C (-4 ... +212 °F)
Ambient conditions	
• Ambient temperature/enclosure	Observe the temperature class in hazardous areas.
- Measuring cell with silicone oil filling	-40 ... +85 °C (-40 ... +185 °F)
- Measuring cell with inert fill oil	-40 ... +85 °C (-40 ... +185 °F)
- Local display	-20 ... +80 °C (-4 ... +176 °F)
• Storage temperature	-50 ... +85 °C (-58 ... +185 °F)
• Climatic class in accordance with IEC 60721-3-4	4K4H
• Degree of protection	
- According to IEC 60529	IP66, IP68
- According to NEMA 250	Type 4X
• Electromagnetic compatibility	
- Emitted interference and interference immunity	According to IEC 61326 and NAMUR NE 21
Structural design	
Weight	- Aluminum enclosure: Approx. 3.9 kg (8.5 lb) - Stainless steel enclosure: Approx. 5.9 kg (13 lb)
Material	
• Material of wetted parts	
- Seal diaphragm	Stainless steel, mat. no. 1.4404/316L, Alloy C276, mat. no. 2.4819, Monel, mat. no. 2.4360, tantalum or gold
- Process flanges	Stainless steel, mat. no. 1.4408 to PN 160, mat. no. 1.4571/316Ti for PN 420, Alloy C22, 2.4602 or Monel, mat. no. 2.4360
- Sealing plug	1.4404 or as option alloy C22; 2.4602 or Monel mat. no. 2.4360
- O-ring	FPM (Viton) or optionally: PTFE, FEP, FEPM and NBR
• Material of non-wetted parts	
- Electronics enclosure	- Low-copper die-cast aluminum GD-AlSi 12 or stainless steel precision casting, mat. no. 1.4409/ CF-3M - Standard: Powder coating with polyester Option: 2 coats: Coat 1: epoxy-based; coat 2: Polyester - Stainless steel nameplate (1.4404/316L)
- Process flange screws	Stainless steel ISO 3506-1 A4-70
- Mounting bracket	Steel, zinc-plated steel, or stainless steel
Process connection	1/4-18 NPT internal thread and flange connection with 7/16-20 UNF fastening thread according to EN 61518 or M10 according to DIN 19213 (M12 for PN 420 (MWP 6092 psi))
Electrical connection	Screw terminals Cable entry via the following screw glands: - M20 × 1.5 1/2-14 NPT - Device plug Han 7D/Han 8D¹⁾ - Device plug M12
Displays and controls	
Buttons	4 buttons for operation directly on the device
Local display	- With or without integrated local display (optional) - Lid with inspection window (optional)
Auxiliary power U_H	
Terminal voltage on pressure transmitter	10.5 ... 45 V DC 10.5 ... 30 V DC in intrinsically safe mode
Ripple	U _{SS} ≤ 0.2 V (47 ... 125 Hz)

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Noise	$U_{\text{eff}} \leq 1.2 \text{ mV}$ (0.5 ... 10 kHz)
Auxiliary power	—
Separate supply voltage	—
Certificates and approvals	
Classification according to pressure equipment directive (PED 2014/68/EU)	For gases of fluid group 1 and liquids of fluid group 1; complies with requirements of article 4, paragraph 3 (sound engineering practice)
Drinking water	
• WRAS (England)	No.: 1903094 (option E83)
• ACS (France)	No.: 24 ACC NY 265 (option E85)
• NSF (USA)	No.: 20180920-MH61350 (option E84)
• CRN (Canada)	No.: 0F9863.5C (option E60)
Explosion protection acc. to NEPSI (China)	No.: GYJ24.1046X (option E27)
Explosion protection acc. to INMETRO (Brazil)	No.: BRA 22.GE0004X (option E25)
Explosion protection as per ATEX	No.: BVS 18 ATEX E 049X
• Intrinsic safety "i"	
- Marking	II 1/2 G Ex ia/ib IIC T4/T6 Ga/Gb
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +55 °C (-40 ... +131 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Connection	To certified intrinsically safe circuits with peak values: $U_i = 30 \text{ V}$, $I_i = 101 \text{ mA}$, $P_i = 760 \text{ mW}$ $U_i = 29 \text{ V}$, $I_i = 110 \text{ mA}$, $P_i = 800 \text{ mW}$
- Effective internal inductance/capacitance	$L_i = 0.24 \text{ } \mu\text{H/C}_i = 3.29 \text{ nF}$
• Flameproof enclosure "d"	
- Marking	Ex II 1/2 G Ex ia/db IIC T4/T6 Ga/Gb
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- Connection	To a circuit with the operating values: $U_n = 10.5 \dots 45 \text{ V}$, $4 \dots 20 \text{ mA}$
• Dust explosion protection for Zones 21, 22	
- Marking	Ex II 2D Ex tb IIIC T120 °C Db Ex II 3D Ex tc IIIC T120 °C Dc
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F)
- Max. surface temperature	120 °C (248 °F)
- Connection	To a circuit with the operating values: $U_n = 10.5 \dots 45 \text{ V}$, $4 \dots 20 \text{ mA}$
• Dust explosion protection for Zones 20, 21, 22	
- Marking	Ex II 1D Ex ia IIIC T120 °C Da Ex II 2D Ex ib IIIC T120 °C Db
- Permissible ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F)
- Connection	To certified intrinsically safe circuits with peak values: $U_i = 30 \text{ V}$, $I_i = 101 \text{ mA}$, $P_i = 760 \text{ mW}$ $U_i = 29 \text{ V}$, $I_i = 110 \text{ mA}$, $P_i = 800 \text{ mW}$
- Effective internal inductance/capacitance	$L_i = 0.24 \text{ } \mu\text{H/C}_i = 3.29 \text{ nF}$
• Type of protection for Zone 2	
- Marking	Ex II 3G Ex ec IIC T4/T6 Gc
- Permissible ambient temperature "ec"	-40 ... +80 °C (-40 ... +176 °F) temperature class T4 -40 ... +40 °C (-40 ... +104 °F) temperature class T6
- Permissible medium temperature	-40 ... +100 °C (-40 ... +212 °F) temperature class T4 -40 ... +70 °C (-40 ... +158 °F) temperature class T6
- "ec" connection	To a circuit with the operating values: $U_n = 10.5 \dots 30 \text{ V}$, $4 \dots 20 \text{ mA}$
• Explosion protection acc. to FM	No.: FM19US0155X

Pressure transmitters for applications with advanced requirements

SITRANS P320/P420 / Gauge pressure (differential pressure series)

Technical specifications (continued)

SITRANS P320 / SITRANS P420 for gauge pressure (differential pressure series)	
• Explosion protection according to CSA	No.: CSA18CA70163103
NAMUR recommendations	
• NE 06	Standardized Electrical Signals and Questions Relating to Engineering Technology
• NE 21	Electromagnetic Compatibility (EMC) of Industrial Process and Laboratory Control Equipment
• NE 23	Extra Low Voltage Circuits with Safe Separation
• NE 43	Standardization of the Signal Level for the Failure Information of Digital Transmitters with Analog Output Signal
• NE 53	Software and Hardware of Field Devices and Signal Processing Devices with Digital Electronics
• NE 80	The Application of the Pressure Equipment Directive to Process Control Devices
• NE 105	Specifications for Integrating Fieldbus Devices in Engineering Tools for Field Devices
• NE 107	Self-Monitoring and Diagnosis of Field Devices
• NE 131	NAMUR Standard Device - Field Devices for Standard Applications

¹⁾ Han 8D is identical to Han 8U.

Communication	
HART	
HART Protocol	230 ... 1 100 Ω HART 7
Software for computer	SIMATIC PDM
PROFIBUS PA	
Simultaneous communication with master class 2 (max.)	4
The address can be set using	Configuration tool or local operation (default setting address 126)
Cyclic data usage	
• Output byte	≤ 35 (7 measured values)
• Input byte	0, 1, or 2 (register operation mode and reset function for dosing)
Internal preprocessing	
Device profile	PROFIBUS PA Profile Version 4.01 Class B. Cyclic data usage compatible with version 3.XX
Number of function blocks	7
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s
- Simulation function	Output/input
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
• Register (totalizer)	
- Limit monitoring	Can be reset, preset, optional direction of counting, simulation function of register output
• Physical block	One upper and lower warning limit and one alarm limit respectively
Transducer blocks	1
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes

Communication	
- Specification of a vessel characteristic curve with	Max. 30 nodes
- Square-rooted characteristic curve for flow measurement	Yes
- Tank characteristic curve for volume measurement	Yes
- Low flow cut-off and implementation point of square-root extraction	Parameterizable
- Simulation function for measured pressure value and sensor temperature	Constant value or by means of parameterizable ramp function
FOUNDATION Fieldbus	
Device profile	FF ITK 6
Function blocks	3 function blocks analog input, 1 function block PID
• Analog input	
- Adaptation to user-specific process variable	Yes, linearly rising or falling characteristic curve
- Electrical damping adjustable	0 ... 100 s
- Simulation function	Output/input (can be locked within the device with a bridge)
- Failure behavior	Parameterizable (last good value, substitute value, incorrect value)
- Limit monitoring	Yes, one upper and lower warning limit and one alarm limit respectively
- Square-rooted characteristic curve for flow measurement	Yes
• PID	Standard FOUNDATION Fieldbus function block
• Physical block	1 resource block
Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
• Pressure transducer block	
- Can be calibrated by applying two pressures	Yes
- Monitoring of sensor limits	Yes
- Simulation function: pressure measurement, sensor temperature and electronics temperature	Constant value or by means of parameterizable ramp function

