

INSTRUCTION MANUAL FOR LEVEL INDICATORS TLT SERIES

1. INSTRUMENT DESCRIPTION

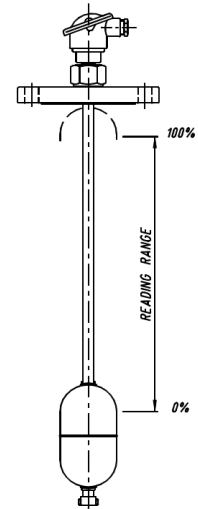
Float Level Transmitters TLT Series are used for level measuring in a 4/20 mA two wires current loop. The fluid shall not be adhesive or highly viscous and it shall not contain solid particles in suspension. The standard version is suitable for a minimum density of 0.6 kg/dm³, pressure up to 50 barg and temperature range within -45 and +85 °C.

Versions suitable for different density, pressure and temperature values are manufactured on request.

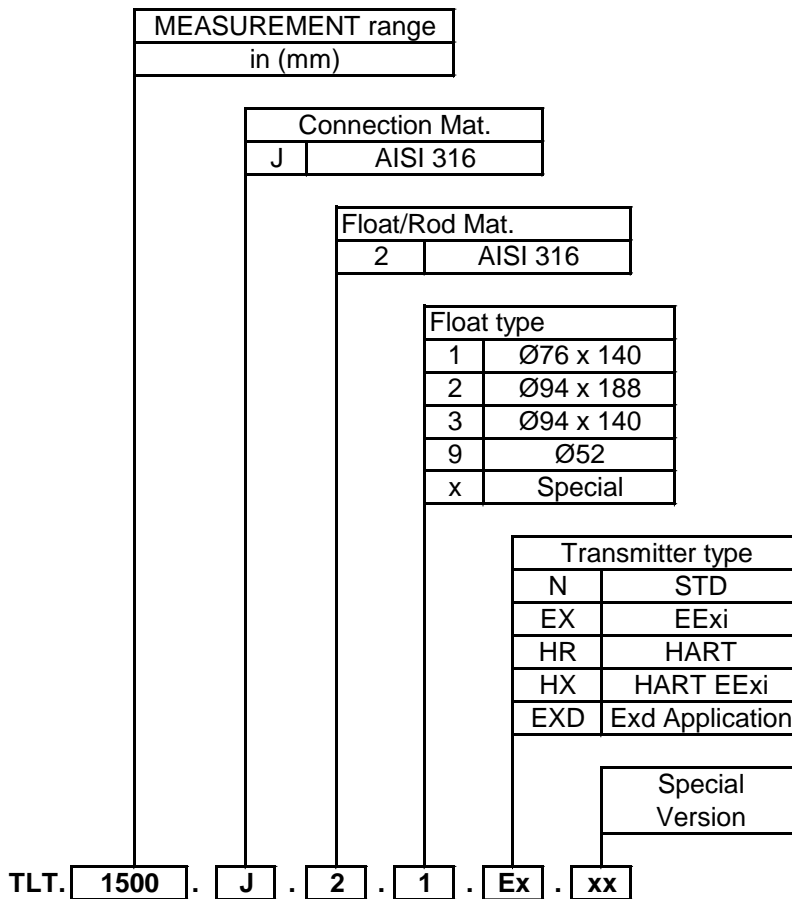
The instrument can also be supplied for interface service for measurement of the level between two unmixable fluids.

It is mounted on top of the vessel through a Flanged or Threaded connection.

It's available in the standard version for safe area or for classified areas in the Ex i or Ex d versions.

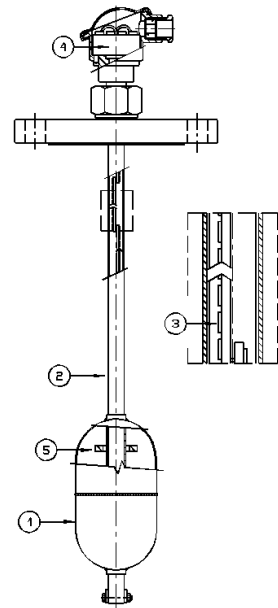


2. MODEL IDENTIFICATION



3. OPERATING PRINCIPLE

Operation is based on the hydrostatic principle (Archimedes Law).
 The float (1) containing a permanent magnet (5) slides along a steel rod (2), containing a potentiometer chain (3) made up of reed contacts and resistances.
 The magnetic field of the float closes the reed bulbs so as to create a resistance variation that is proportional to the position of the float on the rod.
 A converter (4), located in the instrument's head transforms the resistance variation into a 4/20 mA current variation.



4. INSTALLATION

4.1 MOUNTING

Before performing the installation, verify that the vessel connection and the instrument connection are compatible and check that the use is compatible with the ratings printed on the nameplate.

The instrument shall not be used with a fluid that tends to adhere or crystallize, since this would block the float that runs along the guide rod.

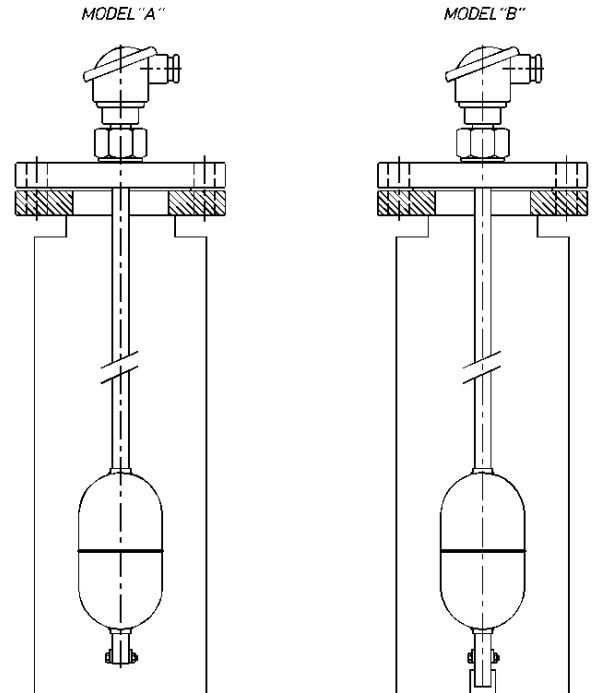
The level indicator of the TLT series shall be installed in an upright position. (Maximum angle 10°).

If the vessel connection point has a diameter smaller than the float one, the float shall be mounted from inside the tank by removing and then re-mount the bottom stopper using its screw or cotter pin. While remounting the float, pay attention to orient it with "TOP" side facing upward.

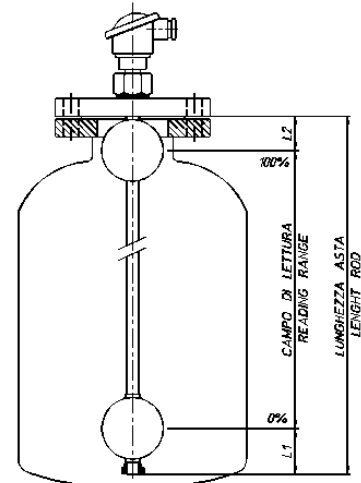
The type "A" installation is typical for transmitters of short length, for calm fluids or where a stilling well is present.

Type "B" installation, where the rod is fixed on the bottom, shall be preferred for long lengths or agitated fluids where there is not a stilling well (the).

Bumps or flexures of the rod can cause a fracture on the potentiometric chain. Therefore the rod shall be handled with care.



As shown in the drawing, the instrument has a blind zone on top (L1) and on the bottom of the rod (L2). The measuring zone is indicated by two stickers on the rod.



4.2 WIRING

The connection shall be made in accordance with the following diagrams.

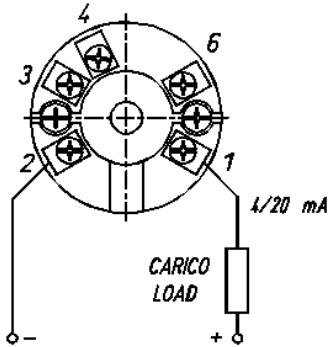
The wiring shall be performed in full compliance with the regulations in force in the country of installation.

Shielded cables are preferred to avoid failures due to current peaks.

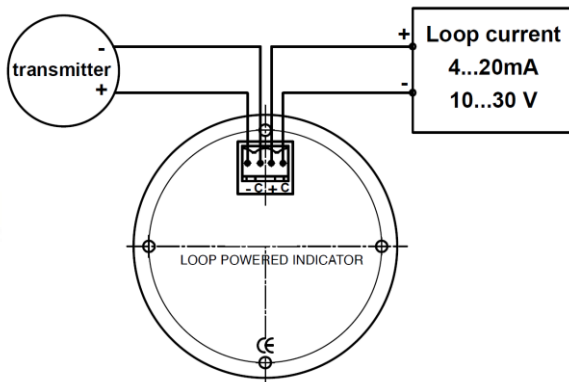
After the wiring, close tightly the housing and the cable gland.

In the display version, the connection terminals are found below the display. Remove the display screws and then turn the display. When the wiring is completed, re-install the display using the same screws.

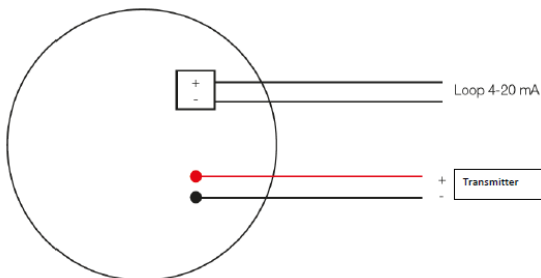
4.2.1 Version without display:



4.2.2 Version with 4 terminals display:



4.2.3 Version with 2 terminals display:



HOUSING

The transmitter housing can be supplied of die cast aluminum. On request it can be of stainless steel and it can be Explosion Proof Ex d. When the instrument is equipped with a local display, the housing comes with a window.



Standard or Ex i, aluminium



Ex d aluminium



Stainless steel



With display

Note for environments featuring explosion risks (Ex i)

The level transmitter shall operate through an Ex i-certified barrier for zones 1 or 2.

Make sure the TLT transmitter suits the area classification and the characteristics of the flammable substances that are found within the system.

Take all measures required to avoid all sparks, wherever a combustible mixture of gas and air can be found in the environment.

Working within this area is strictly forbidden unless the person at issue is qualified.

Safety measures shall be taken to avoid all risks affecting people and the structure.

5 SETTING AT WORK

Verify that the use does not exceed the allowed limits (e.g. pressure, temperature, density) and verify that the instrument measures correctly, making the level of fluid in the vessel vary a few times.

In cases where this is not possible, the float can be moved by hand along the rod. Connect an ammeter in series on the loop and verify that the transmitter operates properly.

The standard calibration ranges from 4mA = 0% to 20mA = 100% (on request it can be inverted).

The supply voltage is 10-35 V for the standard models and 10-28 V for the Ex i models.

The maximum load results from the following formula:

$$R_{LOAD} = (V_{SUPPLY} - 8) / 0.023$$

The instrument shall not be operate close to strong magnetic fields (minimum distance: 1m).

The instrument shall be used only with suitable power supplies or indicators.

6.SETTINGS

The instrument is factory-set and does not require any field setting.

The float is set to the required density value.

7.MAINTENANCE

TLT transmitters usually do not require any routine maintenance schedule.

Approximately once every six months check that the rod and the float are clean and the instrument operates correctly.

Notes for environments featuring explosion risks (Ex)

Tests and maintenance shall be performed in accordance with the criteria of the related EN standards.

- Terminals and cable connections shall be well tight to avoid overheating.
- The grounding system shall be effective.
- All spare parts shall be original.
- Broken components shall not be self-repaired.

7.1 NOTES

- NEVER open the cover before disconnecting the power supply;
- NEVER leave the housing without the cover for more the time needed for the inspection;
- NEVER use the instrument with a pressure or a temperature value exceeding the ratings on the nameplate;
- NEVER use the instrument with an electrical rating that exceeds the ratings on the nameplate;

- NEVER adjust or replace parts without having carefully read the related instructions; when in doubts, please contact our Customer Care dept.;
- NEVER lubricate the parts of the instruments;
- When the instrument is used with low or high temperatures, take all measures needed to grant the protection to the service personnel during maintenance and installation.

7.2 FLOAT REPLACEMENT

- Remove the instrument from the vessel and take out the rod with the float;
- Do not to bend or bump the rod because it can break the reed chain;
- Remove the bottom stopper by removing its screw or cotter pin
- Extract the old float and insert the new one, checking its TOP side.
- Reassemble the whole instrument.
- Follow the instructions of paragraph 5.

8. SPARE PARTS

The only standard spare part is the float.

When ordering spare parts, always indicate the serial number of the instrument, written on its nameplate (e.g.: F.45678/1.1).



9. FAULT FINDING

Level Transmitters TLT series are not generally subject to faults.

In cases they do not perform correctly, perform the tests described at paragraph 7. MAINTENANCE.

10. DISPOSAL

Once their service life is over, the instruments need to be disposed. Please comply with the relevant regulations.

During disposal, pay attention to polymers, resins and rubbers used in the manufacturing process (PVC, PTFE, PP, PVDF, neoprene, viton, etc.).

Separate mechanic from electronic parts and dispose them as per the latter regulations in force.

All metal parts can be recycled, once separated from gaskets, protective covers and any other plastic part.

11. GUARANTEE

All the apparatus manufactured by OFFICINE OROBICHE are warranted free from defects in materials and workmanship for 12 months from the delivery date.

In case of bad working or if returned within the warranty period and upon factory inspection of the control, the cause of the claims determined to be covered under the warranty, OFFICINE OROBICHE will repair and or replace the control at no cost for the purchaser (or owner), except for transportation. OFFICINE OROBICHE won't be liable for misapplication, claims, direct or consequential damages or expense, arising from the installation or use of equipment. There are no other warranties expressed or implied, except for special written warranties.

The transmitters can be used for a maximum period of 10 years from delivery.

After this period they shall be replaced with a new one or they shall be factory inspected by OFFICINE OROBICHE.

INSTRUMENT RETURN PROCEDURE

When returning the instrument, it's mandatory to send us the filled return form stating:

- 1) Purchaser's name.
- 2) Material description.
- 3) Fault found
- 4) Process data.
- 5) Fluids used with the instrument.

The instrument shall be returned perfectly cleaned and free from dust or deposits, otherwise OFFICINE OROBICHE reserve the right no to perform the required maintenance and return the unit to the sender.

FINAL REMARKS

Each unit is supplied completely mounted and equipped with all accessories required. For special applications some pieces may be supplied separately.

Therefore, we suggest to carefully analyze the supply and immediately notify all discrepancies found.



WARNING:

WHEN THE INSTRUMENTS IS USED IN A CLASSIFIED AREA, THE END USER MUST COMPLY WITH THE ATTACHED ADDITIONAL SECURITY INSTRUCTIONS.