

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: ± 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 IIC T6 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.

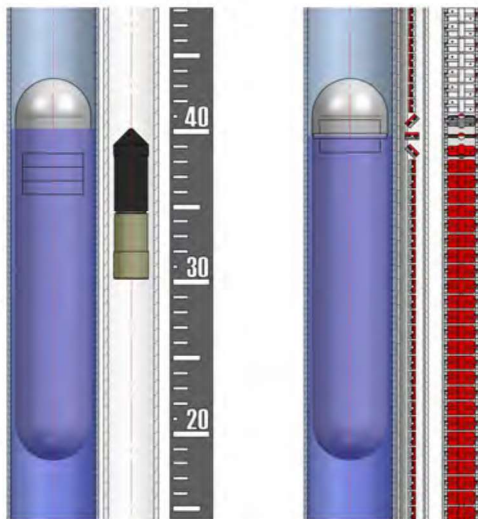
The float is designed for the specific working liquid density and shows the tank level by means of magnetic coupling with an external float or with a magnetic strips rail (depending on model). Both of them are mounted externally and isolated of the level gauge chamber.

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:** ± 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: -10°C ... 80°C
 - LT ... LTL14 / PVDF: -20°C ... 145°C
 - LT ... LTL15 / PTFE: -20°C ... 150°C
- **Nominal pressure:**
 - Models in AISI 316L: PN16 ... PN40 (up to PN100 on request)
 - Models in PVC, PVC-C, PP, PVDF: PN10
 - 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



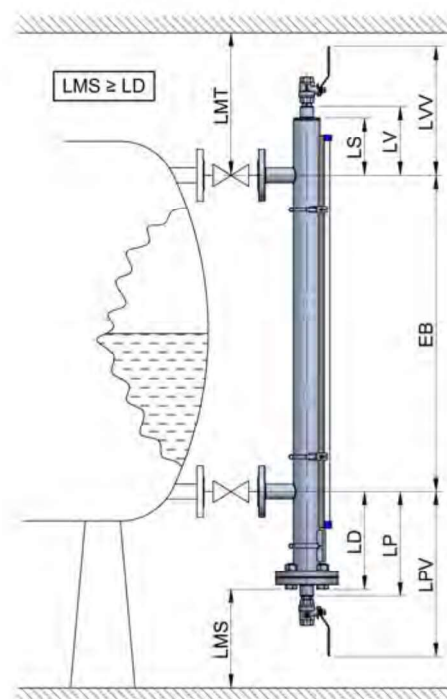
Limit switches and transmitters

- **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, with compact transmitter, for safe area
 - TR2420: 24 VDC 2-wire system, compact mounted and HART, PROFIBUS, FIELDBUS,... protocols, and ATEX certificate Ex ia IIC T6
 - **LTDR:** Guided radar transmitter 4-20 mA, 4-wire system. Ex version available on request

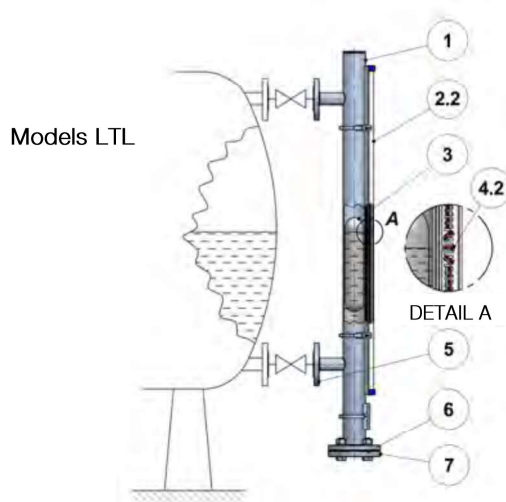
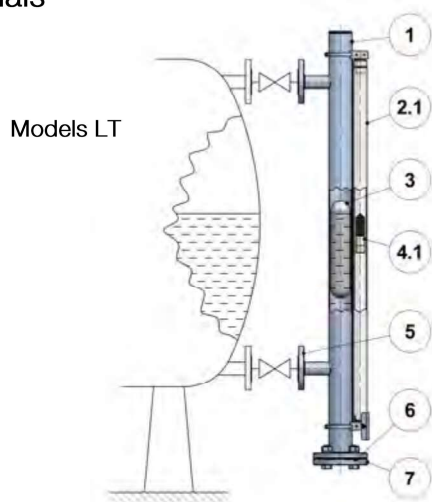
Mounting

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 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)	≥ 0.92	260	275	420			
LT ... LTL /	0.60 ... 0.79		400	525			
PVC (PN10)	0.80 ... 0.89		310	435	150	140	265
	≥ 0.90		240	365			
LT ... LTL /	≥ 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			
	≥ 1.20		240	365			



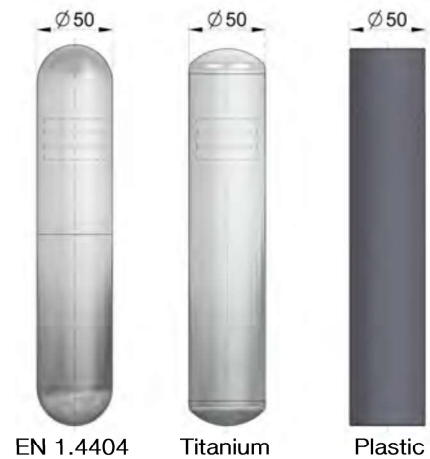
Materials



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® CSA-50	NBR / Viton® / EPDM			PTFE	Belpa® 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 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	PN10
PP	0.70 ... 2.00	PN10
PVDF	0.80 ... 2.00	PN10



Dimensions and specific technical data

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

Technical data

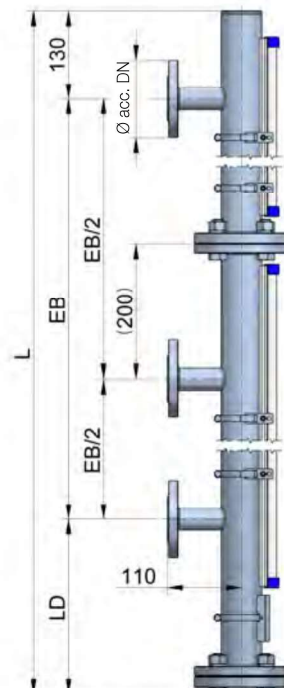
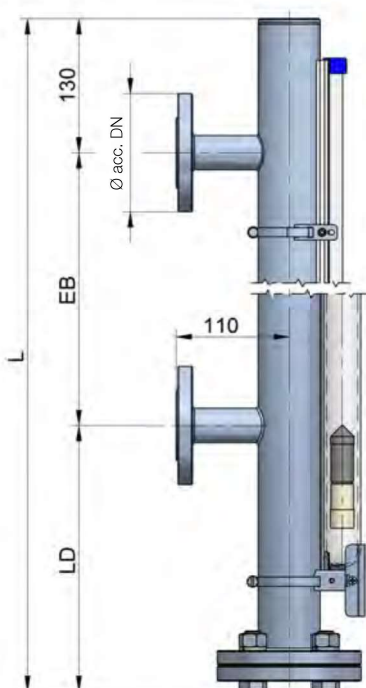
- **Material:** EN 1.4404 (AISI 316L)
- **Measuring range:** 150 ... 15000 mm (supplied in separate sections for measuring ranges longer than 5500 mm; one single section on request). Longer ranges on request.
- **Liquid temperature:**
 - 20°C ... 200°C: magnetic strips indication
 - 20°C ... 400°C: glass 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

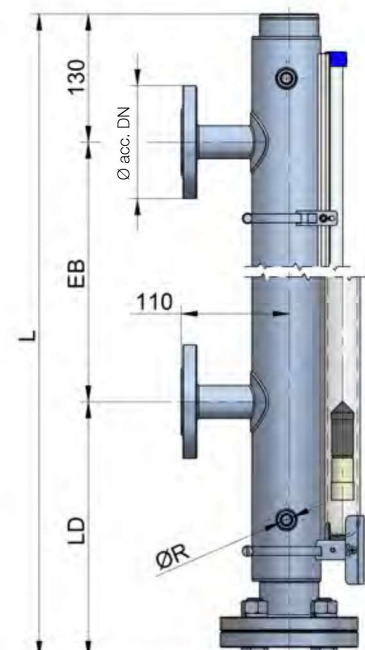
LT ... LTL106



LT ... LTL116

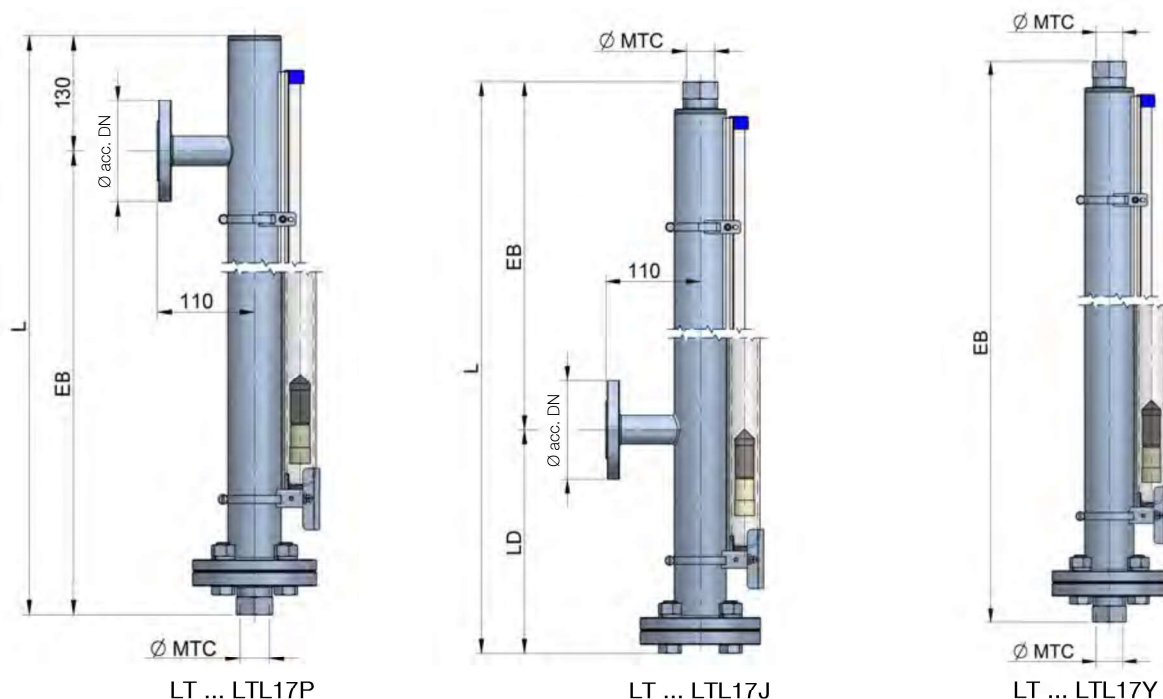


Separate sections



Heating-cooling chamber

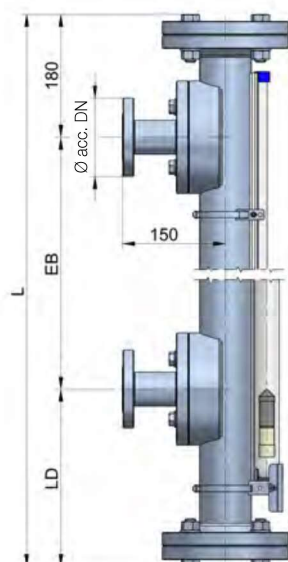
Special models LT ... LTL17



Models LT ... LTL15 / PTFE

Technical data

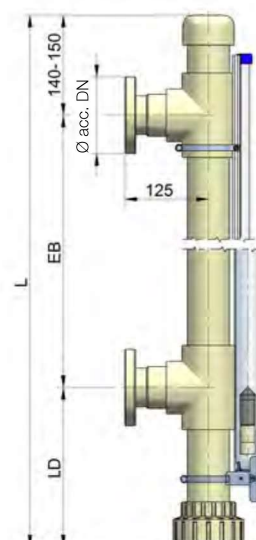
- **Material:** EN 1.4404 (AISI 316L) with internal PTFE coating
- **Measuring range:** 6000 mm max.
Longer ranges on request
- **Liquid temperature:** -20°C ... 150°C
- **Nominal pressure:** PN16 ... PN40
- **Connections:** DN15 ... DN50 EN 1092-1 flanges
(other flange standards and sizes on request)
- **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.
Longer ranges on request
- **Liquid temperature:** PP: -10°C ... 80°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 flange
(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: ± 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: ± 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: ± 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: 20×10^6 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



Control relay (on request)

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

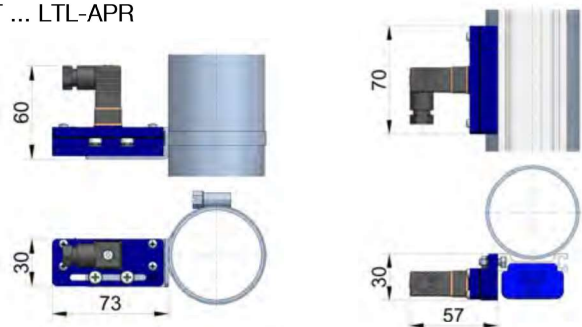
- Power supply: 20 ... 30 VDC
- Consumption: < 1.3 W
- Relay output:
 - Vmax: 253 VAC / 2A // 40 VDC / 2A resistive load
- Ambient temperature: $-20^{\circ}\text{C} \dots +60^{\circ}\text{C}$
- Ingress protection: IP20

Ex d IIC T6 version

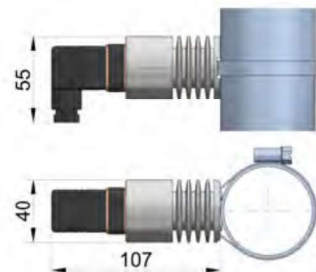


All switches can be supplied with Ex d IIC T6 Explosion Proof Enclosure on request, ATEX certified

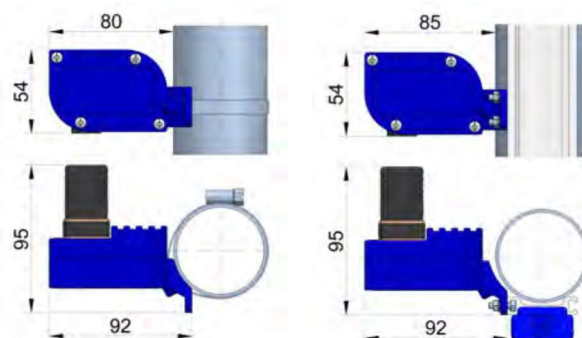
LT ... LTL-APR



LT-AAR



LT ... LTL-AMM / AMD



ATEX version Ex d IIC T6



