T7L SERIES

T7L series includes Float Reed level transmitters. Inside the float is placed a toroidal magnet which drives, without contact, Reed contacts located inside the guide pipe. Moving along the guide pipe the float changes the reed contact status. These variations are then acquired by the electronic board and converted into a current signal.

This system enable a continuous level measurement (output 4 ÷ 20 mA + HART) with high repeatability and linear level indication independently from tank shape, or allows to realize on-off controls by using two floats (output On - Off 5 ÷ 15 mA).

Reed chain replacement can be done without dismantling the transmitter from the process and doesn't need any recalibration.

As option it is possible a PT100 installation in order to get the local temperature of the fluid.

APPLICATION FIELDS
T7L series transmitters are used in marine and industry for level detection of liquids tanks.

The measurement is not affected by parameters such as conductivity, pressure, temperature, viscosity, tank shape, etc.
Our technical office is at your disposal for special application

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:	$R_{Lmax} = (U_{supply} - 12\ Vdc) / 21\ mA$ $220\ \Omega < R_L < 600\ \Omega$ (Hart®)

Measurement performance	
Total accuracy (*):	< ± 5 mm
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
Measuring range:	0.6 ÷ 10 m
Minimum specific gravity of the fluid:	0.5 kg / dm^3
Maximum pressure:	standard: 10bar special: 50bar
Long term stability:	< 0.1 % FS for year

Environmental Conditions	
Ambient temperature:	Standard: -40 ÷ +85°C ATEX T6, T85°C: -40°C ≤ Tamb ≤ 60°C ATEX T5, T100°C: -40°C ≤ Tamb ≤ 75°C
Process temperature:	Standard: -40 ÷ +85°C Finned body: -40 ÷ 130°C
LCD working temperature:	-10 ÷ +65°C
Sorage temperature:	-40 ÷ +90°C
Ingress protection degree:	AISI 316 Housing: IP67 Aluminum Housing: IP66

Notes

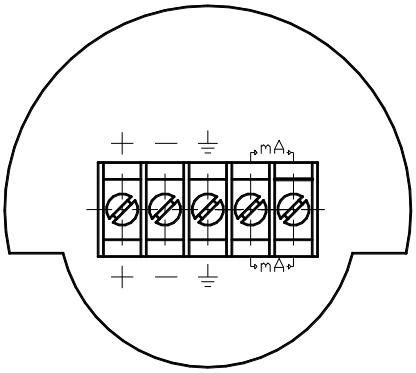
(*) Including hysteresis, non-linearity and non-repeatability (IEC 60770)

VALCOM® - www.valcom.it - valcom@terranova-instruments.com
a TERRANOVA® Srl brand - www.terranova-instruments.com
Factory & Sales: Via Gramsci, 1 – 26827 Terranova Passerini (LO) - Italy
Legal Office: Via Rosso Medardo, 16 – 20159 Milano (MI) - Italy
Ph: +39 0377 911066 – Fax: +39 0377 919156
VAT IT07848810151

APPROVALS

Type approvals		
Directive 2014/34/EU (ATEX)	Ⓔx II 1G Ex ia IIC T6, T5 Ga and Ⓔx II 1D Ex ia IIIC T85°C, T100°C Da Ⓔx II 1/2G Ex ia IIC T6, T5 Ga/	
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}] = $9.82352 \cdot 10^{-8}$ DC = λ_{DD} / (λ_{DD} + λ_{DU}) = 82.5 %
Marine type approval	In compliance with applicable requirements of RINA type approval system	

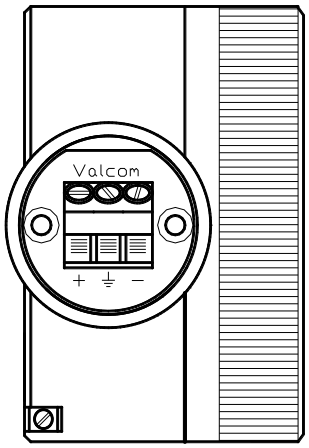
ELECTRICAL WIRING



AISI 316 Housing 2 covers

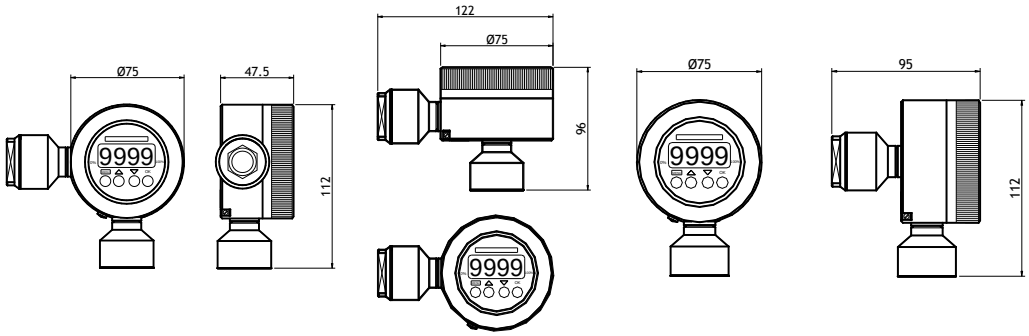
&

Aluminum Housing



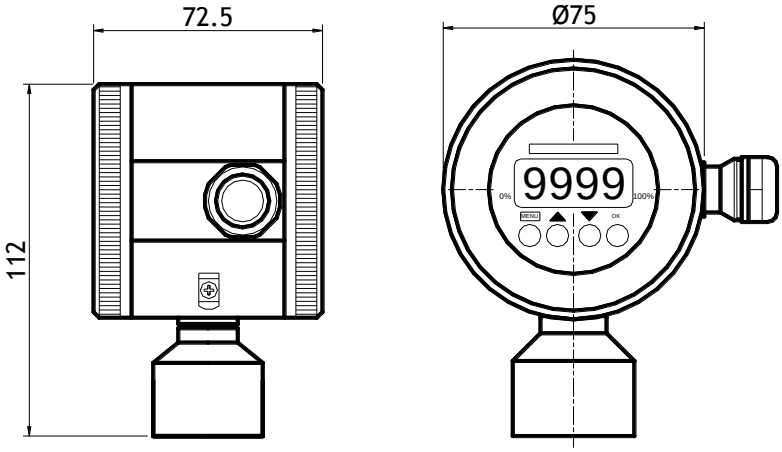
AISI 316 Housing 1 cover

HOUSING MATERIAL AND TYPE



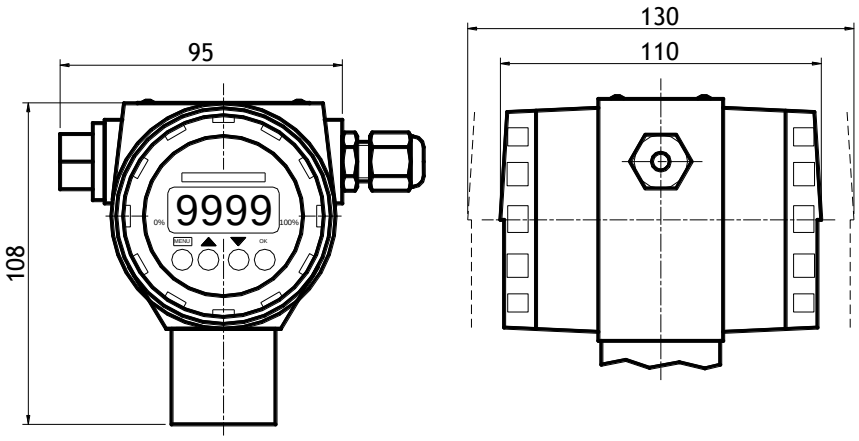
- **Material:** AISI 316
- **Protection Degree:** IP67

A10 - AISI 316 Ø 75 mm back connection
A11 - AISI 316 Ø 75 mm bottom connection (**):IP65



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

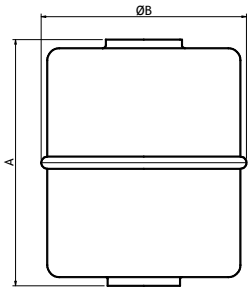
A16 - Fixed head
A17 - Rotating head
(**):IP65



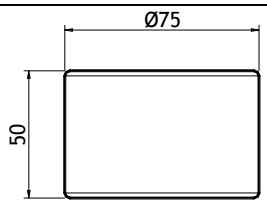
- **Material:** Aluminum
- **Zone:** Ex II 1/2G
- **Protection Degree:** IP66

D04 - Alluminum housing

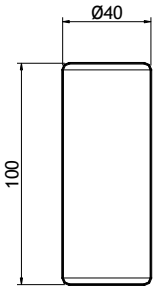
FLOATS



- Code **G1** A= 36 B=Ø 30
- Density **0.67 Kg/dm^3**
- Code **G2** A= 51 B=Ø 44,4
- Density **0.5 Kg/dm^3**
- Code **G3** A= 62.5 B= Ø 55
- Density **0.5 Kg/dm^3**
- Material **AISI 316**

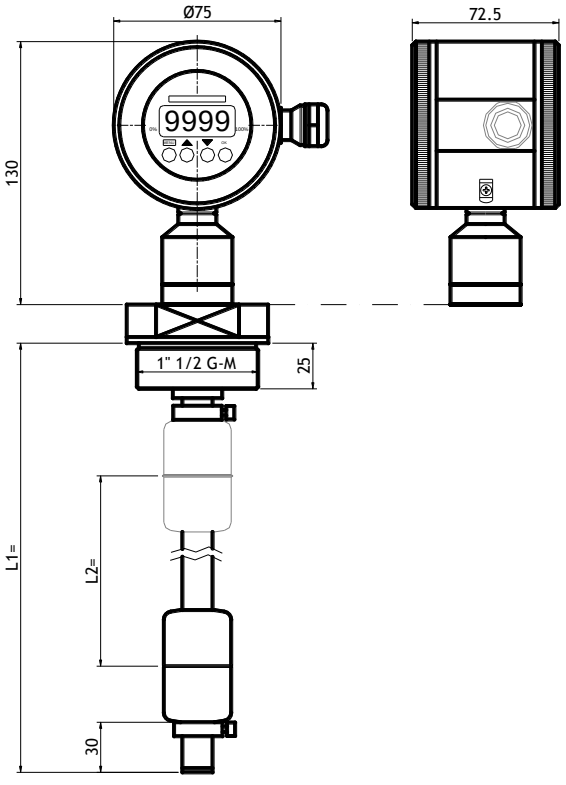


- Code **G5**
- Material **NEOPRENE**
- Density **0.3 Kg/dm^3**



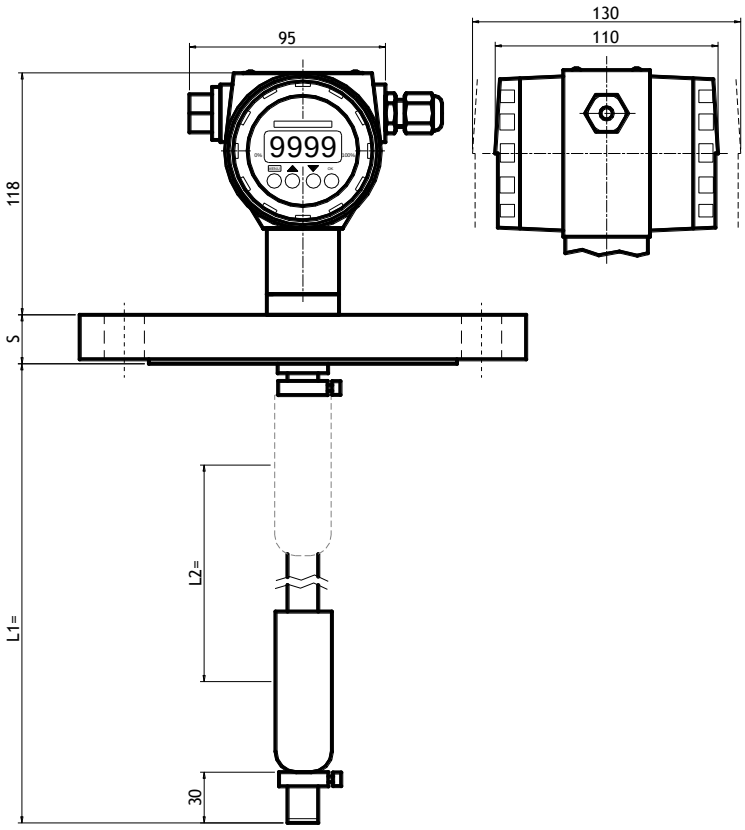
- Code **G7**
- Material **SPANSIL**
- Density **0.35 Kg/dm^3**

DIMENSIONAL DRAWINGS



Installation zone

II 1GD



Installation zone

II 1/2G

ORDERING CODE

01	Type of measure	
E	Level	

02	Sensor type	
G1	Float AISI 316 Ø 30 mm	OVP 40
G2	Float AISI 316 Ø 44 mm	OVP 16
G3	Float AISI 316 Ø 55 mm	OVP 16
G5	Float Neoprene Ø 75 mm	OVP 20
G7	Float Spansil Ø 40 mm	OVP20
ZZ	Special	

03	Measuring range
L01	0 ÷ 0.5 m
L02	0 ÷ 1 m
L03	0 ÷ 1.5 m
ZZZ	Special

04	Filling oil
N	No filling

05	Operating temperature
B	-40 ÷ 85°C Standard
F	-40 ÷ 130°C Corpo alettato

06	Housing material and type
A16	Ø75 Fixed head
D04	Alluminum housing
A11	AISI 316 Bottom connection
...	See “Housing material and type” section

07	Process connection
S70	Screwed 1 1/2" G-M
S81	Screwed 2" G - M flush diaphragm
F49	Flange DN 80 PN 10 / 25
F75	Flanged DN 2" ANSI 150 RF
Z99	Special

08	Extension length
T42	Pipe in AISI 316 Ø 16 mm < 1 m
T43	Pipe in AISI 316 Ø 16 mm < 1.5 m
T44	Pipe in AISI 316 Ø 16 mm < 2 m
Z99	Special

09	Sensor material
A	AISI 316
T	Neoprene
V	Spansil
Z	Special

ORDERING CODE

10	Process gasket material
D	FKM Viton
T	All welded
Z	Special

11	Wetted parts material
B	AISI 316L
G	AISI 316 + Spansil / Neoprene
Z	Special

12	Electrical connection
19	AISI 316 Cable gland PG9 IP67 for cable ø 5 ÷ 7 mm
20	AISI 316 Cable gland PG13 IP67 for cable ø 8 ÷ 12 mm
21	AISI 316 Cable Gland PG16F
36	AISI 316 nipple 1/2" G-F
37	AISI 316 nipple 1/ 2" NPT-F
39	AISI 316 nipple M20x1.5-F
81	Screwed M20 x 1.5
99	Special

13	Electrical output
A	Current output 4÷20 mA 2 wires + HART

14	Ex type approval
A1	Ⓔx II 1G Ex ia IIC T6, T5 Ga and Ⓔx II 1D Ex ia IIIC T85°C, T100°C Da
A5	Ⓔx II 1/2G Ex ia IIC T6, T5 Ga/Gb
N0	No Ex certification

15	Options
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
NN	No options

ACCESSORIES

Mod. T7V
Field digital indicator

OTHER PRODUCTS

Submersible electronic level transmitters 27I series

Electronic displacer level transmitters T7B series

Float electronic level transmitters 27L series with digital output 4÷20 mA

and MORE

- Two floats version for minimum and maximum level alarm or high and overfill
- Floats with specific gravities on customer request
- Flexible immersion probe