

Level displacers Series LP

Level indicator, switch and transmitter for liquids

- Metallic construction, optional with plastic float
- Provides a reliable level measurement under extreme process conditions (very high temperatures, pressures and with corrosive fluids)
- Indication by means of magnetic coupling
- Scales in % or height
- Liquid density: 0.6 ... 2 kg/l
- Measuring range: 300 mm ... 6 m
- Interface level measurement
- Accuracy: ± 5 mm of the measured value
- Connections:
 - EN 1092-1 DN40 PN40 flanges. Other flange standards on request (ASME B16.5, JIS)
 - Threaded connections BSP or NPTOthers on request
- Materials:
 - Body: EN 1.4404 (AISI 316L), Hastelloy C, Titanium
 - Float: EN 1.4404 (AISI 316L), PVC, PP, PVDF, Titanium, Hastelloy C
- Local indication
- Options:
 - 1 or 2 limit switches
 - Electronic transmitter with 4-20 mA analog output for safe or hazardous area (Ex ia protection, ATEX / IECEx certified). HART, MODBUS protocol available on request
 - Side mounting with 80ME external chamber



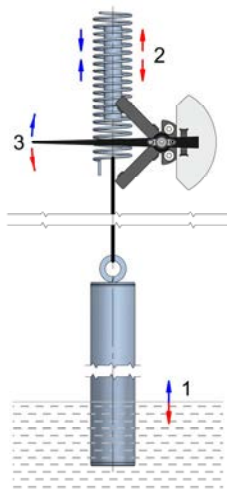
Working principle

According to Archimedes principle of body submerged in a liquid.

A float with a density similar to the measured liquid is suspended by a spring to maintain an equilibrium with its weight. This float is always submerged in the liquid (not floating on the surface)

A variation in the liquid level (1) produces a change in the weight of the float (partially submerged), which can be measured by the extension or compression of the spring that supports the float (2). The variation in the length of the spring is transmitted to the indicating needle via a magnetic coupling (3).

This measuring principle is well suited to dirty environments.



Applications

- Chemical and petrochemical, oil and gas industries
- Steam and power industries and storage of chemicals
- Food and beverage
- Monitoring and control of common processes

Models

- LP80 flanged connection
- LP81 threaded connection

Technical data

- **Accuracy:** ±5 mm of the measured value
- **Scales** in % or height
- **Liquid density:** 0,6 ... 2 kg/l
- **Measuring range:** 300 mm ... 6 m
- **Interface level measurement**
- **Fluid temperature:**
 - Standard: -60°C ... +150°C
 - Special: -120°C ... +400°C (see thermal separator)
- **Ambient temperature:** -10°C ... +80°C
- **Working pressure:** PN40 (others on request)

- **Connections:**
 - EN 1092-1 DN40 PN40 flange
 - Threaded connections G1½ or 1½" NPT

Others on request

- **Housing:** IP65 coated aluminium, polycarbonate window. IP67 EN 1.4404 (AISI 316L), glass window or IP65 PP, methacrylate window, on request
- **Installation:** Vertically, on top of the tank or side mounted by means of external chamber 80ME

Limit switches and transmitters

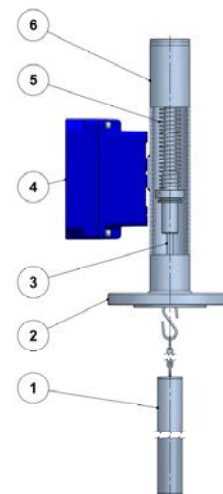
- **AMM1 ... 2:** 1 or 2 adjustable micro-switches
- **AMD1 ... 2:** 1 or 2 adjustable inductive detectors (+ relays on request)
- **TH7 ... TH7H:** 4-20 mA transmitter 2 wires + digital output. HART protocol with model TH7H

All switches and transmitters are available with ATEX / IECEx Ex ia certification

The ATEX / IECEx certified transmitters do not provide a digital output

- **MT03L:** electronic converter. MODBUS RTU RS485 protocol optional

Materials



N°	Description	Materials		
		LP / AISI 316L	LP / Hastelloy	LP / Titanium
1	Float	EN 1.4404 (AISI 316L) *	Hastelloy C *	Titanium *
2	Connection	EN 1.4404 (AISI 316L)	Hastelloy C	Titanium
3	Float guide	(AISI 316L)		
4	Housing	Coated aluminium **		
5	Spring	EN 1.4401 (AISI 316)	Hastelloy C	Titanium
6	Body	EN 1.4404 (AISI 316L)	Hastelloy C	Titanium

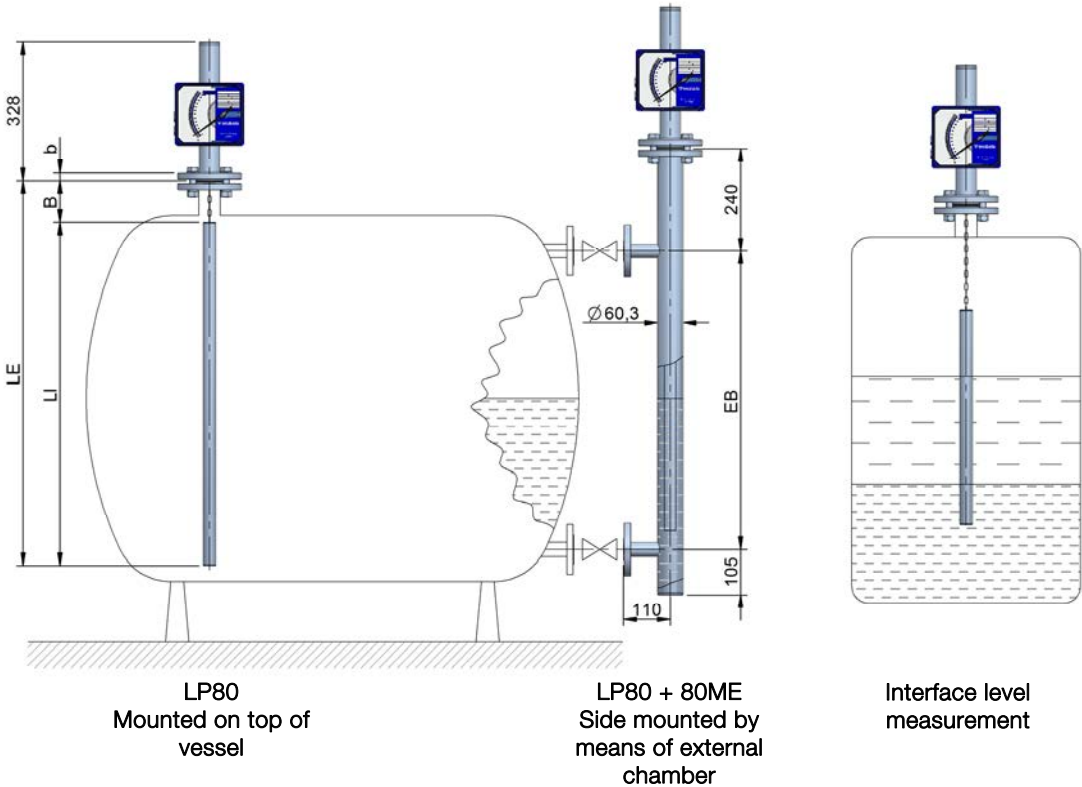
* PVC, PP, PVDF on request

** EN 1.4404 (AISI 316L) on request

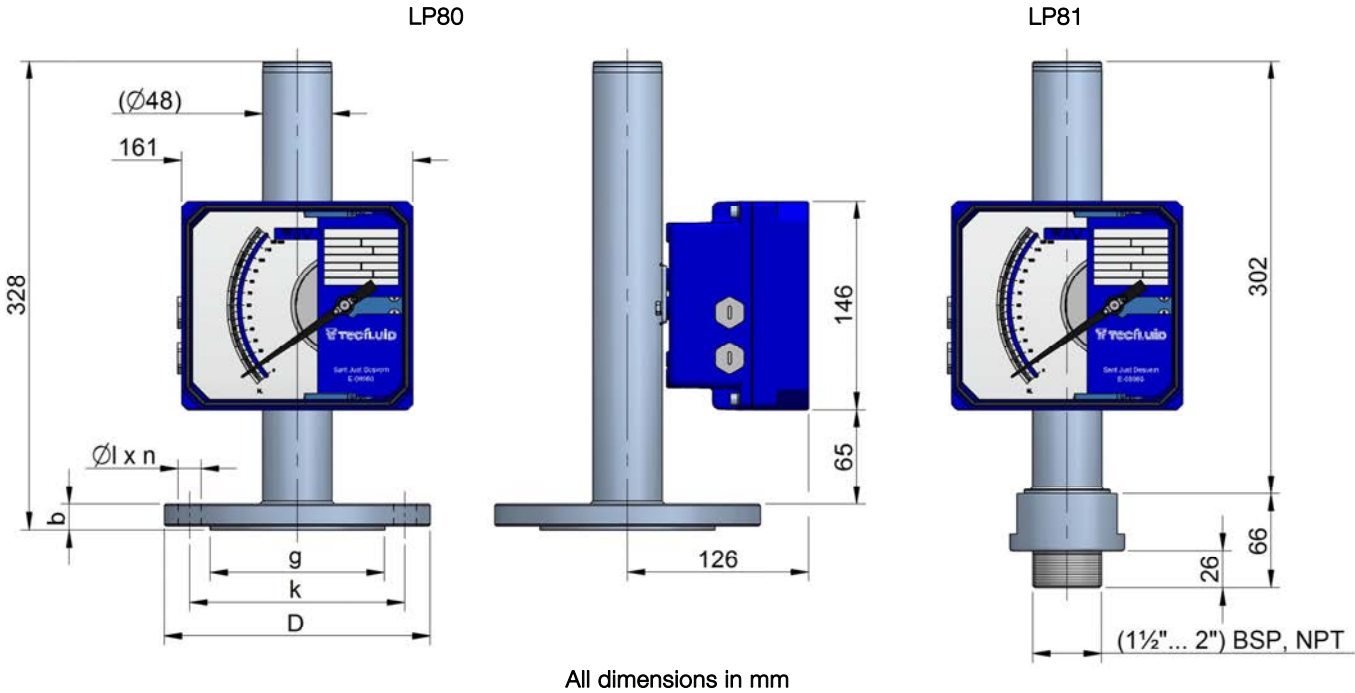
Level displacers

Series LP

Mounting



Dimensions



Model LP80 / LP80+80ME

DN	PN	D	k	g	Øl x n	b	B	EB	LE	LI
40	40	150	110	88	18 x 4	18	to be specified *			

* Dimensions B, EB, LE and LI according to "Mounting" drawing
Other flange sizes and standards on request

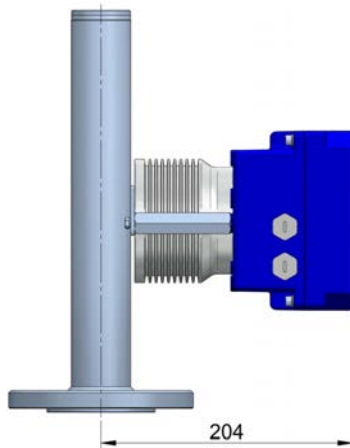
Model LP81

Dimensions according to drawing above.

Other connection standards and sizes on request

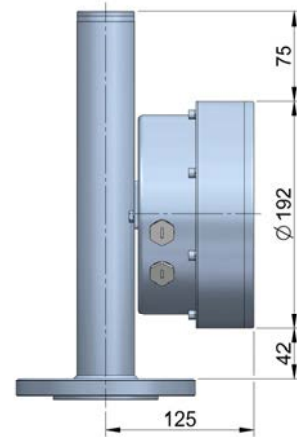
Accessories

Thermal separator



- Standard in aluminium, optional in EN 1.4404 (AISI 316L)
- For working with fluids at high and low temperatures
- Liquid temperature: $-120^{\circ}\text{C} \dots +400^{\circ}\text{C}$
- Reference ambient temperature: 20°C

EN 1.4404 (AISI 316L) housing



- Specially indicated for working within sanitary or sterile installations, saline atmospheres (marine platforms), etc.
- All stainless steel construction EN 1.4404 (AISI 316L), with glass window
- Can fit standard limit switches and TH7 transmitters
- Ingress protection: IP67

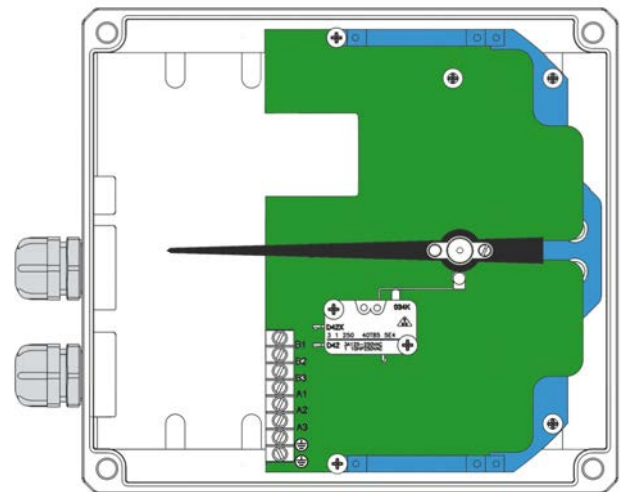
Limit switches

Adjustable limit switch AMM



Electrical micro-switch.

- AMM1 ... 2: 1 ... 2 adjustable limit switches
- Ratings: 3(1) A, 250 V (EN 61058)
- Hysteresis: $\pm 10\%$ of full scale value
- Ambient temperature: $-25^{\circ}\text{C} \dots +100^{\circ}\text{C}$
- Mechanical life: 10^7 operations
- ATEX / IECEx certificate Ex ia IIC T6 Ga / Ex ia IIIC T $^{\circ}\text{C}$ Da
- Gold plated contacts on request.



AMM

Adjustable limit switch AMD



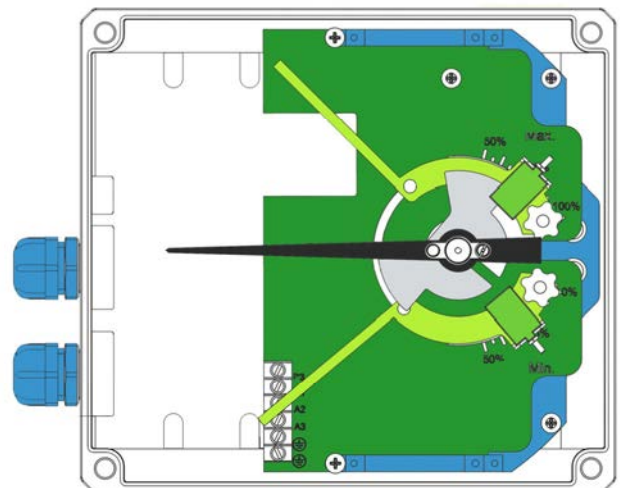
NAMUR (EN 60947-5-6) 3.5 mm slot type inductive detector activated by vane.

- AMD1 ... 2: 1 ... 2 adjustable limit switches
- Nominal voltage: 8.2 V / Working voltage: 5 ... 25 V
- Ambient temperature: $-25^{\circ}\text{C} \dots +100^{\circ}\text{C}$
- ATEX / IECEx certificate Ex ia IIC T6 Ga / Ex ia IIIC T $^{\circ}\text{C}$ Da

Control relay (on request)

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

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



AMD



Transmitters

Transmitter TH7



The TH7 electronic transmitters provide an analog output proportional to the level and a digital output selectable as an alarm (except for the Ex versions). They are based on the Hall effect and mounted inside the indicator housing.

- **TH7** transmitter + digital output
- **TH7H** transmitter + digital output + HART protocol

Technical data

- Power supply: 12 ... 36 VDC (18 ... 36 VDC with HART protocol), 2-wire system
- Power consumption: 4-20 mA for 0 ... 100% of scale
- 4-20 mA analog output:
 - Error: < 0.6% of the magnet position
 - Maximum load in 4-20 mA loop: 1.1 k Ω (with 36 VDC power supply)
- Digital output: Potential free N channel MOSFET, I_{max} 200 mA, for alarm output, adjustable in one point of the scale. Programmable by means of Winsmeter TH7 software
- Ambient temperature: -20°C ... +70°C
- Easy programmable by means of Tecfluid's Winsmeter TH7 software, available for download at www.tecfluid.com

ATEX / IECEx version

- ATEX / IECEx certificate
Ex ia IIC T6 ... T4 Ga / Ex ia IIIC T85°C Da
- Power supply: 14 ... 30 VDC, 2-wire system
- Power consumption: 4-20 mA for 0 ... 100% of scale
- 4-20 mA analog output:
 - Error: <0.6% of the magnet position
 - Maximum load in 4-20 mA loop: 900 Ω (with 30 VDC power supply)
- Ambient temperature: -20°C ... +40°C

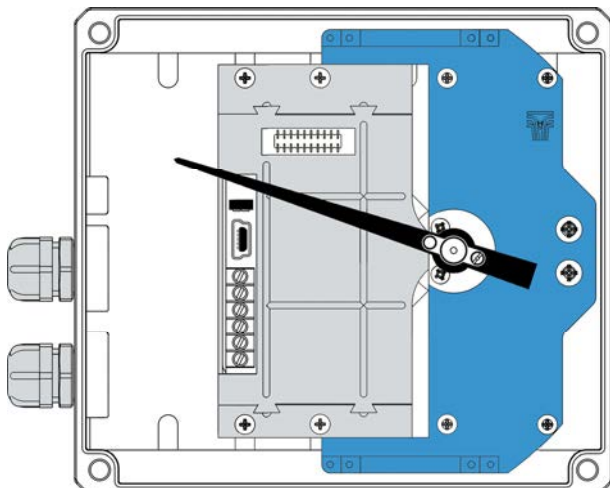
Electronic converter

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



MT03L



TH7

Both limit switches AMM or AMD and electronic transmitters TH7 can be mounted together in the same housing.

The TH7 Ex transmitters belong to group II. They are intended for use in potentially explosive atmospheres, except in mining

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The technical data described in this specification sheet is subject to modification without notification if the technical innovations in the manufacturing processes so require.