

## SERIES T7M



T7M is an electronic multipoint temperature transmitter with a SMART-HART® electronic and a built-in multiplexer that can accept up to 15 resistance thermometers PT100 (3-wires) or 14 resistance thermometers plus 1 interface or level sensor.

The multipoint solution offers great advantages for his mounting simplicity and for connection cables saving. Output is analog 4÷20mA for averaging temperature measurement or HART® protocol for single point's values and average.

In T7M series with display version the average and intermediate single temperature points can be displayed locally.

Accuracy is depending on class of the sensors utilized such as DIN A, DIN B, 1/3 DIN, 1/5 DIN and 1/10 DIN.




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## TECHNICAL FEATURES

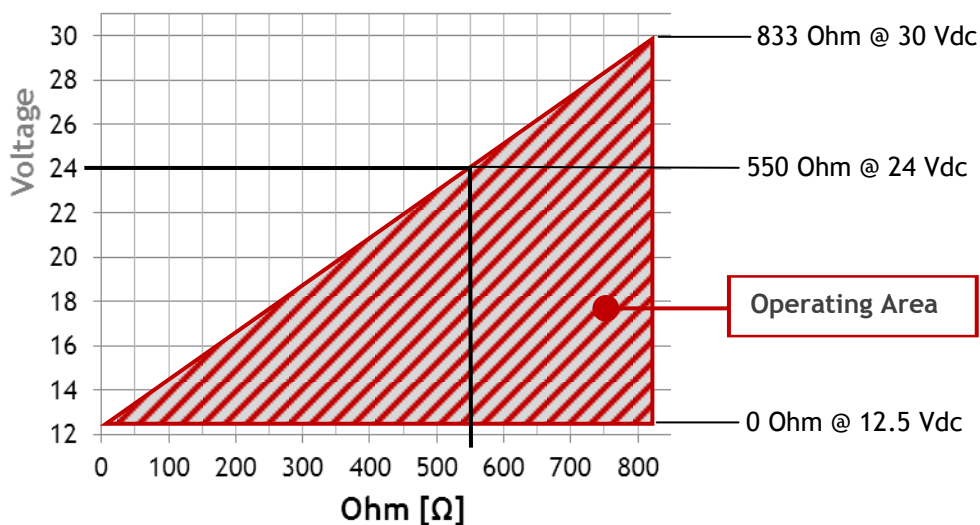
### Electrical parameters

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<sub>L</sub> < 600 Ω (Hart®)



### Measurement performance

Total accuracy (\*): εDGT + εPT100 [± °C]

Thermoelement accuracy [εPT100]: see table 1

Digital accuracy [εDGT]: < ± 0.1 % FS

Display resolution: 0.01 °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®)

Damping: 0 ÷ 60 s

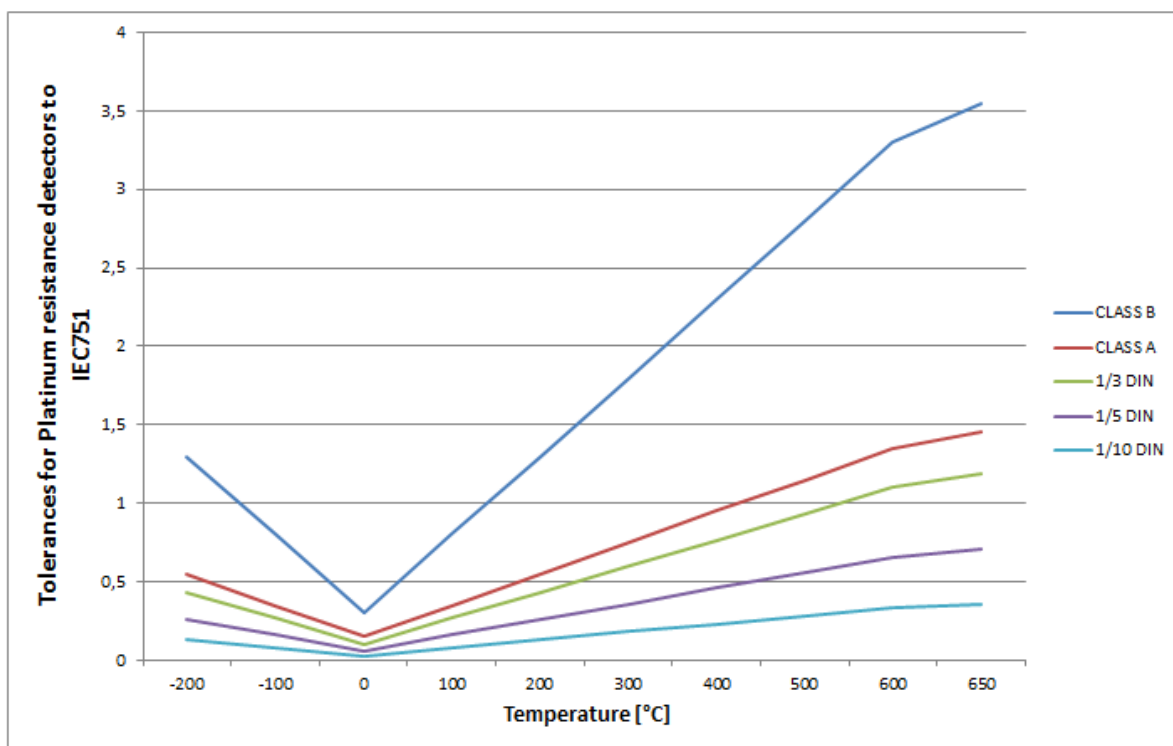
Long term stability: < 0.1 % FS for year

### Notes

(\*) Including hysteresis, non-linearity, non-conformity and non-repeatability (IEC 60770)

## TOLERANCE CLASSES

Temp. [°C]	C. B [± °C]	C. A [± °C]	1 / 3 DIN [± °C]	1 / 5 DIN [± °C]	1 / 10 DIN [± °C]
-200	1.3	0.55	0.44	0.26	0.13
-100	0.8	0.35	0.27	0.16	0.08
0	0.3	0.15	0.1	0.06	0.03
100	0.8	0.35	0.27	0.16	0.08
200	1.3	0.55	0.44	0.26	0.13
300	1.8	0.75	0.6	0.36	0.18
400	2.3	0.95	0.77	0.46	0.23
500	2.8	1.15	0.94	0.56	0.28
600	3.3	1.35	1.1	0.66	0.33
650	3.6	1.45	1.2	0.72	0.36



The total instrument accuracy  $\epsilon_{TOT}$  is given by the formula  $\epsilon_{TOT} = \epsilon_{PT100} + \epsilon_{DGT} [\pm ^\circ C]$  where  $\epsilon_{PT100}$  is the thermoelement accuracy and  $\epsilon_{DGT}$  is the digital accuracy.

## ENVIRONMENTAL FEATURES

### Environmental Conditions




Temperature class:	-40 ÷ +85 °C T6, T85 °C: -40 °C ≤ Tamb ≤ 60 °C T5, T100 °C: -40 °C ≤ Tamb ≤ 65 °C
Process temperature:	-40 ÷ +85 °C
LCD working temperature:	-10 ÷ +65 °C
Storage temperature:	-40 ÷ +90 °C
Ingress protection degree:	AISI 316 Housing: IP67 Aluminum Housing: IP66
Vibration Test:	in accordance with IEC 60068-2-6
Relative Humidity:	< 98% RH not condensing

### Notes

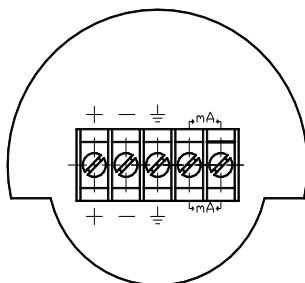
(\*\*) T<sub>MAX</sub> = 350 °C is about the installation without thermowell, T<sub>MAX</sub> = 500 °C is complete with thermowell.

## APPROVALS

### Type approvals

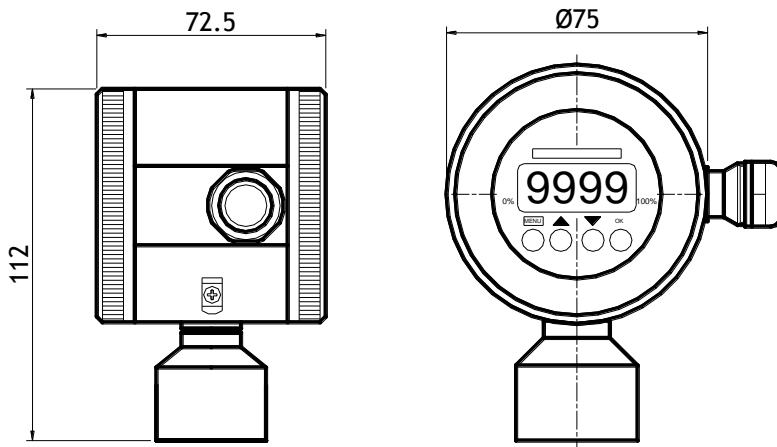
Directive 2014/34/EU (ATEX)	 II 1G Ex ia IIC T6, T5 Ga and  II 1D Ex ia IIIC T85 °C, T100 °C Da or  II 1/2G Ex ia IIC T6, T5 Ga/Gb
Directive 2014/68/EU (PED)	Up to Category III, for fluids in Group 1
Directive 2014/30/EU (EMC)	Adequate level of electromagnetic compatibility

## ELECTRICAL WIRING



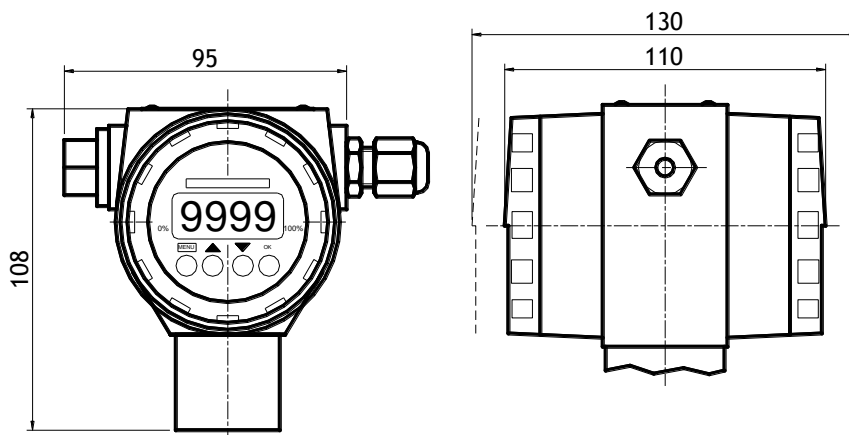
AISI 316 Housing 2 covers

## HOUSING MATERIAL AND TYPE



- Material: AISI 316
- Zone:  $\text{Ex}$  II 1GD
- Protection Degree: IP67

A16 - Fixed head  
 A17 - Rotating head

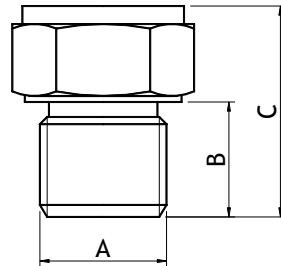


- Material: Aluminum
- Zone:  $\text{Ex}$  II 1/2G
- Protection Degree: IP66

D04 - Alluminum housing

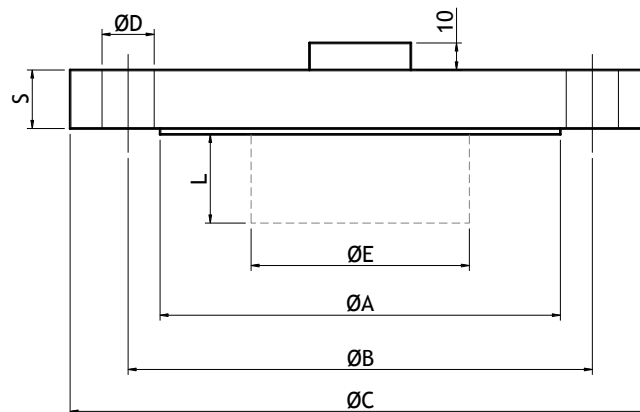
## PROCESS CONNECTIONS

### Standard screws



Code	A	B [mm]	C [mm]	Ex. Ch.
S70	1"1/2 G-M	18	36	41
S81	2" G-M	20	48	41

### Standard flanges



Code	DN	PN	ØA [mm]	ØB [mm]	ØC [mm]	ØD [mm]	S [mm]
F29	40	10/16	88	110	150	18	16
F32	40	25/40	88	110	150	18	18
F33	50	10/16	102	125	165	18	18
F35	50	25/40	102	125	165	18	20
F41	65	10/40	122	145	185	18	22
F44	80	10/16	138	160	200	18	20
F49	80	25/40	138	160	200	18	24
F73	1" 1/2	ANSI 150	73	98.5	127	16	17.5
F75	2"	ANSI 150	92	120.5	152	19	19
F79	3"	ANSI 150	127	152.5	191	19	24
F83	3"	ANSI 300	127	168.3	210	22	28.6
F85	4"	ANSI 150	157.2	190.5	228.6	19	23.8
F87	4"	ANSI 300	157.2	200	254	22	31.7
F89	6"	ANSI 150	215.9	241.3	279.4	22	25.4

## DIMENSIONAL DRAWINGS

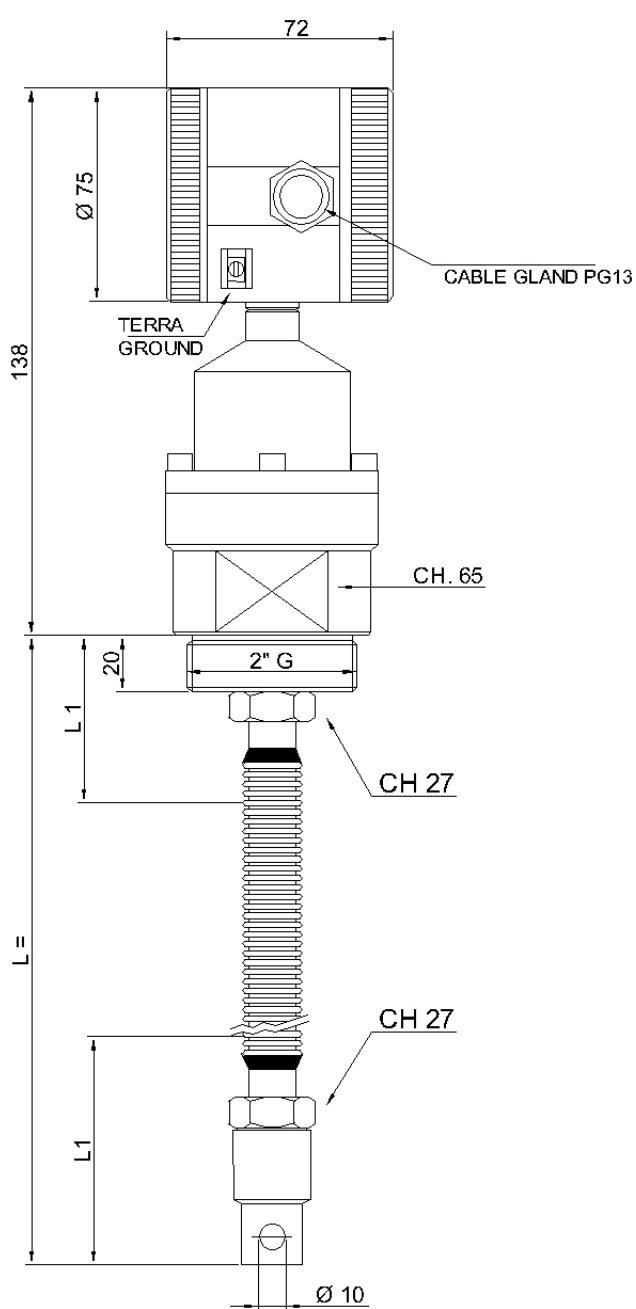


Figure 1: Multipoint electronic Smart transmitter with screwed G 2'' process connection (Cod. S81) and SS AISI 316 housing (Cod. A16)

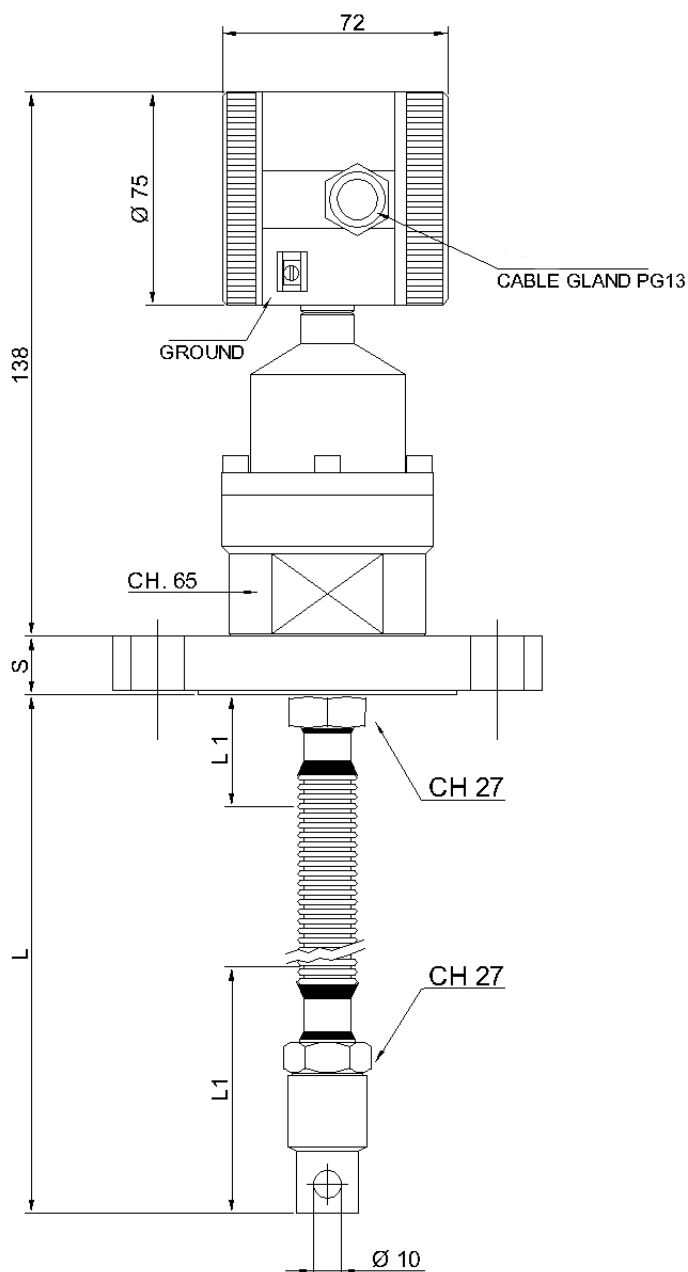


Figure 2: Multipoint electronic Smart transmitter with flanged process connection (Cod. F\_\_) and SS AISI 316 housing (Cod. A16)

## ORDERING CODE

**T7M** Electronic multi-channel temperature transmitter

**01 Type of measure**

F Temperature

**02 Sensor type**

T1 PT100 MGO Ø 3 - 6 mm AISI 316 classe DIN A  
T2 PT100 MGO Ø 3 - 6 mm AISI 316 classe DIN B  
T3 PT100 MGO Ø 3 - 6 mm AISI 316 classe 1 / 4 DIN  
ZZ Special

**03 Measuring range**

T01 1 sensor 0÷50...150°C  
T\_ \_ \_ sensors 0÷50...150°C  
T15 15 sensors 0÷50...150°C  
T21 1 sensor 0÷100...300°C  
T\_ \_ \_ sensors 0÷100...300°C  
T25 15 sensors 0÷100...300°C  
ZZ Special

**04 Filling oil**

N No filling

**05 Process temperature limits**

B -40 ÷ 85°C Standard  
Z Special

**06 Housing material and type**

A16 AISI 316 Fixed head  
A17 AISI 316 Rotating head  
D04 Aluminum housing

**07 Process connection**

... See "Process connections" section  
Z99 Special

**08 Extension length**

XA1 Flexible sondaflex DN16 5/8" AISI 316 OVP 25 < 1 m  
XA\_ Flexible sondaflex DN16 5/8" AISI 316 OVP 25 < \_ m  
XAF Flexible sondaflex DN16 5/8" AISI 316 + interface Level OVP 4  
XB1 Flexible sondaflex DN10 3/8" AISI 316 OVP 40 < 1 m  
XB\_ Flexible sondaflex DN10 3/8" AISI 316 OVP 40 < \_ m  
XBF Flexible sondaflex DN10 3/8" AISI 316 + Interface Level OVP 4  
Z99 Special

**09 Sensor material (Thermoelement)**

A AISI 316  
X No sensor (only electronic head)

**10 Process gasket material**

D FKM Viton  
T All welded

**11 Wetted parts material**

A AISI 316  
Z Special



## ORDERING CODE




### 12 Electrical connection

- 19 AISI 316 Cable Gland PG9 IP67 cable  $\varnothing$  5 ÷ 7 mm
- 20 AISI 316 Cable Gland PG13 IP67 for cable  $\varnothing$  8 ÷ 12 mm
- 21 AISI 316 Cable Gland PG16F
- 36 Nipple AISI 316 1/2" G-F
- 37 Nipple AISI 316 1/2" NPT-F
- 39 Nipple AISI 316 M20 x 1.5 F
- 81 Screwed M20 x 1.5

### 13 Electrical output

- F 4 ÷ 20 mA 2 wires + HART With LCD and blind cover
- G 4 ÷ 20 mA 2 wires + HART With LCD and transparent cover

### 14 Ex type approval

- A1  II 1G Ex ia IIC T6, T5 Ga and  II 1D Ex ia IIIC T85°C, T100°C Da
- A5  II 1/2G Ex ia IIC T6, T5 Ga/Gb
- NO No Ex certification

### 15 Options and accessories

- 02 Marine type approval
- 22 PED Certificate
- 10 Calibration report on 5 points
- 01 Test and material report according to EN 10204
- NN No options

## ACCESSORIES



Cod. XAF / XBF  
With Float for Interface measure



Cod. XAF / XBF  
With Float for Level measuring



Cod. ZZ  
Flexible temperature elements



Cod. T7T  
Temperature transmitter



Cod. TRT  
Temperature transmitters without display

### and MORE

- Various type of floats
- Suitable for integration in Tank Gauging systems
- Nipple-Union-Nipple versions



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