

SERIES T71



T71 series includes SMART electronic transmitters with 4÷20 mA output and HART® digital communication protocol. Sensors are calibrated individually together with their own seal. Configurations and adjustments can be made locally, by means of push buttons and display, or remotely using HART® communication protocol.

DESCRIPTION

The transmitters allow the measurement of pressure, vacuum and level of liquids, in industrial process at different working conditions; they have digital electronics provided with a microcontroller, which allows a more accurate and reliable management of the sensor if compared with the traditional analog transmitters, also giving diagnostic information about the transmitter functioning. A further advantage is the possibility to support a digital output signal through the standard HART® protocol (“Highway Addressable Remote Transducer”).

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TECHNICAL FEATURES

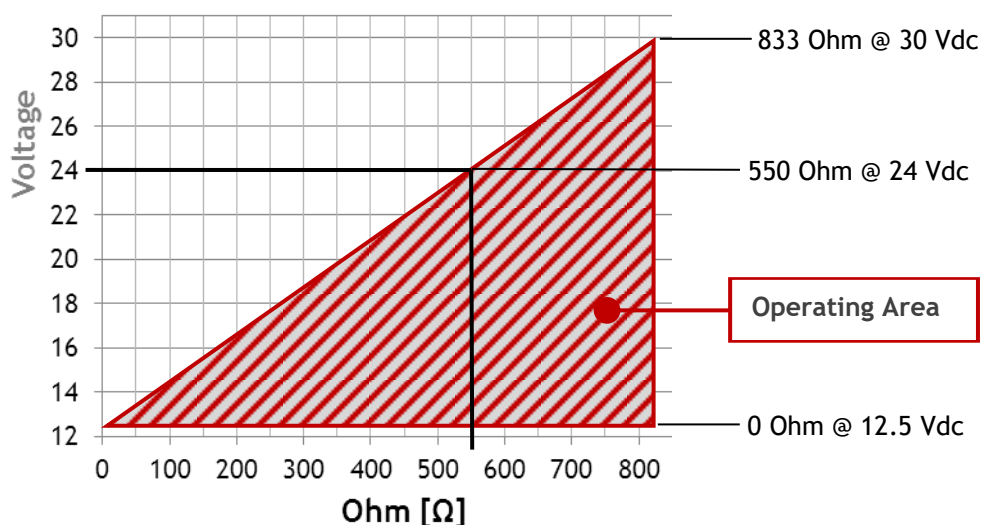
Electrical parameters

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:	-40 ÷ +85 °C Up to: -40 ÷ 130 °C
Storage temperature:	-40 ÷ +90 °C
Ingress protection degree:	Aluminum Housing: IP66
Vibration Test:	in accordance with IEC 60068-2-6
Relative Humidity:	< 98% RH not condensing

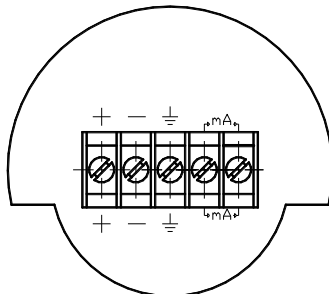
APPROVALS

Type approvals

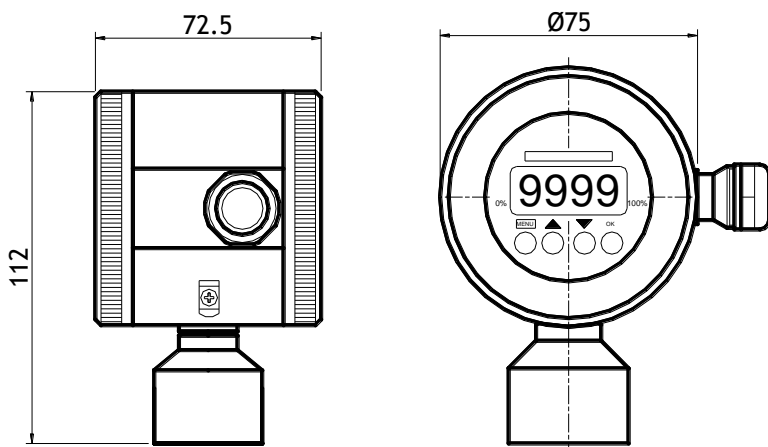
Directive 2014/34/EU (ATEX)	Ex II 1G Ex ia IIC T6, T5 Ga and Ex II 1D Ex ia IIIC T85 °C, T100 °C Da or Ex II 1/2G Ex ia IIC T6, T5 Ga/Gb	
Directive 2014/68/EU (PED)	Up to Category II, for fluids in Group 1	
Directive 2014/30/EU (EMC)	Adequate level of electromagnetic compatibility	
Functional Safety	SIL2 SFF = 78.13 %	PFH [Hours ⁻¹] = 9.2352 · 10 ⁻⁸ DC = $\lambda_{DD} / (\lambda_{DD} + \lambda_{DU}) = 83.7 \%$
Marine type approval	In compliance with applicable requirements of RINA type approval system	

ELECTRICAL WIRING

Transmitters are protected against reverse polarity.

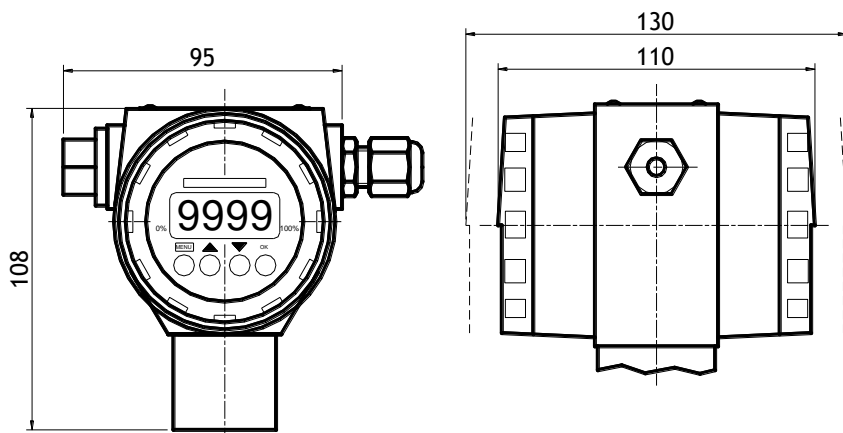


HOUSING MATERIAL AND TYPE



- Material: AISI 316
- Zone: II 1GD
- Protection Degree: IP67

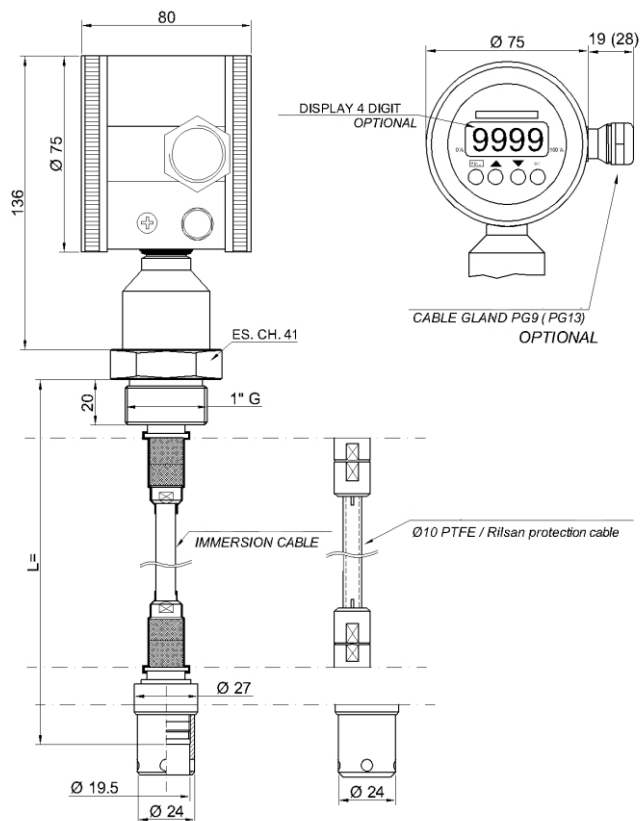
- A16 - Fixed head
- A17 - Rotating head
- A20 - With Gore reference IP65 (*)
- A21 - With Gore reference rotating head IP65 (*)



- Material: Aluminum
- Zone: II 1/2G
- Protection Degree: IP66

- D04 - Aluminum housing
 - D10 - With Gore reference IP65 (*)
- (*): Atmospheric reference for ranges < 10 bar

DIMENSIONAL DRAWINGS



ORDERING CODE

T7I Smart pressure, level, vacuum transmitter

01 Type of measure

<input type="checkbox"/>	A	Absolute Pressure
<input type="checkbox"/>	B	Barometric Pressure
<input type="checkbox"/>	C	Relative Pressure

02 Sensor type

<input type="checkbox"/>	CR	Ceramic Remote
<input type="checkbox"/>	PR	Piezoresistive Remote

03 Measuring range

<input type="checkbox"/>	P01	0,35 bar	Piezo	Overpressure: 0.5 bar
<input type="checkbox"/>	P02	0.7 bar	Piezo	Overpressure: 1.4 bar
<input type="checkbox"/>	P03	2 bar	Piezo	Overpressure: 4 bar
<input type="checkbox"/>	P04	3.5 bar	Piezo	Overpressure: 7 bar
<input type="checkbox"/>	P05	10 bar	Piezo	Overpressure: 20 bar
<input type="checkbox"/>	P06	20 bar	Piezo	Overpressure: 40 bar
<input type="checkbox"/>	P21	0.06 bar	Piezo	Overpressure: 4 bar
<input type="checkbox"/>	P22	0.35 bar	Piezo	Overpressure: 10 bar
<input type="checkbox"/>	P23	1 bar	Piezo	Overpressure: 20 bar
<input type="checkbox"/>	P24	2.5 bar	Piezo	Overpressure: 40 bar
<input type="checkbox"/>	P25	5 bar	Piezo	Overpressure: 50 bar
<input type="checkbox"/>	P26	10 bar	Piezo	Overpressure: 60 bar
<input type="checkbox"/>	P27	30 bar	Piezo	Overpressure: 150 bar
<input type="checkbox"/>	P28	100 bar	Piezo	Overpressure: 200 bar
<input type="checkbox"/>	P29	200 bar	Piezo	Overpressure: 600 bar
<input type="checkbox"/>	P30	400 bar	Piezo	Overpressure: 800 bar
<input type="checkbox"/>	P51	0.01 bar	Piezo	No overpressure
<input type="checkbox"/>	P52	0.055 bar	Piezo	No overpressure
<input type="checkbox"/>	P53	0.206 bar	Piezo	No overpressure
<input type="checkbox"/>	N01	0.35 bar	Piezo	Overpressure: 0.7 bar
<input type="checkbox"/>	N02	1 bar	Piezo	Overpressure: 2 bar
<input type="checkbox"/>	N03	3.5 bar	Piezo	Overpressure: 7 bar
<input type="checkbox"/>	N04	10 bar	Piezo	Overpressure: 20 bar
<input type="checkbox"/>	N05	35 bar	Piezo	Overpressure: 70 bar
<input type="checkbox"/>	M01	0.35 bar	Piezo	Overpressure: 0.7 bar
<input type="checkbox"/>	M02	1 bar	Piezo	Overpressure: 2 bar
<input type="checkbox"/>	M03	2 bar	Piezo	Overpressure: 4 bar
<input type="checkbox"/>	M04	3.5 bar	Piezo	Overpressure: 7 bar
<input type="checkbox"/>	M05	10 bar	Piezo	Overpressure: 20 bar
<input type="checkbox"/>	M06	35 bar	Piezo	Overpressure: 70 bar
<input type="checkbox"/>	M07	100 bar	Piezo	Overpressure: 150 bar
<input type="checkbox"/>	M08	350 bar	Piezo	Overpressure: 700 bar
<input type="checkbox"/>	M09	1000 bar	Piezo	Overpressure: 1500 bar
<input type="checkbox"/>	C01	1 bar	Ceramic	Overpressure: 2 bar
<input type="checkbox"/>	C02	2 bar	Ceramic	Overpressure: 4 bar
<input type="checkbox"/>	C03	5 bar	Ceramic	Overpressure: 10 bar
<input type="checkbox"/>	C04	10 bar	Ceramic	Overpressure: 15 bar
<input type="checkbox"/>	C05	20 bar	Ceramic	Overpressure: 35 bar
<input type="checkbox"/>	C06	60 bar	Ceramic	Overpressure: 100 bar
<input type="checkbox"/>	C07	100 bar	Ceramic	Overpressure: 200 bar
<input type="checkbox"/>	C08	400 bar	Ceramic	Overpressure: 650 bar
<input type="checkbox"/>	ZZZ	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

04 Filling oil		
6	Fluoride and Inert Oil -40/+200°C	
8	Standard siliconic Oil -40/+200°C	
9	Oil for food use -10/+220°C	
N	No filling	
05 Process temperature limits		
B	-40 ÷ 85°C Standard	
D	-40 ÷ 120°C Piezoresistive sensor	
F	-40 ÷ 130°C Ceramic sensor	
06 Housing material and type		
A16	Fixed head	
A17	Rotating head	
A20	With Gore reference	
A21	With Gore reference rotating head	
D04	Aluminum housing	
D10	Aluminum housing with Gore reference	
07 Process connection		
Z56	Without cable	
Z57	Without tube	
S56	Screwed 1" G-M	
S71	Screwed 1 1/2" G-M	
S81	Screwed 2" G-M	
F29	Flanged DN 40 PN 10/16	
F33	Flanged DN 50 PN 10/16	
F41	Flanged DN 65 PN 10/40	
F44	Flanged DN 80 PN 10/16 Not rotate	
F55	Flanged DN 100 PN 40	
F71	Flanged DN 1" ANSI 150 RF	
F73	Flanged DN 1 1/2" ANSI 150 RF	
F75	Flanged DN 2" ANSI 150 RF	
F79	Flanged DN 3" ANSI 150 RF	
E07	Welding ring ET 15	
E14	Welding ring ET 30	
G04	DIN Nut DN 40	
G10	DIN Nut DN 80	
T03	Triclamp 2"	
T06	Triclamp 4"	
Z99	Special	
08 Extension length		
A01	Cable PE 3 wires no ref with shield	Ø7,2 (-30/+60°C) L=1mt
B01	Cable PE 6 wires with ref with shield	Ø7,2 (-30/+60°C) L=1mt
C01	Cable TPR 6 wires with ref with shield	Ø6,8 (-40/+125°C) L=1mt
D01	Cable PVC 3 wires without ref with shield	Ø7,2 (-30/+80°C) L=1mt
E01	Cable PUR 7 wires with ref with shield	Ø7 (-30/+80°C) L=1mt
T14	Pipe in AISI 316 Ø 12mm < 2 m	
T59	Pipe in AISI 316 Ø 20mm < 2 m	
T74	Pipe in AISI 316 Ø 28mm < 2 m	
XA2	Flexible sondaflex DN16 5/8" AISI 316 OVP 25 < 2 m	
N00	No extension	

ORDERING CODE

09 Sensor material (diaphragm)	
<input type="checkbox"/>	A AISI 316
<input type="checkbox"/>	B AISI 316 L
<input type="checkbox"/>	E Ceramic
<input type="checkbox"/>	K Hastelloy C
<input type="checkbox"/>	Q Titanium
10 Process gasket material	
<input type="checkbox"/>	C EPDM
<input type="checkbox"/>	D FKM Viton
<input type="checkbox"/>	F Silicone
<input type="checkbox"/>	T All welded
11 Wetted parts material	
<input type="checkbox"/>	A AISI 316
<input type="checkbox"/>	B AISI 316 L
<input type="checkbox"/>	L Titanium
<input type="checkbox"/>	N Hastelloy C
<input type="checkbox"/>	V PTFE coating
12 Electrical connection	
<input type="checkbox"/>	19 AISI 316 Cable Gland PG9 IP67 cable \varnothing 5 ÷ 7 mm
<input type="checkbox"/>	20 AISI 316 Cable Gland PG13 IP67 for cable \varnothing 8 ÷ 12 mm
<input type="checkbox"/>	36 Nipple AISI 316 1/2" G-F
<input type="checkbox"/>	37 Nipple AISI 316 1/2" NPT-F
<input type="checkbox"/>	39 Nipple AISI 316 M20 x 1.5 F
<input type="checkbox"/>	81 Screwed M20 x 1.5
13 Electrical output	
<input type="checkbox"/>	J 4 ÷ 20 mA 2 fili + HART (0.2 % FS) With LCD and blind cover
<input type="checkbox"/>	K 4 ÷ 20 mA 2 fili + HART (0.2 % FS) With LCD and transparent cover
<input type="checkbox"/>	R 4 ÷ 20 mA 2 fili + HART (0.1 % FS) With LCD and blind cover
<input type="checkbox"/>	S 4 ÷ 20 mA 2 fili + HART (0.1 % FS) With LCD and transparent cover
14 Ex type approval	
<input type="checkbox"/>	A1  II 1G Ex ia IIC T6, T5 Ga and  II 1D Ex ia IIIC T85°C, T100°C Da
<input type="checkbox"/>	A5  II 1/2G Ex ia IIC T6, T5 Ga/Gb
<input type="checkbox"/>	N0 No Ex certification
15 Options and accessories	
<input type="checkbox"/>	01 Test certificate according to EN 10204
<input type="checkbox"/>	02 Marine type approval
<input type="checkbox"/>	05 Sliding bracket on sommersion cable
<input type="checkbox"/>	10 Calibration report on 5 points
<input type="checkbox"/>	12 Degreasing
<input type="checkbox"/>	91 Cable output PE 6 wires with ref with shield \varnothing 7,2 (-30/+60°C) L=...
<input type="checkbox"/>	92 Cable output TPR 6 wires with ref with shield \varnothing 6,8 (-40/+125°C) L=...
<input type="checkbox"/>	C2 Counterflange AISI 316 DN 80 PN 16 with central hole
<input type="checkbox"/>	S4 Wall mounting bracket
<input type="checkbox"/>	S5 Mounting bracket for 2" pipe
<input type="checkbox"/>	NN No options

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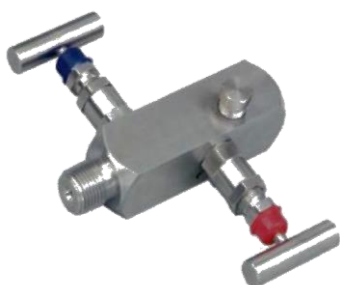
ACCESSORIES



Cod. OV
Overpressure protection



Cod. S3
Pulsation dampener



Cod. M2
2 ways and 1 or 2 valves manifold

and MORE

- Wall mounting bracket

OTHER INSTRUMENTS



Cod. T7N
Digital level, pressure and vacuum transmitter



Cod. T72
Digital level, pressure and vacuum transmitter



Cod. 271
Analog submersible transmitter



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