

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 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: ±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

• 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

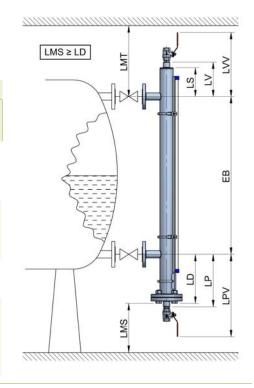
- LTE: Resistive sensor. 4-20 mA output:
 - TR3420: 24 VDC 2-wire system, compact or DIN rail mounted, for safe area and with ATEX certificate Ex d
 - TR2420: 24 VDC 2-wire system, compact mounted, for safe area and with ATEX certificate Ex ia, and HART, PROFIBUS, FIELDBUS,... protocols
- LTDR: Guided radar transmitter 4-20 mA, 4-wire system. Ex version available on request

Series LT

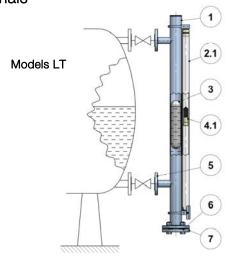
Mounting

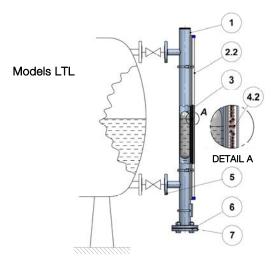
The lower dimension LD, LP or LPV of series LT level gauges is variable depending on liquid density. The lower the density, the longer this dimension. To remove the float due to a change in density, maintenance,..., a minimum distance LMS, longer or equal to LD distance, must be kept between the lowest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

Liquid	Lov	ver dimens	sion	Upper dimension			
density kg/l	Without drain (LD)	With drain (LP)	With drain + valve (LPV)	Without vent (LS)	With vent (LV)	With vent + valve (LVV)	
0.55 0.59	430	445	590				
0.60 0.91	340	355	500	130	155	300	
≥ 0.92	260	275	420				
0.60 0.79	40	00	525		140	265	
0.80 0.89	3	10	435	150			
≥ 0.90	24	10	365				
≥ 0.70	240		365	150	165	290	
0.80 0.89	4	15	540		165	290	
0.90 0.99	34	40	465	150			
1.00 1.19	29	90	415	150			
≥ 1.20	24	10	365				
	kg/l 0.55 0.59 0.60 0.91 ≥ 0.92 0.60 0.79 0.80 0.89 ≥ 0.70 0.80 0.89 0.90 0.89 1.00 1.19	density kg/l Without drain (LD) 0.55 0.59 430 0.60 0.91 340 ≥ 0.92 260 0.60 0.79 40 0.80 0.89 3 ≥ 0.90 24 ≥ 0.70 24 0.80 0.89 4 0.90 0.89 34 1.00 1.19 25	density kg/l Without drain (LD) With drain (LP) With drain (LP) (LP) $0.55 \dots 0.59$ 430 445 $0.60 \dots 0.91$ 340 355 ≥ 0.92 260 275 $0.60 \dots 0.79$ 400 $0.80 \dots 0.89$ 310 ≥ 0.90 240 $0.80 \dots 0.89$ 240 $0.80 \dots 0.89$ 310 $0.80 \dots 0.89$ 310 $0.80 \dots 0.89$ 310 $0.80 \dots 0.89$ 340 1.00 1.19 290	density kg/l Without drain (LD) With drain (LP) With drain + valve (LPV) 0.55 0.59 430 445 590 0.60 0.91 340 355 500 ≥ 0.92 260 275 420 0.80 0.89 310 435 ≥ 0.90 240 365 ≥ 0.70 240 365 0.80 0.89 415 540 0.90 0.99 340 465 1.00 1.19 290 415	density kg/l Without drain (LD) With drain (LP) With drain (LPV) Person	density kg/l Without drain (LD) With drain (LP) With drain + valve (LPV) With drain vent (LS) With vent (LV) 0.55 0.59 430 445 590 355 500 130 155 ≥ 0.92 260 275 420 435 150 140 0.60 0.79 400 525 500 140 140 ≥ 0.90 240 365 150 165 0.80 0.89 415 540 540 540 0.90 0.99 340 465 150 165 1.00 1.19 290 415 150 165	



Materials

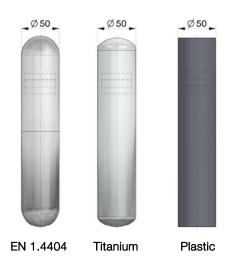




N 10	Describition	Models LT				Models LTL					
N°	Description	EN 1.4404	EN 1.4404 PVC PP PVDF PTFE		PTFE	EN 1.4404	PVC	PP	PVDF	PTFE	
4	Body	EN 1.4404	PVC	PP	PVDF	PTFE +	EN 1.4404	PVC	PP	PVDF	PTFE +
'	Dody	EN 1.4404	FVC	ГГ	FVDF	EN 1.4404	LIN 1.4404	FVC	FF	FVDF	EN 1.4404
2.1	Guide tube		Boro	silicate	glass					-	
2.2	Mag strips rail						A	Aluminiur	m + Pol	ycarbonat	е
0	Floot	EN 1.4404 /	D) (O	DD	D) (D.E.	DTEE	EN 1.4404 /	D) (O	DD	D) (D.E.	DTEE
3	Float	Titanium	PVC	PP	PVDF	PTFE	Titanium	PVC	PP	PVDF	PTFE
4.1	External float		PP	/ Alumir	nium					-	
4.2	Mag strips							F	OM re	sin	
5	Connection	EN 1.4404	PVC	PP	PVDF	PTFE	EN 1.4404	PVC	PP	PVDF	PTFE
	Onalist	Belpa®					Belpa®				
6	Gasket	CSA-50	NBR /	Viton®	/ EPDM	PTFE	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	6 bar max.
PP	0.70 2.00	6 bar max.
PVDF	0.80 2.00	6 bar max.



Dimensions and specific technical data

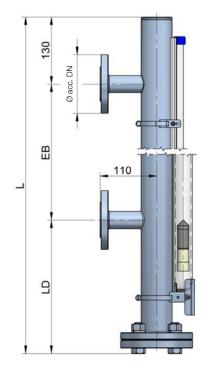
Models LT ... LTL106 ... 116 / LT ... LTL17

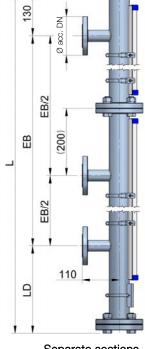
Technical data

- 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)

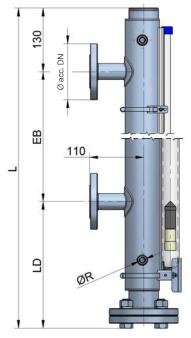
- Limit switches: LT ... LTL-APR / AMM / AMD // LT-AAR Ex d IIC T6 version on request
- Transmitter LTE 4-20 mA or guided radar LTDR









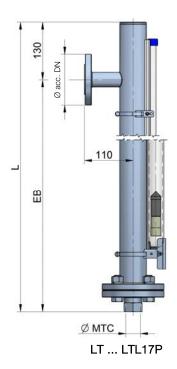


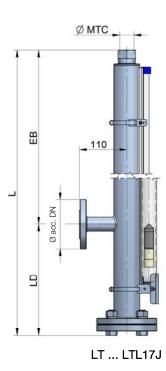
Heating-cooling chamber

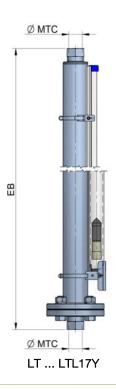
Level gauges

Series LT

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

LB Ø acc. DN 180

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

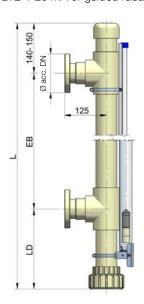
PVC: 0°C ... +45°C PVC-C: 0°C ... +70°C PVDF: -20°C ... +145°C

• 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: ±6 mm

Liquid temperature: -20°C ... +250°C
Ambient temperature: -10°C ... +70°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°C ... +400°C
Ambient temperature: -10°C ... +70°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°C ... +250°C
Ambient temperature: -25°C ... +80°C

• Mechanical life: 20 x 10⁶ 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°C ... +250°C

• Ambient temperature: -25°C ... +100°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°C ... +60°C

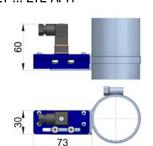
• Ingress protection: IP20

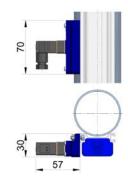
Ex d IIC T6 version



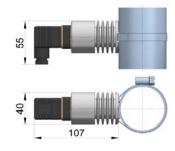
All switches can be supplied with Ex d IIC T6 Explosion Proof Enclosure on request, ATEX certified

LT ... LTL-APR

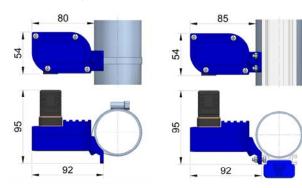




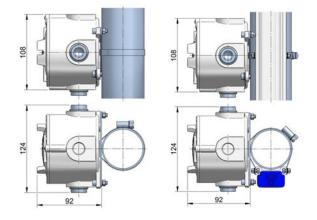
LT-AAR



LT ... LTL-AMM / AMD



ATEX version Ex d IIC T6



Level gauges

Series LT

Transmitters

Transmitter LTE 4-20 mA



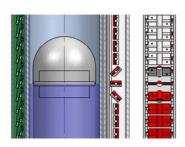
Transmitter composed of a resistive sensor based on a reed and resistances chain, mounted on a printed circuit placed inside a guide tube. Not wetted by the process liquid.

Variations in level inside the tank move the internal LT or LTL float, which by means of magnetic coupling changes the value of the resistance of the resistive sensor in correspondence to the measured liquid level.

These variations of resistance are processed by an electronic converter in order to obtain a 4-20 mA current output proportional to liquid level.

Technical data LTE

- Connection by means of IP65 connector, IP67 polycarbonate housing or IP68 aluminium housing
- Distance between reed switches: 10 mm
- Liquid temperature: -20°C ... +250°C
 For Exd transmitters: -20°C ... +150°C
- Ambient temperature: -20°C ... +60°C



Transmitters series TR

- 2-wire system with 4-20 mA output
- TR3420 safe area or hazardous area ATEX Ex d IIC T6
 - Power supply: 12 ... 36 VDC
 - Consumption: 0.8 W
 - Configuration by means of USB cable and software Winsmeter TR available for download at www.tecfluid.com
- TR2420Ex hazardous area ATEX Ex ia IIC T6
 - Power supply: 8 ... 30 VDC
- TR2420H (HART protocol), TR2420FP (Fieldbus/Profibus protocol). Also available in combination with their ATEX Ex ia versions

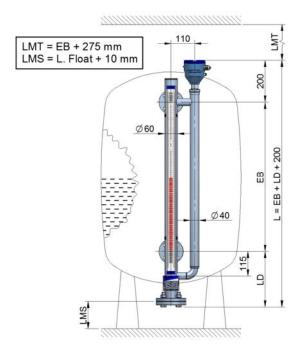
Transmitter LTDR

LTDR guided radar level transmitter uses TDR (Time Domain Reflectometry) technology.

Low-energy, high-frequency electromagnetic impulses, generated by the sensor's circuitry, are propagated along the probe which is immerged in the liquid to be measured.

When these impulses hit the surface of the liquid, part of the impulse energy is reflected back up the probe to the circuitry which then calculates the fluid level from the time difference between the impulses sent and the impulses reflected. The sensor can output the analyzed level as a continuous level measurement.

For more details, see LTDR guided radar level transmitter datasheet. Available at www.tecfluid.com



Electronic converter Model MT03L



- Electronic converter for level applications
- Resistance and current inputs
- Programmable via USB cable by means of Tecfluid S.A.
 Winsmeter MT03 software or by means of keyboard and graphic display with intuitive menus
- Panel mounting with dimensions 96 x 96 mm DIN 43700
- Power supply: 100 ... 240 VAC 50 / 60 Hz 18 ... 36 VDC
- Full diagnosis. User selectable password protection
- 5 digits level indication
- Programmable 4-20 mA analog output
- 2 x relay outputs programmable as level alarms
- Ingress protection: IP50 front, IP30 back (Optional IP65 front with silicone cover)
- Ambient temperature: -20°C ... +60°C
- MODBUS RTU RS485 protocol on request





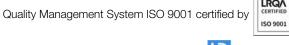


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Pressure Equipment Directive certified by Lloyd's Register





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