

Pressure Measurement

Transmitters for applications with advanced requirements (Advanced)

SITRANS P DS III for level

Technical specifications

SITRANS P DS III for level

Input		Level	
Measured variable		HART	PROFIBUS PA/ FOUNDATION Fieldbus
Span (fully adjustable) or measuring range, max. operating pressure (in accordance with 2014/68/EU Pressure Equipment Directive) and max. test pressure (pursuant to DIN 16086)		Span	Nominal measuring range
		25 ... 250 mbar 2.5 ... 25 kPa 10 ... 100 inH ₂ O	250 mbar 25 kPa 100 inH ₂ O
		25 ... 600 mbar 2.5 ... 60 kPa 10 ... 240 inH ₂ O	600 mbar 60 kPa 240 inH ₂ O
		53 ... 1600 mbar 5.3 ... 160 kPa 21 ... 642 inH ₂ O	1600 mbar 160 kPa 642 inH ₂ O
		160 ... 5000 mbar 16 ... 500 kPa 2.32 ... 72.5 psi	5000 mbar 500 kPa 72.5 psi
Lower measuring limit			Max. operating pressure MAWP (PS)
• Measuring cell with silicone oil filling		-100 % of max. span or 30 mbar a/3 kPa a/0.44 psia depending on mounting flange	See "Mounting flange"
• Measuring cell with inert filling liquid		-100 % of max. span or 30 mbar a/3 kPa a/0.44 psia depending on mounting flange	
Upper measuring limit		100 % of max. span	
Start of scale value		Between the measuring limits (fully adjustable)	
Output		HART	PROFIBUS PA/FOUNDATION Fieldbus
Output signal		4 ... 20 mA	Digital PROFIBUS PA and FOUNDATION Fieldbus signal
• Lower limit (infinitely adjustable)		3.55 mA, factory preset to 3.84 mA	-
• Upper limit (infinitely adjustable)		23 mA, factory preset to 20.5 mA or optionally set to 22.0 mA	-
Load			
• Without HART		$R_B \leq (U_H - 10.5 \text{ V})/0.023 \text{ A in } \Omega$ U_H : Power supply in V	-
• With HART		$R_B = 230 \dots 500 \Omega$ (SIMATIC PDM) or $R_B = 230 \dots 1100 \Omega$ (HART Communicator)	-
Physical bus		-	IEC 61158-2
Protection against polarity reversal		Protected against short-circuit and polarity reversal. Each connection against the other with max. supply voltage.	
Electrical damping (step width 0.1 s)		Set to 2 s (0 ... 100 s)	

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Measuring accuracy	Acc. to IEC 60770-1
Reference conditions	<ul style="list-style-type: none"> • Increasing characteristic • Start-of-scale value 0 bar/kPa/psi • Stainless steel seal diaphragm • Silicone oil filling • Room temperature 25 °C (77 °F)
Measuring span ratio r (spread, Turn-Down)	$r = \text{max. measuring span/set measuring span or nom. pressure range}$
Error in measurement at limit setting incl. hysteresis and reproducibility	
<ul style="list-style-type: none"> • Linear characteristic 	
<ul style="list-style-type: none"> - 250 mbar/25 kPa/3.6 psi 	$r \leq 5 :$ $\leq 0.125 \%$ $5 < r \leq 10 :$ $\leq (0.007 \cdot r + 0.09) \%$
<ul style="list-style-type: none"> - 600 mbar/60 kPa/8.7 psi 	$r \leq 5 :$ $\leq 0.125 \%$ $5 < r \leq 25 :$ $\leq (0.007 \cdot r + 0.09) \%$
<ul style="list-style-type: none"> - 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 	$r \leq 5 :$ $\leq 0.125 \%$ $5 < r \leq 30 :$ $\leq (0.007 \cdot r + 0.09) \%$
Influence of ambient temperature (in percent per 28 °C (50 °F))	
<ul style="list-style-type: none"> • 250 mbar/25 kPa/3.6 psi 	$\leq (0.4 \cdot r + 0.16) \%$
<ul style="list-style-type: none"> • 600 mbar/60 kPa/8.7 psi 	$\leq (0.24 \cdot r + 0.16) \%$
<ul style="list-style-type: none"> • 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 	$\leq (0.2 \cdot r + 0.16) \%$
Influence of static pressure	
<ul style="list-style-type: none"> • on the zero point 	
<ul style="list-style-type: none"> - 250 mbar/25 kPa/3.6 psi 	$\leq (0.3 \cdot r) \%$ per nominal pressure
<ul style="list-style-type: none"> - 600 mbar/60 kPa/8.7 psi 	$\leq (0.15 \cdot r) \%$ per nominal pressure
<ul style="list-style-type: none"> - 1600 mbar/160 kPa/23.21 psi 5 bar/500 kPa/72.5 psi 	$\leq (0.1 \cdot r) \%$ per nominal pressure
<ul style="list-style-type: none"> • on the span 	$\leq (0.1 \cdot r) \%$ per nominal pressure
Long-term stability (temperature change ± 30 °C (± 54 °F))	$\leq (0.25 \cdot r) \%$ in 5 years static pressure max. 70 bar/7 MPa/1015 psi
Effect of mounting position	Depending on filling liquid of mounting flange
Effect of auxiliary power supply (in percent per change in voltage)	0.005 % per 1 V
Measuring value resolution for PROFIBUS PA and FOUNDATION Fieldbus	$3 \cdot 10^{-5}$ of nominal measuring range
Rated conditions	
Degree of protection to IEC 60529	IP66 (optional IP66/IP68), NEMA 4X
Temperature of medium	Note: Always take into account assignment of max. permissible operating temperature to max. permissible operating pressure of the respective flange connection!
<ul style="list-style-type: none"> • Measuring cell with silicone oil filling 	
<ul style="list-style-type: none"> - High-pressure side 	$-40 \dots +100^{(1)} \text{ °C } (-40 \dots +212^{(1)} \text{ °F})$ $p_{\text{abs}} \geq 1 \text{ bar: } -40 \dots +175 \text{ °C } (-40 \dots +347 \text{ °F})$ $p_{\text{abs}} < 1 \text{ bar: } -40 \dots +80 \text{ °C } (-40 \dots +176 \text{ °F})$
<ul style="list-style-type: none"> - Low-pressure side 	$-40 \dots +100 \text{ °C } (-40 \dots +212 \text{ °F})$ $-20 \dots +60 \text{ °C } (-4 \dots +140 \text{ °F})$ in conjunction with dust explosion protection
Ambient conditions	
<ul style="list-style-type: none"> • Ambient temperature 	
<ul style="list-style-type: none"> - Transmitter 	$-40 \dots +85 \text{ °C } (-40 \dots +185 \text{ °F})$
<ul style="list-style-type: none"> - Display readable 	$-30 \dots +85 \text{ °C } (-22 \dots +185 \text{ °F})$
<ul style="list-style-type: none"> • Storage temperature 	$-50 \dots +85 \text{ °C } (-58 \dots +185 \text{ °F})$
<ul style="list-style-type: none"> • Climatic class 	
<ul style="list-style-type: none"> - Condensation 	Relative humidity 0 ... 100 %, condensation permissible, suitable for use in the tropics
<ul style="list-style-type: none"> • Electromagnetic Compatibility 	
<ul style="list-style-type: none"> - Emitted interference and interference immunity 	Acc. to IEC 61326 and NAMUR NE 21

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Design

Weight (without options)

- To EN (pressure transmitter with mounting flange, without tube) ≈ 11 ... 13 kg (≈ 24.2 ... 28.7 (lb))
- To ASME (pressure transmitter with mounting flange, without tube) ≈ 11 ... 18 kg (≈ 24.2 ... 39.7 (lb))

Enclosure material

Low-copper die-cast aluminum, GD-ALSi12 or stainless steel precision casting, mat. no. 1.4408

Wetted parts materials

High-pressure side

- Seal diaphragm of mounting flange

- Stainless steel, W.-Nr. 1.4404/316L
 - coated with PFA
 - coated with PTFE
 - coated with ECTFE
 - gold plated
- Monel 400, mat. no. 2.4360
- Hastelloy C276, mat. no. 2.4619
- Hastelloy C4, mat. no. 2.4602
- Hastelloy C22, mat. no. 2.4602
- Tantalum
- Titanium, mat. no. 3.7035
- Nickel 201
- Duplex 2205, mat. no. 1.4462

Measuring cell filling

Silicone oil

Process connection

- High-pressure side
- Low-pressure side

Flange to EN and ASME

Female thread 1/4"-18 NPT and flange connection with mounting thread M10 to DIN 19213 or 7/16"-20 UNF to IEC 61518/DIN EN 61518

Power supply U_H

Terminal voltage on transmitter

HART

10.5 ... 45 V DC
10.5 ... 30 V DC in intrinsically-safe mode

PROFIBUS PA/FOUNDATION Fieldbus

-

Power supply

Supplied through bus

Separate 24 V power supply necessary

-

No

Bus voltage

- Not Ex
- With intrinsically-safe operation

-

9 ... 32 V

-

9 ... 24 V

Current consumption

- Basic current (max.)
- Start-up current ≤ basic current
- Max. current in event of fault

-

12.5 mA

-

Yes

-

15.5 mA

Fault disconnection electronics (FDE) available

-

Yes

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Certificates and approvals		
Classification according to 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)	
Explosion protection		
• Intrinsic safety "i"	PTB 13 ATEX 2007 X	
- Marking	Ex II 1/2 G Ex ia/ib IIC T4/T5/T6 Ga/Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +70 °C (-40 ... +158 °F) temperature class T5; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$, $I_i = 100 \text{ mA}$, $P_i = 750 \text{ mW}$; $R_i = 300 \Omega$	FISCO supply unit: $U_o = 17.5 \text{ V}$, $I_o = 380 \text{ mA}$, $P_o = 5.32 \text{ W}$ Linear barrier: $U_o = 24 \text{ V}$, $I_o = 250 \text{ mA}$, $P_o = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$, $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$, $C_i = 1.1 \text{ nF}$
• Explosion-proof "d"	PTB 99 ATEX 1160	
- Marking	Ex II 1/2 G Ex d IIC T4/T6 Gb	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F) temperature class T4; -40 ... +60 °C (-40 ... +140 °F) temperature class T6	
- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$	To circuits with values: $U_H = 9 \dots 32 \text{ V DC}$
• Dust explosion protection for zone 20	PTB 01 ATEX 2055	
- Marking	Ex II 1 D Ex ta IIIC T120°C Da Ex II 1/2 D Ex ta/tb IIIC T120°C Da/Db	
- Permissible ambient temperature	-40 ... +85 °C (-40 ... +185 °F)	
- Max. surface temperature	120 °C (248 °F)	
- Connection	To certified intrinsically-safe circuits with peak values: $U_i = 30 \text{ V}$, $I_i = 100 \text{ mA}$, $P_i = 750 \text{ mW}$, $R_i = 300 \Omega$	FISCO supply unit: $U_o = 17.5 \text{ V}$, $I_o = 380 \text{ mA}$, $P_o = 5.32 \text{ W}$ Linear barrier: $U_o = 24 \text{ V}$, $I_o = 250 \text{ mA}$, $P_o = 1.2 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$, $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$, $C_i = 1.1 \text{ nF}$
• Dust explosion protection for zone 21/22	PTB 01 ATEX 2055	
- Marking	Ex II 2 D Ex tb IIIC T120°C Db	
- Connection	To circuits with values: $U_H = 10.5 \dots 45 \text{ V DC}$; $P_{\max} = 1.2 \text{ W}$	To circuits with values: $U_H = 9 \dots 32 \text{ V DC}$; $P_{\max} = 1 \text{ W}$
• Type of protection "n" (zone 2)	PTB 13 ATEX 2007 X	
- Marking	Ex II 2/3 G Ex nA II T4/T5/T6 Gc Ex II 2/3 G Ex ic IIC T4/T5/T6 Gc	
- Connection (Ex nA)	$U_m = 45 \text{ V}$	$U_m = 32 \text{ V}$
- Connection (Ex ic)	To circuits with values: $U_i = 45 \text{ V}$	FISCO supply unit ic: $U_o = 17.5 \text{ V}$, $I_o = 570 \text{ mA}$ Linear barrier: $U_o = 32 \text{ V}$, $I_o = 132 \text{ mA}$, $P_o = 1 \text{ W}$
- Effective internal inductance/capacitance	$L_i = 0.4 \text{ mH}$, $C_i = 6 \text{ nF}$	$L_i = 7 \mu\text{H}$, $C_i = 1.1 \text{ nF}$
• Explosion protection acc. to FM	Certificate of Compliance 3008490	
- Identification (XP/DIP) or (IS); (NI)	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; CL I, ZN 0/1 AEx ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III	
• Explosion protection to CSA	Certificate of Compliance 1153651	
- Identification (XP/DIP) or (IS)	CL I, DIV 1, GP ABCD T4...T6; CL II, DIV 1, GP EFG; CL III; Ex ia IIC T4...T6; CL I, DIV 2, GP ABCD T4...T6; CL II, DIV 2, GP FG; CL III	

1) This value may be increased if the process connection is sufficiently insulated.

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HART communication		FOUNDATION Fieldbus communication	
HART	230 ... 1100 Ω	Function blocks	3 function blocks analog input, 1 function block PID
Protocol	HART Version 5.x	<ul style="list-style-type: none"> Analog input <ul style="list-style-type: none"> - Adaptation to customer-specific process variables - Electrical damping, adjustable - Simulation function Failure mode Limit monitoring Square-rooted characteristic for flow measurement 	Yes, linearly rising or falling characteristic 0 ... 100 s Output/input (can be locked within the device with a bridge) parameterizable (last good value, substitute value, incorrect value) Yes, one upper and lower warning limit and one alarm limit respectively Yes
Software for computer	SIMATIC PDM	<ul style="list-style-type: none"> PID Physical block 	Standard FOUNDATION Fieldbus function block 1 resource block
PROFIBUS PA communication		Transducer blocks	1 transducer block Pressure with calibration, 1 transducer block LCD
Simultaneous communication with master class 2 (max.)	4	<ul style="list-style-type: none"> Pressure transducer block <ul style="list-style-type: none"> - Can be calibrated by applying two pressures - Monitoring of sensor limits - Simulation function: Measured pressure value, sensor temperature and electronics temperature 	Yes Yes
The address can be set using	Configuration tool or local operation (standard setting address 126)	Mounting flange	
Cyclic data usage		Nominal diameter	Nominal pressure
<ul style="list-style-type: none"> Output byte 	5 (one measured value) or 10 (two measured values)	<ul style="list-style-type: none"> Acc. to EN 1092-1 <ul style="list-style-type: none"> - DN 80 - DN100 To ASME B16.5 <ul style="list-style-type: none"> - 3 inch - 4 inch 	PN 40 PN16, PN40 class 150, class 300 class 150, class 300
<ul style="list-style-type: none"> Input byte 	0, 1, or 2 (register operating mode and reset function for metering)		
Internal preprocessing			
Device profile	PROFIBUS PA Profile for Process Control Devices Version 3.0, class B		
Function blocks	2		
<ul style="list-style-type: none"> Analog input <ul style="list-style-type: none"> - Adaptation to customer-specific process variables - Electrical damping, adjustable - Simulation function - Failure mode Limit monitoring Register (totalizer) <ul style="list-style-type: none"> - Failure mode Limit monitoring Physical block 	Yes, linearly rising or falling characteristic 0 ... 100 s Input/Output parameterizable (last good value, substitute value, incorrect value) Yes, one upper and lower warning limit and one alarm limit respectively Can be reset, preset, optional direction of counting, simulation function of register output parameterizable (summation with last good value, continuous summation, summation with incorrect value) One upper and lower warning limit and one alarm limit respectively		
Transducer blocks			
<ul style="list-style-type: none"> Pressure transducer block <ul style="list-style-type: none"> - Can be calibrated by applying two pressures - Monitoring of sensor limits - Specification of a container characteristic with - Square-rooted characteristic for flow measurement - Gradual volume suppression and implementation point of square-root extraction - Simulation function for measured pressure value and sensor temperature 	1 2 Yes Yes Max. 30 nodes Yes Parameterizable Constant value or over parameterizable ramp function		

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Selection and Ordering data		Article No.
Pressure transmitter for level, SITRANS P DS III with HART		7MF4633-
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		Y - - - -
Measuring cell filling	Measuring cell cleaning	
Silicone oil	normal	1
Measuring span (min. ... max.)		
25 ... 250 mbar	(10 ... 100 inH ₂ O)	D
25 ... 600 mbar	(10 ... 240 inH ₂ O)	E
53 ... 1600 mbar	(21 ... 642 inH ₂ O)	F
0.16 ... 5 bar	(64.3 ... 2000 inH ₂ O)	G
Process connection of low-pressure side		
Female thread 1/4-18 NPT with flange connection		
<ul style="list-style-type: none"> Mounting thread 7/16-20 UNF to IEC 61518/DIN EN 61518 Mounting thread M10 to DIN 19213 (only for replacement requirement) 		2 0
Non-wetted parts materials		
process flange screws	Electronics housing	
Stainless steel	Die-cast aluminum	2
Stainless steel	Stainless steel precision casting ¹⁾	3
Version		
<ul style="list-style-type: none"> Standard version, German plate inscription, setting for pressure unit: bar International version, English plate inscription, setting for pressure unit: bar Chinese version, English plate inscription, setting for pressure unit: Pascal 		1 2 3
All versions include DVD with compact operating instructions in various EU languages.		
Explosion protection		
<ul style="list-style-type: none"> None With ATEX, Type of protection: <ul style="list-style-type: none"> "Intrinsic safety (Ex ia)" "Explosion-proof (Ex d)"²⁾ "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d)"³⁾ "Ex nA/ic (Zone 2)"⁴⁾ "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia+ Ex d + Zone 1D/2D)"³⁾⁵⁾ FM + CSA intrinsic safe (is)⁶⁾ FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D³⁾⁵⁾⁶⁾ With FM + CSA, Type of protection: <ul style="list-style-type: none"> "Intrinsic Safe and Explosion Proof (is + xp)"¹⁾⁶⁾ 		A B D P E R F S NC
Electrical connection/cable entry		
<ul style="list-style-type: none"> Screwed gland M20x1.5 Screwed gland 1/2-14 NPT Han 7D plug (plastic housing) incl. mating connector⁷⁾ M12 connectors (stainless steel)^{8) 9)} 		B C D F
Display		
<ul style="list-style-type: none"> Without display Without visible display (display concealed, setting: mA) With visible display (setting mA) With customer-specific display (setting as specified, Order code "Y21" or "Y22" required) 		0 1 6 7

Ordering information

1st order item: Pressure transmitter 7MF4633-...
2nd order item: Mounting flange 7MF4912-3-...

ordering example

Item line 1: 7MF4633-1EY20-1AA1-Z
B line: Y01
C line: Y01: 80 to 143 mbar (1.16 to 2.1 psi)
Item line 2: 7MF4912-3GE01

Power supply units see Chap. 7 "Supplementary Components".

Included in delivery of the device:

- Quick-start guide
 - Sealing plug(s) or sealing screw(s) for the process flanges(s)
- 1) Not in conjunction with Electrical connection "Han7D plug".
 - 2) Without cable gland, with blanking plug.
 - 3) With enclosed cable gland Ex ia and blanking plug.
 - 4) Configurations with HAN and M12 connectors are only available in Ex ic.
 - 5) Only in connection with IP66.
 - 6) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
 - 7) Only in connection with Ex approval A, B or E.
 - 8) M12 delivered without cable socket
 - 9) Only in connection with Ex approval A, B, E or F.

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Selection and Ordering data	Article No.
Pressure transmitters for level	
SITRANS P DS III with PROFIBUS PA (PA)	7MF4634 -
SITRANS P DS III with FOUNDATION Fieldbus (FF)	7MF4635 -
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	1 Y - - - -
Nominal measuring range	
250 mbar (100 inH ₂ O)	D
600 mbar (240 inH ₂ O)	E
1600 mbar (642 inH ₂ O)	F
5 bar (2000 inH ₂ O)	G
Process connection of low-pressure side	
Female thread 1/4-18 NPT with flange connection	
• Mounting thread 7/16-20 UNF to IEC 61518/DIN EN 61518	2
• Mounting thread M10 to DIN 19213 (only for replacement requirement)	0
Non-wetted parts materials	
process flange screws Electronics housing	
Stainless steel Die-cast aluminum	2
Stainless steel Stainless steel precision casting	3
Version	
• Standard version, German plate inscription, setting for pressure unit: bar	1
• International version, English plate inscription, setting for pressure unit: bar	2
• Chinese version, English plate inscription, setting for pressure unit: Pascal	3
All versions include DVD with compact operating instructions in various EU languages.	
Explosion protection	
• None	A
• With ATEX, Type of protection:	
- "Intrinsic safety (Ex ia)"	B
- "Explosion-proof (Ex d)" ¹⁾	D
- "Intrinsic safety and flameproof enclosure" (Ex ia + Ex d) ²⁾	P
- "Ex nA/ic (Zone 2)" ³⁾	E
- "Intrinsic safety, explosion-proof enclosure and dust explosion protection (Ex ia + Ex d + Zone 1D/2D) ²⁾⁴⁾ (not for DS III FF)	R
• FM + CSA intrinsic safe (is) ⁵⁾	F
• FM + CSA (is + ep) + Ex ia + Ex d (ATEX) + Zone 1D/2D ²⁾⁴⁾⁵⁾	S
• With FM + CSA, Type of protection:	
- "Intrinsic Safe and Explosion Proof (is + xp)" ¹⁾⁵⁾	NC
Electrical connection/cable entry	
• Screwed gland M20 x 1.5	B
• Screwed gland 1/2-14 NPT	C
• M12 connectors (stainless steel) ^{6) 7)}	F
Display	
• Without display	0
• Without visible display (display concealed, setting: bar)	1
• With visible display (setting: bar)	6
• With customer-specific display (setting as specified, Order code "Y21" required)	7

Ordering information

1st order item: Pressure transmitter 7MF4634-...
2nd order item: Mounting flange 7MF4912-...

ordering example

Item line 1: 7MF4634-1EY20-1AA1
Item line 2: 7MF4912-3GE01

Included in delivery of the device:

- Quick-start guide
- Sealing plug(s) or sealing screw(s) for the process flanges(s)

- 1) Without cable gland, with blanking plug.
- 2) With enclosed cable gland Ex ia and blanking plug.
- 3) Configurations with HAN and M12 connectors are only available in Ex ic.
- 4) Only in connection with IP66.
- 5) Explosion protection acc. to FM/CSA: suitable for installations according to NEC 500/505.
- 6) M12 delivered without cable socket
- 7) Only in connection with Ex approval A, B, E or F.

Selection and Ordering data	Order code			Selection and Ordering data	Order code		
<i>Further designs</i>	HART	PA	FF	<i>Further designs</i>	HART	PA	FF
Add "-Z" to Article No. and specify Order code.				Add "-Z" to Article No. and specify Order code.			
O-rings for process flanges on low-pressure side (instead of FPM (Viton))				Use on zone 1D / 2D (only together with type of protection "Intrinsic safety" (transmitter 7MF4...-.....-B.. Ex ia)" and IP66)	E01	✓	✓
• PTFE (Teflon)	A20	✓	✓	Overfilling safety device for flammable and non-flammable liquids (max. PN 32 (MAWP 464 psi), basic device with type of protection "Intrinsic safety (Ex ia)", to WHG and VbF, not together with measuring cell filling "inert liquid")	E08	✓	
• FEP (with silicone core, approved for food)	A21	✓	✓	Export approval Korea	E11	✓	✓
• FFPM (Kalrez, compound 4079), for measured medium temperatures -15 ... 100 °C (5 ... 212 °F)	A22	✓	✓	Dual seal	E24	✓	✓
• NBR (Buna N)	A23	✓	✓	Explosion-proof "Intrinsic safety" (Ex ia) to INMETRO (Brazil) (only for transmitter 7MF4...-.....-B..)	E25 ²⁾	✓	✓
Plug				"Flameproof" explosion protection according to INMETRO (Brazil) (only for transmitter 7MF4...-.....-D..)	E26 ²⁾	✓	✓
• Han 7D (metal)	A30	✓		Explosion-proof "Intrinsic safety" (Ex ia + Ex d) to INMETRO (Brazil) (only for transmitter 7MF4...-.....-P..)	E28 ²⁾	✓	✓
• Han 8D (instead of Han 7D)	A31	✓		Ex Approval IEC Ex (Ex ia) (only for transmitter 7MF4...-.....-B..)	E45 ²⁾	✓	✓
• Angled	A32	✓		Ex Approval IEC Ex (Ex d) (only for transmitter 7MF4...-.....-D..)	E46 ²⁾	✓	✓
• Han 8D (metal)	A33	✓		Explosion-proof "Intrinsic safety" to NEPSI (China) (only for transmitter 7MF4...-.....-B..)	E55 ²⁾	✓	✓
Sealing screw ¼-18 NPT, with valve in mat. of process flanges	A40	✓	✓	Explosion protection "Explosion-proof" to NEPSI (China) (only for transmitter 7MF4...-.....-D..)	E56 ²⁾	✓	✓
Cable sockets for M12 connectors (metal (CuZn))	A50	✓	✓	Ex protection "Zone 2" to NEPSI (China) (only for transmitter 7MF4...-.....-E..)	E57 ²⁾	✓	✓
Rating plate inscription (instead of German)				Ex protection „Ex ia“, „Ex d“ and „Zone 2“ to NEPSI (China) (only for transmitter 7MF4...-.....-R..)	E58 ²⁾	✓	✓
• English	B11	✓	✓	"Intrinsic safety" and "Explosion-proof" explosion protection acc. to Kosha (Korea) (only for transmitter 7MF4...-.....-[B, D]..-Z + E11)	E70 ²⁾	✓	✓
• French	B12	✓	✓	Ex-protection Ex ia according to EAC Ex (Russia)	E80	✓	✓
• Spanish	B13	✓	✓	Ex-protection Ex d according to EAC Ex (Russia)	E81	✓	✓
• Italian	B14	✓	✓	Ex-protection Ex nA/ic (Zone 2) according to EAC Ex (Russia)	E82	✓	✓
• Cyrillic (russian)	B16	✓	✓	Ex-protection Ex ia + Ex d + Zone 1D/2D according to EAC Ex (Russia)	E83	✓	✓
English rating plate Pressure units in inH ₂ O and/or psi	B21	✓	✓	Two coats of lacquer on casing and cover (PU on epoxy)	G10	✓	✓
Quality Inspection Certificate (5-point characteristic curve test) according to IEC 60770-2	C11	✓	✓	Replacement of process connection side	H01	✓	✓
Inspection certificate Acc. to EN 10204-3.1	C12	✓	✓				
Factory certificate Acc. to EN 10204-2.2	C14	✓	✓				
Acceptance certificate (EN 10204-3.1) PMI test of parts in contact with medium	C15	✓	✓				
Functional safety (SIL2) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C20	✓					
Functional safety (PROFIsafe) Certificate and PROFIsafe protocol	C21 ¹⁾		✓				
Functional safety (SIL2/3) Devices suitable for use according to IEC 61508 and IEC 61511. Includes SIL conformity declaration	C23	✓					
PED for Russia with initial calibration mark	C99	✓	✓				
Setting of the upper saturation limit of the output signal to 22.0 mA	D05	✓					
Degree of protection IP66/IP68 (only for M20x1.5 and ½-14 NPT)	D12	✓	✓				
Supplied with oval flange (1 item), PTFE packing and screws in thread of process flange	D37	✓	✓				
Capri cable gland 4F CrNi and clamping device (848699 + 810634) included	D59	✓	✓				

Pressure Measurement

Transmitters for applications with advanced requirements (Advanced)

SITRANS P DS III for level

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Selection and Ordering data	Order code			
<i>Further designs</i>	HART	PA	FF	
Add "-Z" to Article No. and specify Order code.				
Transient protector 6 kV (lightning protection)	J01	✓	✓	✓
Vent valve or blanking plug of process flange welded-in (orientation: on right when viewing the display)³⁾	J08	✓	✓	✓
Vent valve or blanking plug of process flange welded-in (orientation: on left when viewing the display)³⁾	J09	✓	✓	✓

- 1) Profisafe transmitters can only be operated with the S7 F Systems V6.1 configuration software in combination with S7-400H
- 2) Option does not include ATEX approval, but instead includes only the country-specific approval.
- 3) Blanking plug is standard configuration. Order option A40 if a vent valve is required instead of a blanking plug.

Selection and Ordering data	Order code			
<i>Additional data</i>	HART	PA	FF	
Please add "-Z" to Article No. and specify Order code(s) and plain text.				
Measuring range to be set Specify in plain text (max. 5 characters): Y01: ... up to ... mbar, bar, kPa, MPa, psi	Y01	✓	✓ ¹⁾	
Stainless steel tag plate and entry in device variable (measuring point description) Max. 16 characters, specify in plain text: Y15:	Y15	✓	✓	✓
Measuring point text (entry in device variable) Max. 27 characters, specify in plain text: Y16:	Y16	✓	✓	✓
Entry of HART address (TAG) Max. 8 characters, specify in plain text: Y17:	Y17	✓		
Setting of pressure indicator in pressure units Specify in plain text (standard setting: bar): Y21: mbar, bar, kPa, MPa, psi, ... Note: The following pressure units can be selected: bar, mbar, mm H ₂ O ^{*)} , inH ₂ O ^{*)} , ftH ₂ O ^{*)} , mmHG, inHG, psi, Pa, kPa, MPa, g/cm ² , kg/cm ² , Torr, ATM or % *) ref. temperature 20 °C	Y21	✓	✓	✓
Setting of pressure indicator in non-pressure units²⁾ Specify in plain text: Y22: up to l/min, m ³ /h, m, USgpm, ... (specification of measuring range in pressure units "Y01" is essential, unit with max. 5 characters)	Y22³⁾ + Y01	✓		
Preset bus address possible between 1 and 126 Specify in plain text: Y25:	Y25		✓	✓
Damping adjustment in seconds (0 ... 100 s) Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset	Y30	✓	✓	✓

Only Y01, Y15, Y16, Y17, Y21, Y22, Y25 and D05 can be factory preset

✓ = available

- 1) Measuring accuracies for PROFIBUS PA transmitters with Option Y01 are calculated in the same way as for HART devices.
- 2) Preset values can only be changed over SIMATIC PDM.
- 3) Not in conjunction with over-filling safety device for flammable and non-flammable liquids (Order code "E08")

Pressure Measurement

Transmitters for applications with advanced requirements (Advanced)

SITRANS P DS III for level

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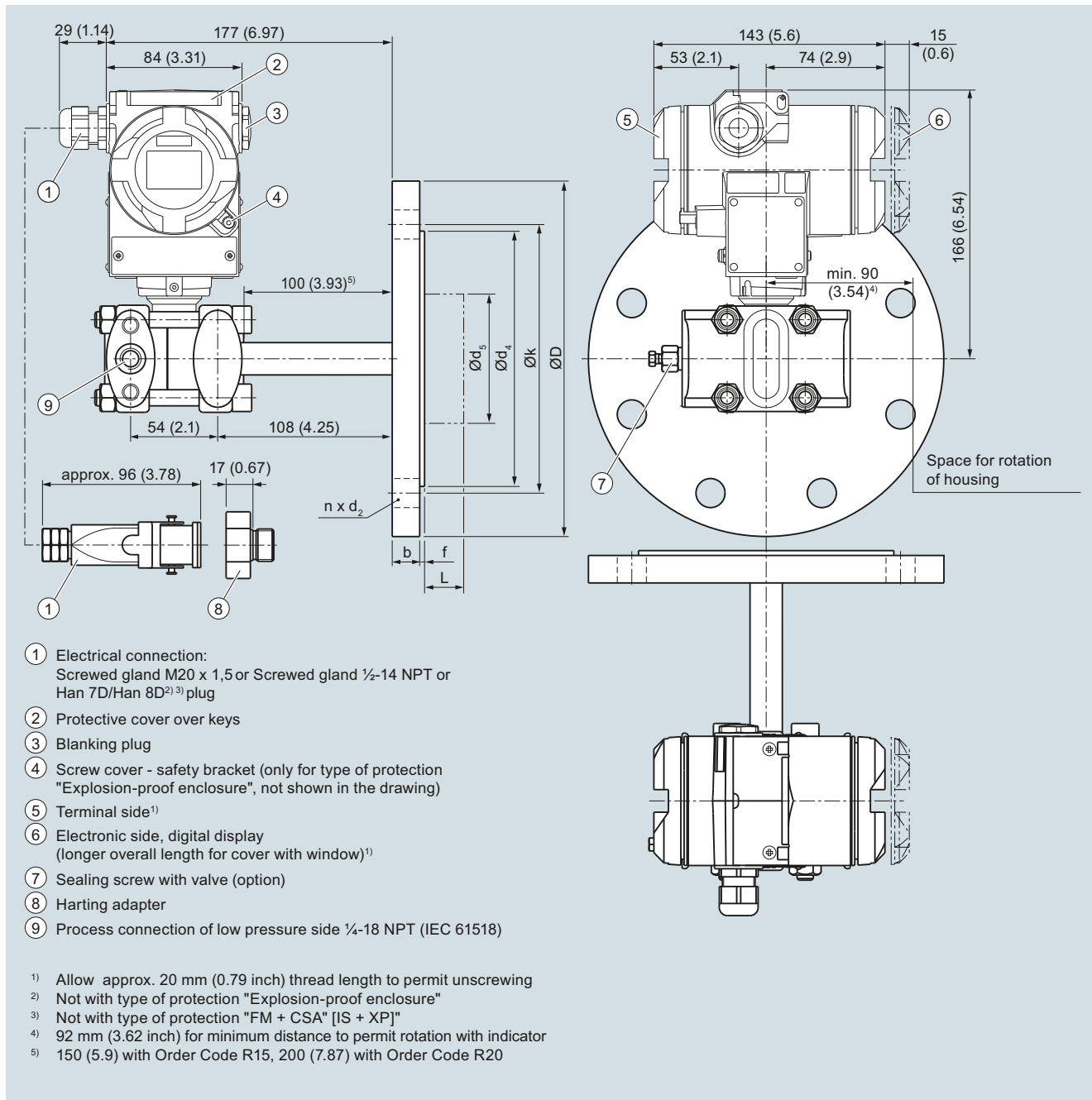
Selection and Ordering data			Article No.	Order code
Mounting flange				
directly mounted at SITRANS P for Level 7MF46 ■■ (order separately)			7 M F 4 8 1 2 -	
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			3 ■■■■	■■■
Flange	Size	Class		
ANSI B16.5	2 inch	150	L M Q R T U Z	
		300		
	3 inch	150		
		300		
	4 inch	150		
		300		
Special design, customer information to be supplied				J 1 Y
Materials and wetted parts				
<ul style="list-style-type: none"> • SST 316L • SST 316L with carbon pigmented Teflon lined diaphragm (good upto 500 °F) • Monel 400, mat. No. 2.4360 • Hastelloy C276, mat. No. 2.4819 • Tantal 			A E 0 G J K Z	
Special design, customer information to be supplied				K 1 Y
Extension length (316SS standard)				
Without extension (standard version, 0 mm)			0	
2"	50 mm		1	
4"	100 mm		2	
6"	150 mm		3	
8"	200 mm		4	
Special design, customer information to be supplied for extension			9	L 1 Y
System fill				
<ul style="list-style-type: none"> • Silicone oil DC 200-10 • Silicone oil DC 200-50 • High temperature oil • Halocarbon (for O₂-application) • Silicone oil M5 • Syltherm 800 • DC704 silicone oil • Fluorolube 			1 2 3 4 5 6 7 8 9	
Special design, customer information to be supplied				M 1 Y
Further designs				
Please add „-Z“ to Article No. and specify Order code				
Integrated flame path restriction				A 0 1
Rotatable Flange				B 0 1
Certificates:				
Certification of calibration N.I.S.T. (20% steps)				C 1 1
Material conformance certificate				C 1 2
Vacuum service (must be specified with HT oil)				V 0 4
Calculation of span of transmitter (completed questionnaire to be attached)				Y 0 5

Pressure Measurement

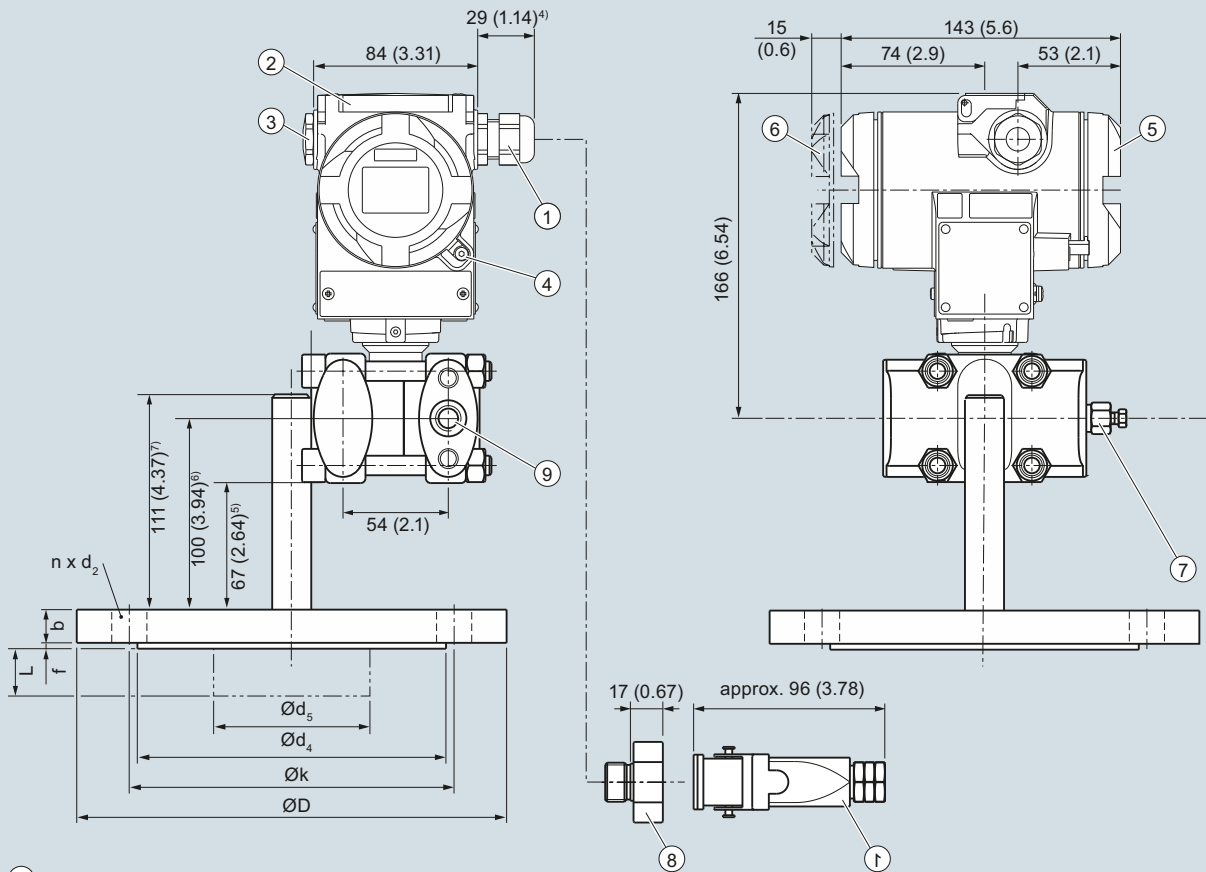
Transmitters for applications with advanced requirements (Advanced)

SITRANS P DS III for level

Dimensional drawings



SITRANS P DS III with HART pressure transmitters for level, including mounting flange, dimensions in mm (inch)



- ① Electrical connection:
Screwed gland M20 x 1,5 or Screwed gland ½-14 NPT or Han 7D/Han 8D³⁾ plug
- ② Protective cover over keys
- ③ Blanking plug
- ④ Screw cover - safety bracket (only for type of protection "Explosion-proof enclosure", not shown in the drawing)
- ⑤ Terminal side¹⁾
- ⑥ Electronic side, digital display
(longer overall length for cover with window)¹⁾
- ⑦ Sealing screw with valve (option)
- ⑧ Harting adapter
- ⑨ Process connection of low pressure side ¼-18 NPT (IEC 61518)

¹⁾ Allow approx. 20 mm (0.79 inch) thread length to permit unscrewing

²⁾ Not with type of protection "Explosion-proof enclosure"

³⁾ Not with type of protection "FM + CSA" [IS + XP]"

⁴⁾ For Pg 13,5 with adapter approx. 45 mm (1.77 inch)

⁵⁾ 117 (4.61) with Order Code R15, 167 (6.57) with Order Code R20

⁶⁾ 150 (5.19) with Order Code R15, 200 (7.87) with Order Code R20

⁷⁾ 161 (6.34) with Order Code R15, 211 (8.31) with Order Code R20

SITRANS P DS III with HART pressure transmitters for level, including mounting flange, one sided-mounting, sealing surface below (order code H20), dimensions in mm (inch)

Pressure Measurement

Transmitters for applications with advanced requirements (Advanced)

SITRANS P DS III for level

Connection to EN 1092-1

Nominal diameter	Nominal pressure	b	D	d	d ₂	d ₄	d ₅	d _M	f	k	n	L
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
DN 50	PN 10/16/25/40	20	165	90	18	102	48.3	45 ¹⁾	2	125	4	0, 50, 100, 150 or 200
	PN 100	28	195	90	26	102	48.3	45 ¹⁾	2	145	8	
DN 80	PN 10/16/25/40	24	200	90	18	138	76	72 ²⁾	2	160	8	
	PN 100	32	230	90	26	138	76	72 ²⁾	2	180	8	
DN 100	PN 10/16	20	220	115	18	158	94	89	2	180	8	
	PN 25/40	24	235	115	22	162	94	89	2	190	8	

Connection to ASME B16.5

Nominal diameter	Nominal pressure	b	D	d ₂	d ₄	d ₅	d _M	f	k	n	L
		lb./sq.in	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)
2 inch	150	0.77 (19.5)	5.91 (150)	0.79 (20)	3.62 (92)	1.9 (48.3)	1.77 ¹⁾ (45)	0.08 (2)	4.74 (120.5)	4	0, 2, 3.94, 5.94 or 7.87 (0, 50, 100, 150 or 200)
	300	0.89 (22.7)	6.5 (165)	0.79 (20)	3.62 (92)	1.9 (48.3)	1.77 ¹⁾ (45)	0.08 (2)	5 (127)	8	
	400/600	1.28 (32.4)	6.5 (165)	0.79 (20)	3.62 (92)	1.9 (48.3)	1.77 ¹⁾ (45)	0.28 (7)	5 (127)	8	
	900/1500	1.78 (45.1)	8.46 (215)	1.02 (26)	5 (127)	1.9 (48.3)	1.77 ¹⁾ (45)	0.28 (7)	6.5 (165)	8	
3 inch	150	0.96 (24.3)	7.48 (190)	0.79 (20)	5 (127)	3 (76)	2.83 ²⁾ (72)	0.08 (2)	6 (152.5)	4	
	300	1.14 (29)	8.27 (210)	0.87 (22)	5 (127)	3 (76)	2.83 ²⁾ (72)	0.08 (2)	6.63 (168.5)	8	
	600	1.53 (38.8)	8.27 (210)	0.87 (22)	5 (127)	3 (76)	2.83 ²⁾ (72)	0.28 (7)	6.63 (168.5)	8	
4 inch	150	0.96 (24.3)	9.06 (230)	0.79 (20)	6.22 (158)	3.69 (94)	3.5 (89)	0.08 (2)	7.5 (190.5)	8	
	300	1.27 (32.2)	10.04 (255)	0.87 (22)	6.22 (158)	3.69 (94)	3.5 (89)	0.08 (2)	7.87 (200)	8	
	400	1.65 (42)	10.04 (255)	1.02 (26)	6.22 (158)	3.69 (94)	3.5 (89)	0.28 (7)	7.87 (200)	8	

d: Internal diameter of gasket to DIN 2690

d_M: Effective diaphragm diameter

¹⁾ 59 mm = 2.32 inch with tube length L=0.

²⁾ 89 mm = 3½ inch with tube length L=0.