

## Level gauges Series LT

### Level indicator, switch and transmitter for liquids

- Simple construction
- Resistant under extreme temperature and pressure conditions
- No risk of leakage
- Excellent chemical resistance
- Measuring range: from 150 mm to 15 m
- Accuracy:  $\pm 10$  mm
- Connections:
  - EN 1092-1 or ASME B16.5 flanges. Other flange standards on request (JIS,...)
  - BSP or NPT threaded connections
 Other connections on request
- Materials: EN 1.4404 (AISI 316L), PVC, PP, PVDF, PTFE, PVC-C. Others on request
- Local indication:
  - By means of external float in a glass tube
  - By means of magnetic strips
- Options:
  - Switches. Optional with Ex d IIC T6 Explosion Proof Enclosure (ATEX certified)
  - Electronic transmitter with 4-20 mA analog output for safe or hazardous area (Ex ia or Ex d protection, ATEX certified). HART, PROFIBUS, FIELDBUS, MODBUS RTU protocols available on request



## Working principle

According to communicating vessels principle. A float submersed in a chamber communicated with the tank whose liquid level needs to be measured floats on liquid surface and moves together with it, as level increases or decreases.

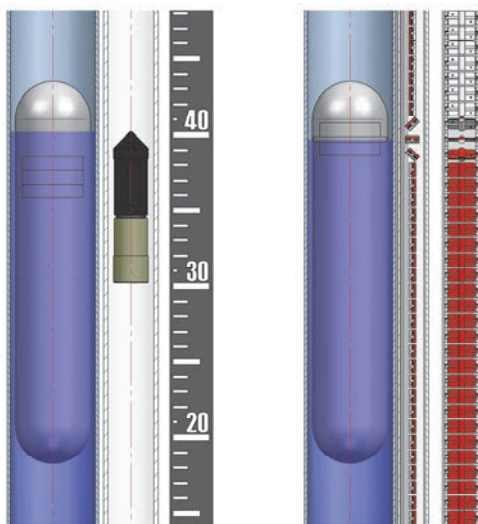
The float is designed for the specific working liquid density and shows the tank level by means of magnetic coupling with an external float or with a magnetic strips rail (depending on model). Both of them are mounted externally and isolated of the level gauge chamber.

## Applications

- Chemical and petrochemical industries
- Process industry
- Thermal plants and cryogenic installations
- Ship industry
- Boilers
- Storage installations

## Models

- **LT.../** : indication by means of external float in a borosilicate glass tube. Graduated scale in cm included. Maximum liquid temperature for AISI 316L versions: 400°C
- **LTL.../** : indication by means of bi-color magnetic strips (red -white) mounted in an anodized aluminium rail with polycarbonate cover. Optional graduated scale in cm. Maximum liquid temperature for AISI 316L versions: 200°C



- **LT ... LTL106** body in AISI 316L, flanged connection
- **LT ... LTL116** body in AISI 316L, threaded connection
- **LT ... LTL14** body in PVC, PVC-C, PP or PVDF, flanged connection
- **LT ... LTL15** body in AISI 316L with internal PTFE coating, flanged connection

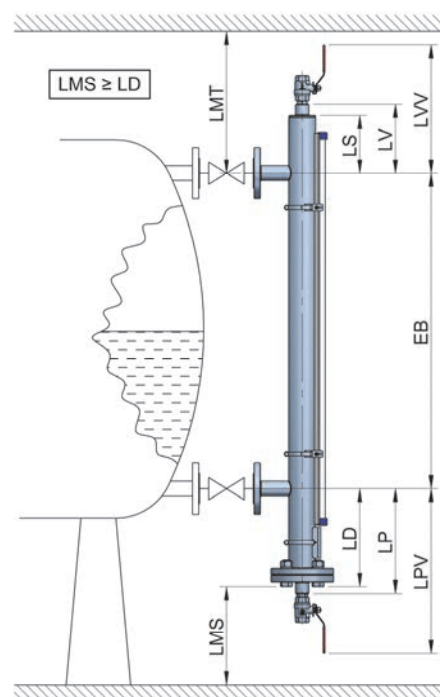
## Technical data

- **Accuracy:**  $\pm 10$  mm
  - **Scale in cm** for LT models  
For LTL models, scale in cm available on request
  - **Liquid density:** 0.55 ... 2 kg/l (others on request)
  - **Liquid viscosity:** 1500 cSt maximum
  - **Measuring range:** 150 mm ... 15 m
  - **Liquid temperature:**
    - LTL106 / AISI 316L: -20°C ... +200°C
    - LT106 / AISI 316L: -20°C ... +400°C, depending on config.
    - LT ... LTL14 / PVC: 0°C ... +45°C
    - LT ... LTL14 / PVC-C: 0°C ... +70°C
    - LT ... LTL14 / PP: 0°C ... +90°C
    - LT ... LTL14 / PVDF: -20°C ... +145°C
    - LT ... LTL15 / PTFE: -20°C ... +150°C
  - **Ambient temperature:** -20°C ... +80°C
  - **Nominal pressure:**
    - Models in AISI 316L: PN16 ... PN40 (up to PN100 on request)
    - Models in PVC, PVC-C, PP, PVDF: PN10  
Floats 6 bar max.
    - Models in PTFE: PN16 ... PN40
  - **Connections:**
    - EN 1092-1 or ASME B16.5 flanges. Other flange standards on request (JIS,...)
    - BSP or NPT threaded connections (for LT ... LTL116)Other connections on request
  - **Mounting:** vertical, tank side
  - **Certificate Type Approval** for ship, "offshore" and industry in general, models LTL106 and LTL116 (up to PN25 / 150# RF) by Lloyd's Register 
- ### Limit switches and transmitters
- **LT ... LTL-APR:** adjustable reed switches
  - **LT-AAR:** adjustable reed switches (high temperature version)
  - **LT ... LTL-AMM:** adjustable micro-switches
  - **LT ... LTL-AMD:** adjustable inductive switches (+ relays on request)
- All switches can be supplied in Ex d IIC T6 version on request
- **LTE:** Resistive sensor. 4-20 mA output:
    - TR3420: 24 VDC 2-wire system, compact or DIN rail mounted, for safe area and with ATEX certificate Ex d
    - TR2420: 24 VDC 2-wire system, compact mounted, for safe area and with ATEX certificate Ex ia, and HART, PROFIBUS, FIELDBUS,... protocols
  - **LTDR:** Guided radar transmitter 4-20 mA, 4-wire system. Ex version available on request

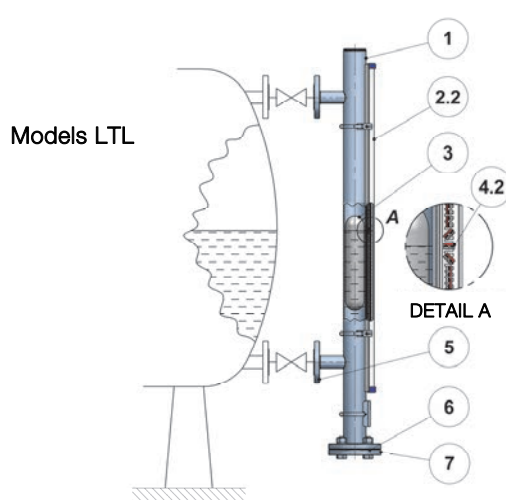
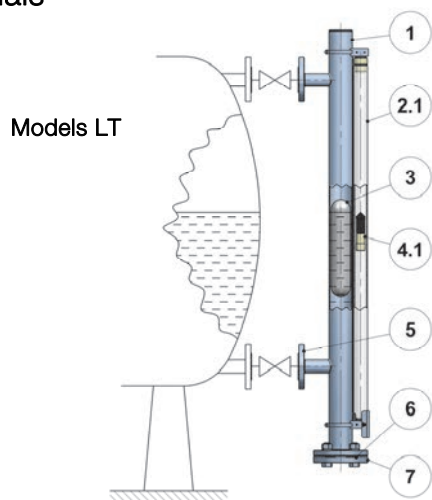
### Mounting

The lower dimension LD, LP or LPV of series LT level gauges is variable depending on liquid density. The lower the density, the longer this dimension. To remove the float due to a change in density, maintenance,..., a minimum distance LMS, longer or equal to LD distance, must be kept between the lowest side of the level gauge and the floor.

| Model         | Liquid density<br>kg/l | Lower dimension    |                 |                          | Upper dimension   |                |                         |
|---------------|------------------------|--------------------|-----------------|--------------------------|-------------------|----------------|-------------------------|
|               |                        | Without drain (LD) | With drain (LP) | With drain + valve (LPV) | Without vent (LS) | With vent (LV) | With vent + valve (LVV) |
| LT ... LTL /  | 0.55 ... 0.59          | 430                | 445             | 590                      |                   |                |                         |
| AISI 316L     | 0.60 ... 0.91          | 340                | 355             | 500                      | 130               | 155            | 300                     |
| (PN16 ... 40) | $\geq 0.92$            | 260                | 275             | 420                      |                   |                |                         |
| LT ... LTL /  | 0.60 ... 0.79          | 400                |                 | 525                      |                   |                |                         |
| PVC (PN10)    | 0.80 ... 0.89          | 310                |                 | 435                      | 150               | 140            | 265                     |
|               | $\geq 0.90$            | 240                |                 | 365                      |                   |                |                         |
| LT ... LTL /  | $\geq 0.70$            | 240                |                 | 365                      | 150               | 165            | 290                     |
| PP (PN10)     |                        |                    |                 |                          |                   |                |                         |
|               | 0.80 ... 0.89          | 415                |                 | 540                      |                   |                |                         |
| LT ... LTL /  | 0.90 ... 0.99          | 340                |                 | 465                      | 150               | 165            | 290                     |
| PVDF (PN10)   | 1.00 ... 1.19          | 290                |                 | 415                      |                   |                |                         |
|               | $\geq 1.20$            | 240                |                 | 365                      |                   |                |                         |



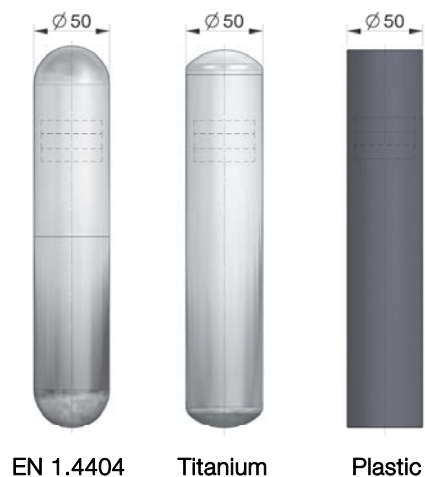
### Materials



| N°  | Description     | Models LT            |                     |    |      |                  | Models LTL                |                     |    |      |                  |
|-----|-----------------|----------------------|---------------------|----|------|------------------|---------------------------|---------------------|----|------|------------------|
|     |                 | EN 1.4404            | PVC                 | PP | PVDF | PTFE             | EN 1.4404                 | PVC                 | PP | PVDF | PTFE             |
| 1   | Body            | EN 1.4404            | PVC                 | PP | PVDF | PTFE + EN 1.4404 | EN 1.4404                 | PVC                 | PP | PVDF | PTFE + EN 1.4404 |
| 2.1 | Guide tube      | Borosilicate glass   |                     |    |      |                  | ---                       |                     |    |      |                  |
| 2.2 | Mag strips rail | ---                  |                     |    |      |                  | Aluminium + Polycarbonate |                     |    |      |                  |
| 3   | Float           | EN 1.4404 / Titanium | PVC                 | PP | PVDF | PTFE             | EN 1.4404 / Titanium      | PVC                 | PP | PVDF | PTFE             |
| 4.1 | External float  | PP / Aluminium       |                     |    |      |                  | ---                       |                     |    |      |                  |
| 4.2 | Mag strips      | ---                  |                     |    |      |                  | POM resin                 |                     |    |      |                  |
| 5   | Connection      | EN 1.4404            | PVC                 | PP | PVDF | PTFE             | EN 1.4404                 | PVC                 | PP | PVDF | PTFE             |
| 6   | Gasket          | Belpa®<br>CSA-50     | NBR / Viton® / EPDM |    |      | PTFE             | Belpa®<br>CSA-50          | NBR / Viton® / EPDM |    |      | PTFE             |
| 7   | End connection  | EN 1.4404            | PVC                 | PP | PVDF | PTFE             | EN 1.4404                 | PVC                 | PP | PVDF | PTFE             |

## Float types

| Material  | Liquid density<br>kg/l | Nominal pressure |
|-----------|------------------------|------------------|
| Titanium  | 0.55 ... 0.83          | PN40             |
| Titanium  | 0.68 ... 0.83          | PN63             |
| Titanium  | 0.77 ... 0.83          | 100 bar max.     |
| EN 1.4404 | 0.84 ... 2.00          | PN40             |
| EN 1.4404 | 0.84 ... 2.00          | PN63             |
| EN 1.4404 | 0.84 ... 2.00          | PN100            |
| PVC       | 0.60 ... 2.00          | 6 bar max.       |
| PP        | 0.70 ... 2.00          | 6 bar max.       |
| PVDF      | 0.80 ... 2.00          | 6 bar max.       |



## Dimensions and specific technical data

### Models LT ... LTL106 ... 116 / LT ... LTL17

#### Technical data

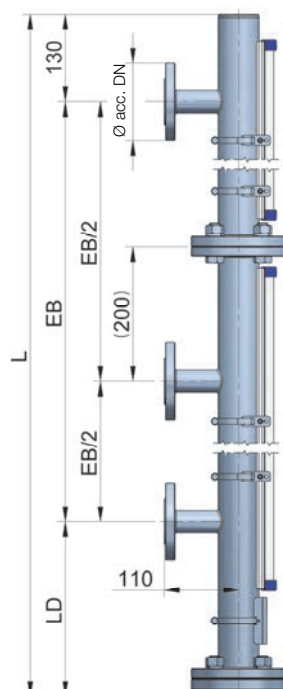
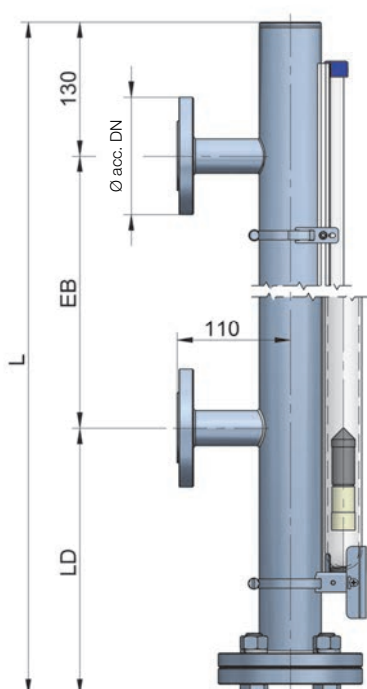
- **Material:** EN 1.4404 (AISI 316L)
- **Measuring range:** 150 ... 15000 mm (supplied in separate sections for measuring ranges longer than 5500 mm; one single section on request). Longer ranges on request.
- **Liquid temperature:**
  - 20°C ... +200°C: magnetic strips indication
  - 20°C ... +400°C: glass tube indication
- **Nominal pressure:** PN16 ... PN40 (up to PN100 on request)
- **Connections:**
  - LT ... LTL106: DN15 ... DN50 EN 1092-1 flanges (other flange standards and sizes on request)
  - LT ... LTL116: G½ ... G2 threaded connection (other thread standards and sizes on request)

- **Limit switches:** LT ... LTL-APR / AMM / AMD // LT-AAR Ex d IIC T6 version on request
- **Transmitter** LTE 4-20 mA or guided radar LTDR

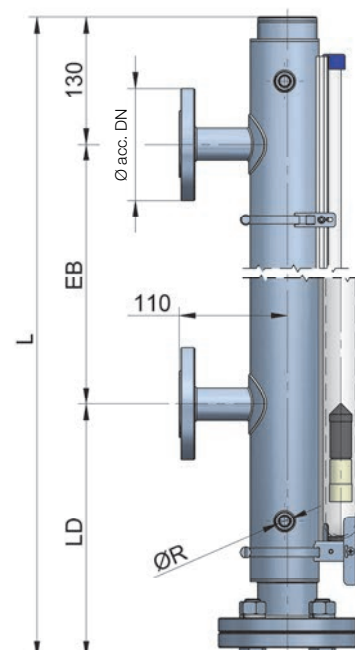
LT ... LTL106



LT ... LTL116

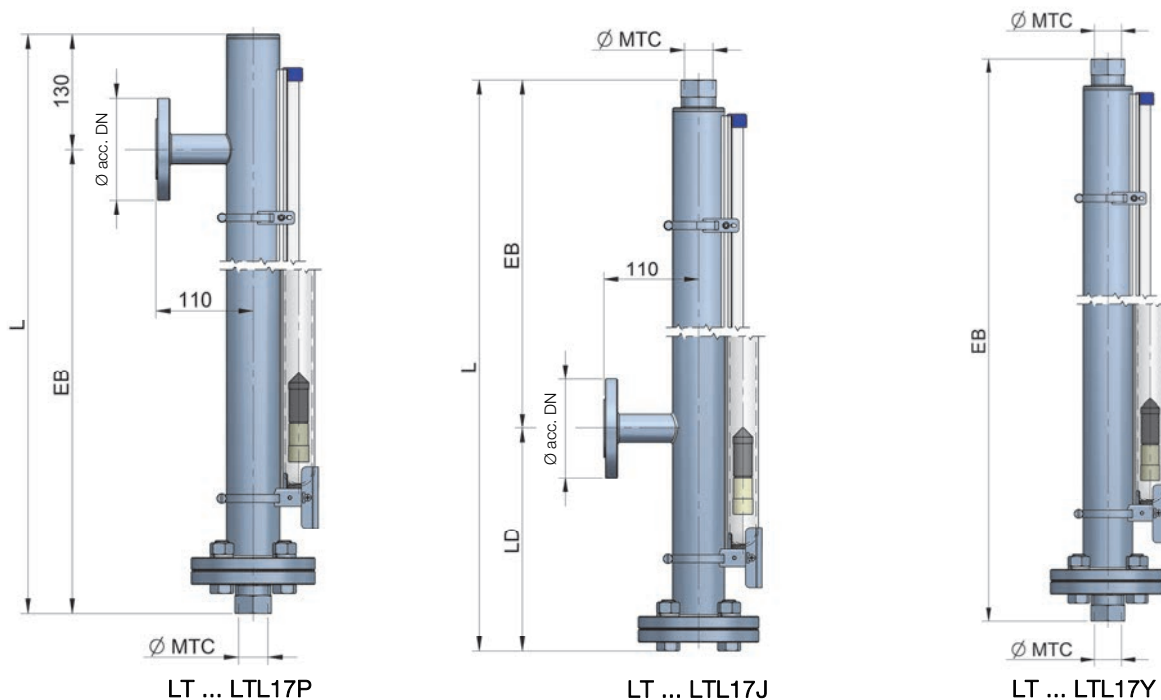


Separate sections



Heating-cooling chamber

### Special models LT ... LTL17



### Models LT ... LTL15 / PTFE

#### Technical data

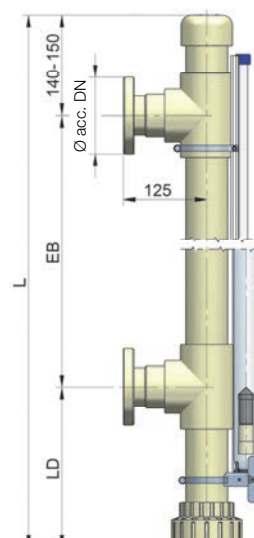
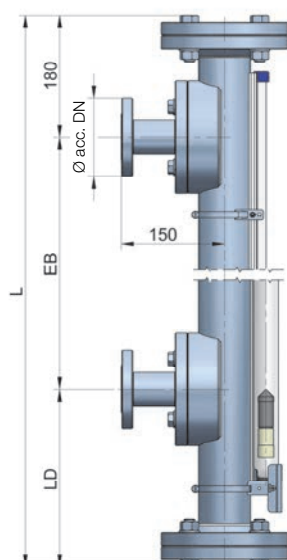
- **Material:** EN 1.4404 (AISI 316L) with internal PTFE coating
- **Measuring range:** 6000 mm max. Others on request
- **Liquid temperature:** -20°C ... +150°C
- **Nominal pressure:** PN16 ... PN40
- **Connections:** DN15 ... DN50 EN 1092-1 flanges (other flange standards and sizes on request)
- **Limit switches:** LT ... LTL-APR / AMM / AMD  
Ex d IIC T6 version on request
- **Transmitter** LTE 4-20 mA or guided radar LTDR

### Models LT ... LTL14 / PP, PVC, PVC-C, PVDF

#### Technical data

- **Material:** PP, PVC, PVC-C, PVDF
- **Measuring range:** 6000 mm max. Others on request
- **Liquid temperature:**

|        |                  |
|--------|------------------|
| PP:    | 0°C ... +90°C    |
| PVC:   | 0°C ... +45°C    |
| PVC-C: | 0°C ... +70°C    |
| PVDF:  | -20°C ... +145°C |
- **Nominal pressure:** PN10
- **Connections:** DN15 ... DN50 EN 1092-1 flanges except LT ... LTL14 / PVC, ISO 1452-3 flanges (other flange standards and sizes on request)
- **Limit switches:** LT ... LTL-APR / AMM / AMD  
Ex d IIC T6 version on request
- **Transmitter** LTE 4-20 mA or guided radar LTDR



## Limit switches

### Adjustable switch LT ... LTL-APR

- SPDT bi-stable reed switch
- IP65 polycarbonate housing
- Contact rating: 0.5 A 220 VAC 60 VA
- Hysteresis:  $\pm 6$  mm
- Liquid temperature:  $-20^{\circ}\text{C} \dots +250^{\circ}\text{C}$
- Ambient temperature:  $-10^{\circ}\text{C} \dots +70^{\circ}\text{C}$
- Suitable for ATEX hazardous area "Simple apparatus"

### Adjustable switch LT-AAR

- SPDT bi-stable reed switch
- Aluminium housing & thermal separator for high temperature
- Contact rating: 0.5 A 220 VAC 60 VA
- Hysteresis:  $\pm 6$  mm
- Liquid temperature:  $-20^{\circ}\text{C} \dots +400^{\circ}\text{C}$
- Ambient temperature:  $-10^{\circ}\text{C} \dots +70^{\circ}\text{C}$
- Suitable for ATEX hazardous area "Simple apparatus"

### Adjustable switch LT ... LTL-AMM

- SPDT bi-stable micro-switch
- IP65 coated aluminium housing
- Contact rating: 3 A 220 VAC
- Hysteresis:  $\pm 6$  mm
- Liquid temperature:  $-20^{\circ}\text{C} \dots +250^{\circ}\text{C}$
- Ambient temperature:  $-25^{\circ}\text{C} \dots +80^{\circ}\text{C}$
- Mechanical life:  $20 \times 10^6$  operations
- Suitable for ATEX hazardous area "Simple apparatus"

### Adjustable switch LT ... LTL-AMD

NAMUR (EN 60947-5-6) 3.5 mm slot type bi-stable inductive detector activated by vane, mounted in an aluminium housing.

- Nominal voltage: 8.2 V / Operating voltage: 5 ... 25 V
- Liquid temperature:  $-20^{\circ}\text{C} \dots +250^{\circ}\text{C}$
- Ambient temperature:  $-25^{\circ}\text{C} \dots +100^{\circ}\text{C}$
- ATEX certificate Ex ia IIC T6 ... T1 Ga / Ex ia IIIC T85°C Da

### Control relay (on request)

NAMUR input (EN 60947-5-6) for 1 or 2 inductive detectors.

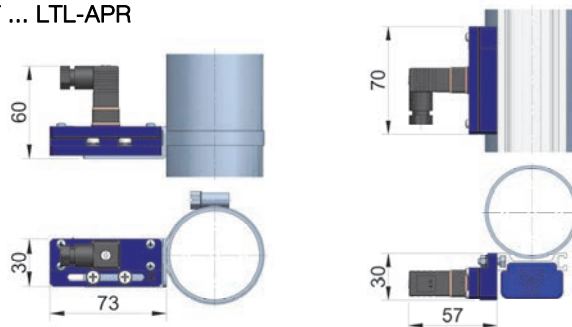
- Power supply: 20 ... 30 VDC
- Consumption:  $<1.3$  W
- Relay output:
  - Vmax: 253 VAC / 2A // 40 VDC / 2A resistive load
- Ambient temperature:  $-20^{\circ}\text{C} \dots +60^{\circ}\text{C}$
- Ingress protection: IP20

## Ex d IIC T6 version

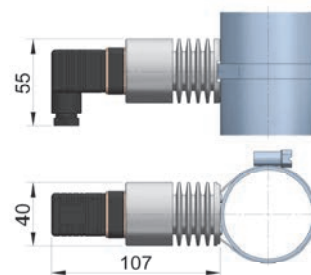
All switches can be supplied with Ex d IIC T6 Explosion Proof Enclosure on request, ATEX certified



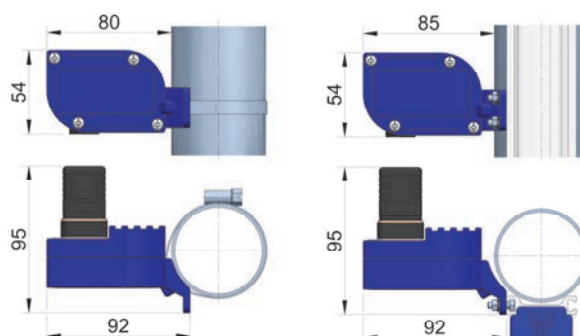
### LT ... LTL-APR



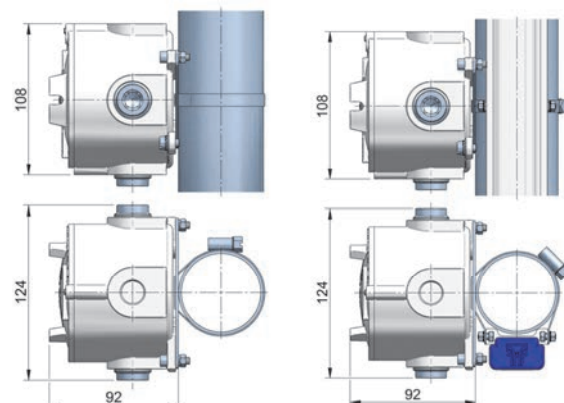
### LT-AAR



### LT ... LTL-AMM / AMD



## ATEX version Ex d IIC T6



## Transmitter LTE 4-20 mA



The image shows a Teefluid MT03 digital level transmitter. It is a square device with a black frame and a white face. At the top, the Teefluid logo is visible. Below the logo is a digital display showing a scale from 0 to 100 cm, with a current reading of 25.35 cm. The word 'LEVEL' is displayed on the left side of the screen. Below the display are five buttons: a down arrow, a left arrow, an up arrow, a right arrow, and a square button with a circle inside. The model number 'MT03' is printed at the bottom right of the device.

## PRESENCE IN MORE THAN 50 COUNTRIES ALL OVER THE WORLD



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