

T72 SERIES



PED



SIL IEC 61508

T72 series includes submersible electronic level transmitters with 4 ÷ 20 mA output and HART® digital communication protocol for hydrostatic pressure sensing.

Sensors are always calibrated individually together with their own seal.

Configurations and adjustments can be made remotely using HART® protocol compatible communicators.

APPLICATION FIELDS

- Level measurement;
- Installation on chemical, Oil & Gas, pharmaceutical, alimentary, marine plants etc;
- Installation in areas with persistence of potentially explosive mixtures.




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TECHNICAL FEATURES

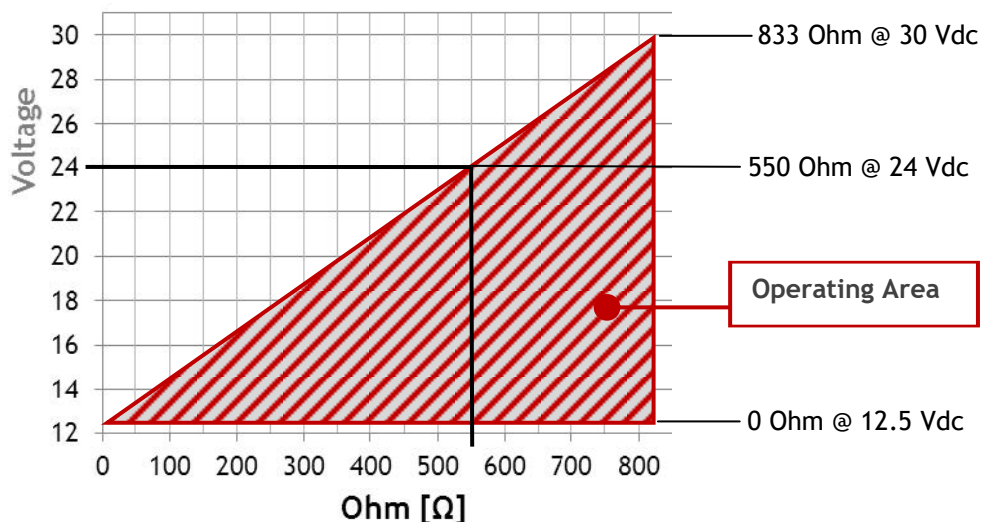
Electrical parameters

Supply: 12.5 ÷ 30 Vdc

Output signal: 4 ÷ 20 mA + Hart® Rev6

Alarm values: 3.85 mA \ 21 mA

Maximum load: As per chart
220 Ω < R_L < 600 Ω (Hart®)



Measurement performance

Total accuracy (*): < 0.20 % FS (-25 ÷ 0 °C)
< 0.07 % FS (0 ÷ 80 °C)

Measured value update frequency: 4 ÷ 20 mA + Hart®: ≈ 1 s
Hart®: ≈ 500 ms (On request)

Polling time: 4 ÷ 20 mA + Hart®: ≈ 800 ms
Hart®: ≈ 500 ms (On request)

Response time: < 256 ms (Standard Hart®)

Allowable de-range: Down to 30 times the Nominal Range

Damping: 0 ÷ 60 s

Long term stability: < 0.1 % FS for year

Notes

(*) Including hysteresis, non-linearity, non-conformity and non-repeatability (IEC 60770) Accuracy and drifts are given for instruments with integral sensor and diaphragm; they may vary according to sensor type and diameter, thickness and material of the diaphragm.



ENVIRONMENTAL FEATURES

Environmental Conditions

Temperature class:	-40 ÷ +85 °C T6, T85 °C: -40 °C ≤ Tamb ≤ 60 °C T5, T100 °C: -40 °C ≤ Tamb ≤ 75 °C
Process temperature:	-10 ÷ +80 °C
Storage temperature:	-40 ÷ +90 °C
Ingress protection degree:	IP68
Vibration Test:	in accordance with IEC 60068-2-6
Relative Humidity:	< 98% RH not condensing

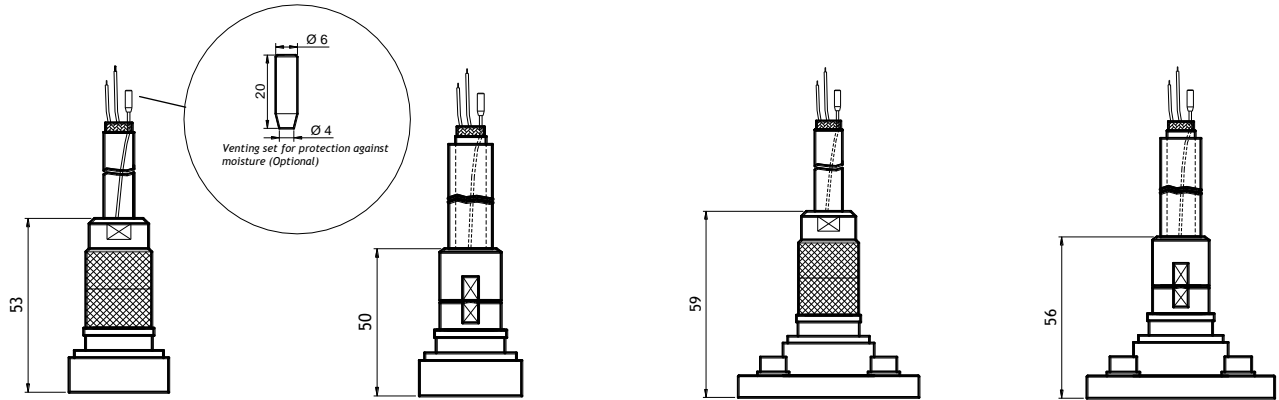
APPROVALS

Type approvals

Directive 2014/34/EU (ATEX)	 II 1G Ex ia IIC T6, T5 Ga  II 2G Ex ia IIC T6, T5 Gb
Directive 2014/68/EU (PED)	Up to Category II, for fluids in Group 1
Directive 2014/30/EU (EMC)	Adequate level of electromagnetic compatibility
Functional Safety	SIL2 SFF = 76.67 % PFH [Hours ⁻¹] = 8.6644·10 ⁻⁸ DC = λ _{DD} / (λ _{DD} + λ _{DU}) = 82.9 %
Marine type approval	In compliance with applicable requirements of DNV GL type approval system

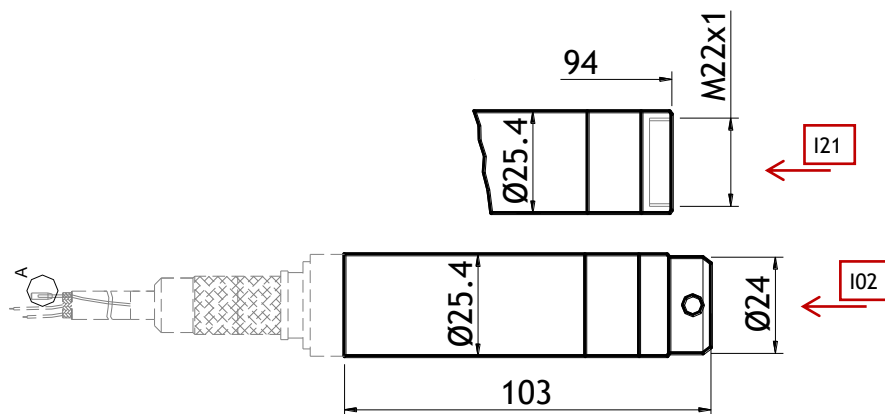
ELECTRICAL WIRING

Transmitters are protected against reverse polarity. The recommended wiring cable is a screened signal cable, with wires of min. section area of 0.2 mm² (AWG24) and shielding > 80 %.

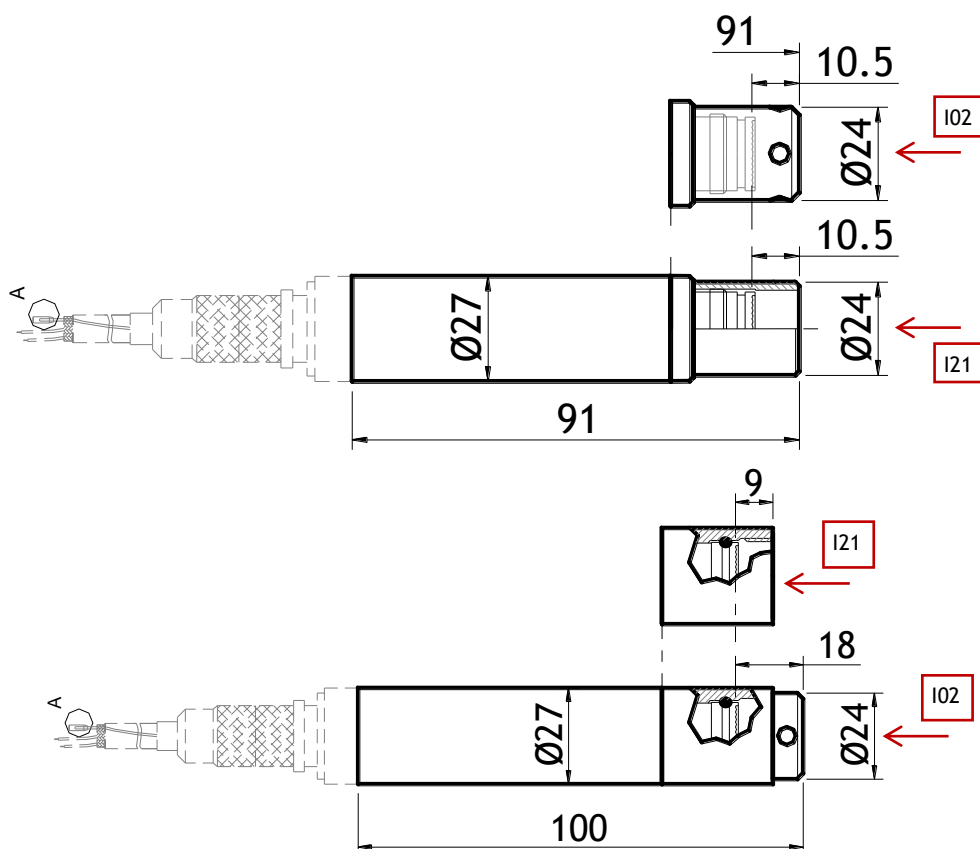


<p>Code 17 AISI 316 Cable gland for output double sealing IP68</p>	<p>Code 18 AISI 316 Cable gland for output double sealing IP68 with protection tube Rilsan \PTFE</p>	<p>Code 56 Flange AISI 316 Ø 48</p>	<p>Code 57 Flange AISI 316 SS with protection tube Rilsan\PTFE</p>
<p>Code 27 Titanium Cable gland for output double sealing IP68</p>	<p>Code 28 P Titanium Cable gland for output double sealing IP68 with protection tube Rilsan \PTFE</p>	<p>Code 61 Flange Titanium</p>	<p>Code 62 Flange Titanium with protection tube Rilsan\PTFE</p>

HOUSING MATERIAL AND TYPE

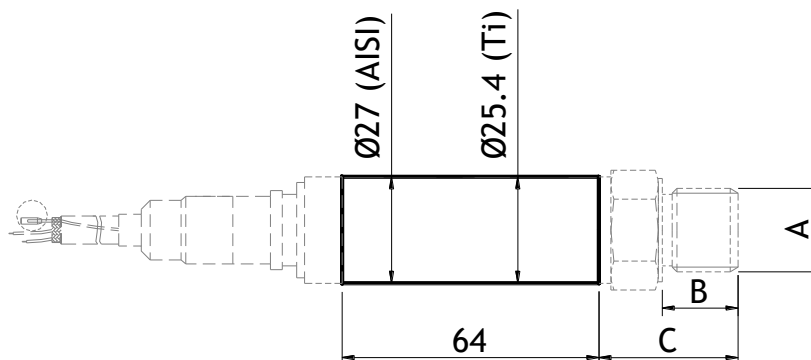


- **Material:** Titanium
- **Protection Degree:** IP68
Housing code T10 & Process connection I21 o I02



- **Material:** AISI 316
- **Zone:** II 1G
- **Protection Degree:** IP68
Housing code A04 & Process connection I21 o I02

HOUSING MATERIAL AND TYPE



- Material: AISI 316

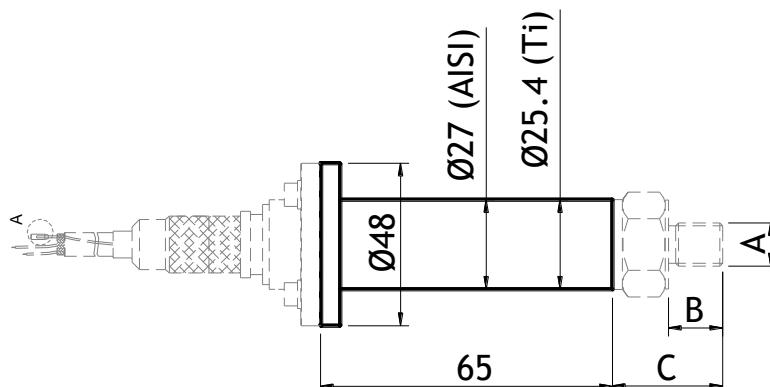
- Zone: II 1G
- Protection Degree: IP68

or

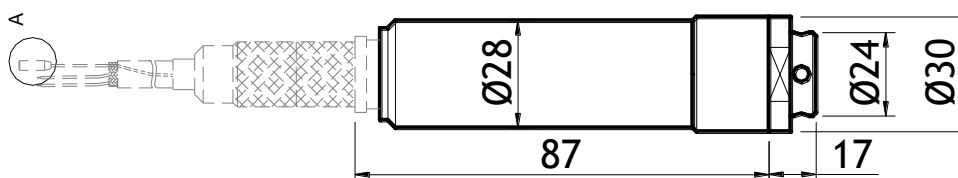
- Material: Titanium

- Zone: II 2G
- Protection Degree: IP68

Housing code A04- AISI316 or T11 - Titanium
Process connection S26 AISI316 or S27 Titanium

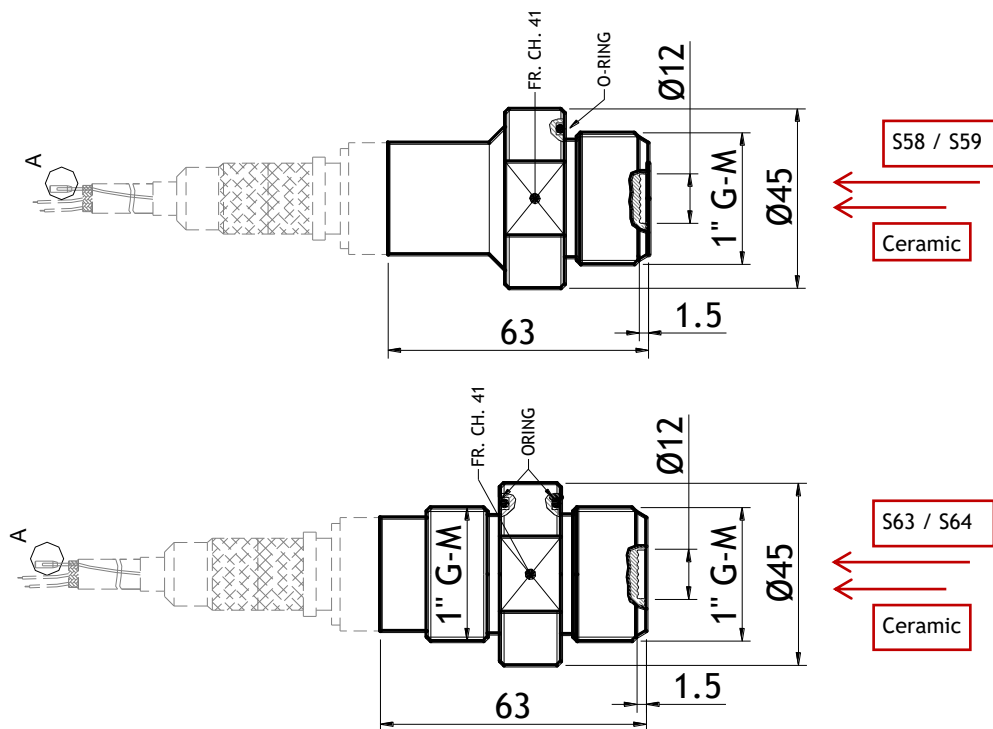


- Material: AISI 316
 - Zone: II 1G
 - Protection Degree: IP68
- Housing code A04 - Ø27



- Material: AISI 316
 - Zone: II 1G
 - Protection Degree: IP68
- Housing code A04 & Process connection I02

HOUSING MATERIAL AND TYPE

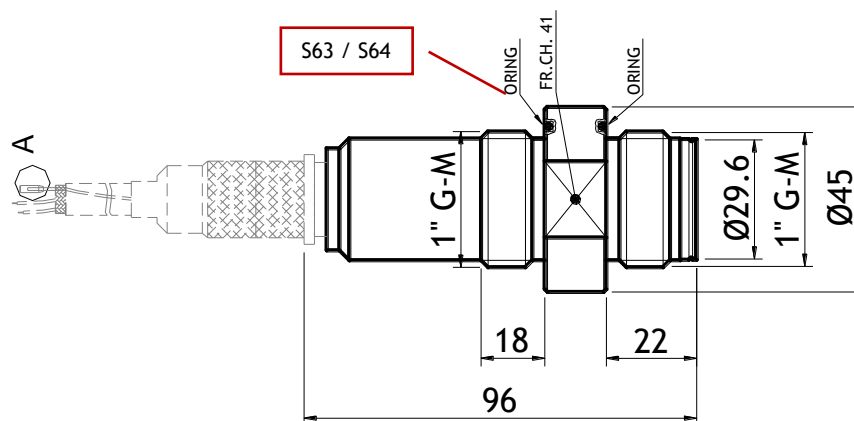


- Material: AISI 316
- Zone: Ex II 1G
- Protection Degree: IP68

or

- Material: Titanium
- Zone: Ex II 2G
- Protection Degree: IP68

Housing code A04- AISI316 or T11 - Titanium
Process connection S58 o S63 AISI316 or S59 or S64 Titanium



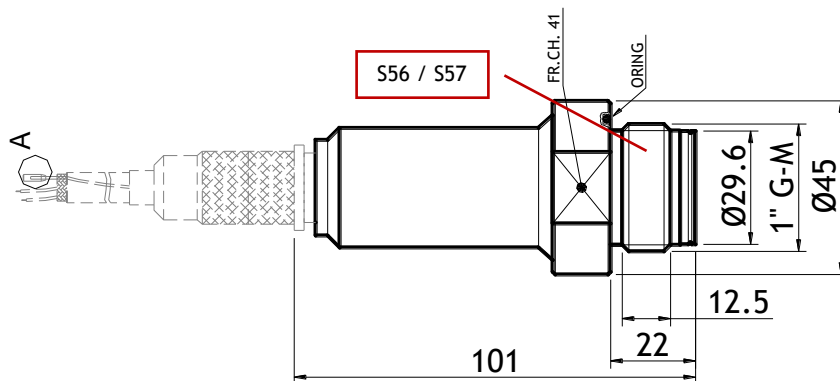
- Material: AISI 316 \ AISI 316
- Zone: Ex II 1G
- Protection Degree: IP68

or

- Material: Titanium
- Zone: Ex II 2G
- Protection Degree: IP68

Housing code A24- AISI316 or T04 - Titanium
Process connection S63 (AISI316 - Flush)
S64 (Titanium - Flush)

HOUSING MATERIAL AND TYPE

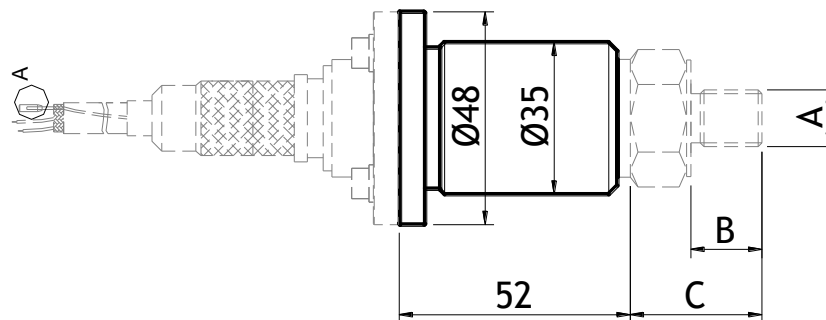


- Material: AISI 316
- Zone: Ex II 1G
- Protection Degree: IP68

or

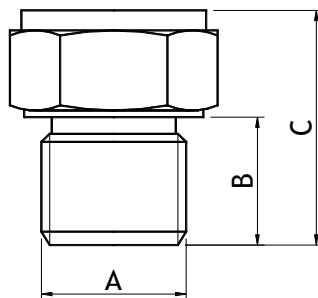
- Material: Titanium
- Zone: Ex II 2G
- Protection Degree: IP68

Housing code A24- AISI316 or T04 - Titanium
Process connection S56 (AISI316 - Flush)
S57 (Titanium - Flush)
S61(AISI316/ Titanium - Back Diaphragm)



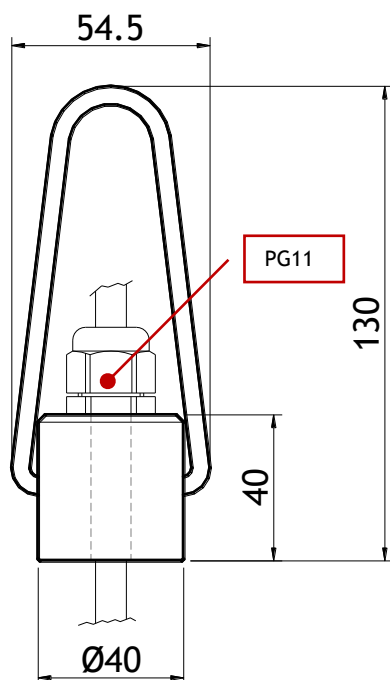
- Material: AISI 316
 - Zone: Ex II 1G
 - Protection Degree: IP68
- Housing code A05 - Ø35

PROCESS CONNECTIONS



Code	A	B [mm]	C [mm]	Ex. Ch.
S06	1/4" G-M	14	38	27
S08	1/4" NPT-M	14	39	27
S22	3/8" G-M	16	41	27
S26	1/2" G-M	18	45	27
S30	1/2" NPT-M	20	45	27
S39	1/2" G-M Flush diaphragm Ø18.5	16	32	27
S51	3/4" G-M	20	48	32
S56	1" G-M Flush diaphragm	20	33.5	41
S58	1" G-M	20	32	41

ACCESSORIES



Code 05 - Sliding bracket on submersible cable



ORDERING CODE

T72 Smart submersible level Transmitter

01 Type of measure			
	A	Absolute Pressure	
	C	Relative Pressure	
02 Sensor type			
	CI	Ceramic Integral	
	PI	Piezoresistive Integral	
03 Measuring range			
	P01	0,35 bar	Piezo Overpressure: 0.5 bar
	P02	0.7 bar	Piezo Overpressure: 1.4 bar
	P03	2 bar	Piezo Overpressure: 4 bar
	P04	3.5 bar	Piezo Overpressure: 7 bar
	P05	10 bar	Piezo Overpressure: 20 bar
	P06	20 bar	Piezo Overpressure: 40 bar
	P21	0.06 bar	Piezo Overpressure: 10 bar
	P22	0.35 bar	Piezo Overpressure: 4 bar
	P23	1 bar	Piezo Overpressure: 20 bar
	P24	2.5 bar	Piezo Overpressure: 40 bar
	P25	5 bar	Piezo Overpressure: 50 bar
	P26	10 bar	Piezo Overpressure: 60 bar
	P27	30 bar	Piezo Overpressure: 150 bar
	P28	100 bar	Piezo Overpressure: 200 bar
	P29	200 bar	Piezo Overpressure: 600 bar
	P30	400 bar	Piezo Overpressure: 800 bar
	N01	0.35 bar	Piezo Overpressure: 0.7 bar
	N02	1 bar	Piezo Overpressure: 2 bar
	N03	3.5 bar	Piezo Overpressure: 7 bar
	N04	10 bar	Piezo Overpressure: 20 bar
	N05	35 bar	Piezo Overpressure: 70 bar
	M01	0.35 bar	Piezo Overpressure: 0.7 bar
	M02	1 bar	Piezo Overpressure: 2 bar
	M03	2 bar	Piezo Overpressure: 4 bar
	M04	3.5 bar	Piezo Overpressure: 7 bar
	M05	10 bar	Piezo Overpressure: 20 bar
	M06	35 bar	Piezo Overpressure: 70 bar
	M07	100 bar	Piezo Overpressure: 150 bar
	M08	350 bar	Piezo Overpressure: 700 bar
	M09	1000 bar	Piezo Overpressure: 1500 bar
	C01	1 bar	Ceramic Overpressure: 2 bar
	C02	2 bar	Ceramic Overpressure: 4 bar
	C03	5 bar	Ceramic Overpressure: 10 bar
	C04	10 bar	Ceramic Overpressure: 15 bar
	C05	20 bar	Ceramic Overpressure: 35 bar
	C06	60 bar	Ceramic Overpressure: 100 bar
	C07	100 bar	Ceramic Overpressure: 200 bar
	C08	400 bar	Ceramic Overpressure: 650 bar
	ZZZ	Special	
04 Filling oil			
	9	Oil for food use -10/+220°C	
	6	Fluoride and Inert Oil -40/+200°C	
	1	Siliconic Oil for high temperature -40/+308°C	
	8	Standard siliconic Oil -40/+200°C	
	N	No filling	
	Z	Special	



NOTES

- 1) Negative or compound ranges are possible.
- 2) In case of vacuum applications must be necessary to use P01 ÷ P06 sensors.

ORDERING CODE

05 Process temperature limits		
<input type="text"/>	B	-10 ÷ 80°C
06 Housing material and type		
<input type="text"/>	A04	AISI 316 Ø 27 mm
	A05	AISI 316 Ø 35 mm
	A24	AISI 316 Ø 31 mm
	T04	Titanium Ø 31 mm
	T10	Titanium Ø 25,4 mm
	T11	Titanium Ø 27 mm
	Z99	Special
07 Process connection		
<input type="text"/>	I01	Plug with front hole
	I21	Open diaphragm
	S25	Screwed 1/2" G/BSP/PF-M IN PVDF
	S54	Screwed 3/4" G-M front diaphragm
	S56	Screwed 1" G-M
	S57	Screwed 1" G-M in Titanium
	S61	Screwed 1" G-M back diaphragm
	S63	Screwed 1" G-M Double, flush diaphragm
	S64	Screwed 1" G-M Double Titanium CH41 flush diaphragm
	S30	Screwed 1/2" NPT-M
	S39	Screwed 1/2" G-M flush diaphragm Ø18,5
	S56	Screwed 1" G-M
	Z99	Special
08 Extension length		
<input type="text"/>	A01	Cable PE without ref. (-30 / +60°C) L = 1 m
	B01	Cable PE with ref. (-30/+60°C) L = 1 m
	C01	Cable TPR with ref. (-40 / +125°C) L = 1 m
	E01	Cable PUR with ref. (-30 / +80°C) L = 1 m
	T14	Pipe AISI 316 Ø 12 mm < 2 m
	XA2	Sondaflex DN16 5 / 8" AISI 316 OVP 25 bar < 2 m (MAX 20 m)
	Z99	Special
09 Sensor material (diaphragm)		
<input type="text"/>	A	AISI 316
	E	Ceramic
	K	Hastelloy C
	Q	Titanium
	Z	Special
10 Process gasket material		
<input type="text"/>	C	EPDM
	D	FKM Viton
	F	Silicon
	T	All welded
	Z	Special
11 Wetted parts material		
<input type="text"/>	A	AISI 316
	B	AISI 316L
	L	Titanium
	N	Hastelloy C
	V	PTFE coating
	Z	Special

ORDERING CODE

12 Electrical connection	
	17 AISI 316 Cable gland double sealing IP68
	18 AISI 316 Cable gland IP68 + Rilsan / PTFE
	27 Titanium Cable gland double sealing IP68
	28 Titanium Cable gland IP68 + Rilsan / PTFE
	56 Flange AISI 316 SS Ø48
	57 AISI 316 SS flange with Rilsan\PTFE protection
	61 Ø48 Titanium Flange
	62 Titanium flange with Rilsan\PTFE protection
	99 Special
13 Electrical output	
	A Current output 4÷20 mA 2 wires + HART
14 Ex type approval	
	A2  II 1G Ex ia IIC T6, T5 Ga
	A3  II 2G Ex ia IIC T6, T5 Gb
	N0 No Ex certification
15 Options and accessories	
	02 Marine type approval
	22 PED Certificate
	21 SIL Certificate
	10 Calibration report on 5 points
	01 Test and material report according to EN 10204
	05 Sliding bracket on submersible cable
	NN No options

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ACCESSORIES



Cod. F01/F02/F03
ABS/PVC/PVDF submersible housing



Cod. 06
Housing with thermos-shrinkable sleeve protection



Cod. 271
Analog submersible transmitter



Cod. S4 + Cod. I1/I2
1" Mounting Bracket with Delrin/Moplen protection Cap and isolating ring



Cod. JBX
AISI316 Junction Box

and MORE

- Junction Box with flanged process connection



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