

## Level displacers

### Series LP

#### Level indicator, switch and transmitter for liquids

- Metallic construction, optional with plastic rod
- 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 to 6 m
- Interface level measurement
- Accuracy:  $\pm 5$  mm of the measured value
- Connections:
  - DN40 PN40 EN 1092-1 flanges. Other flange standards on request (ANSI, JIS)
  - Threaded connections BSP or NPT
  - Sanitary connections according to ISO 2852, SMS 1145, DIN 11851, TRI-CLAMP®
- Materials:
  - Body: EN 1.4404 (AISI 316L), Hastelloy C, Titanium
  - Rod: 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 IIC T4 or T6 protection, ATEX certified). HART protocol available on request
  - Side mounting with 80ME external chamber



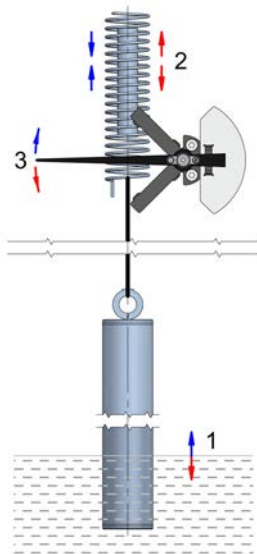
## Working principle

According to Archimedes principle of body submerged in a liquid.

A rod with a density similar to the measured liquid is suspended by a spring to maintain an equilibrium with its weight. This rod 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 rod (partially submerged), which can be measured by the extension or compression of the spring that supports the rod (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:**  $\pm 5$  mm of the measured value
- **Scales** in % or height
- **Liquid density:** 0,6 ... 2 kg/l
- **Measuring range:** 300 mm to 6 m
- **Interface level measurement**
- **Fluid temperature:**
  - Standard: -60°C ... 150°C
  - Special: -120°C ... 400°C (see thermal separator p. 4)
- **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
  - Sanitary connections according to ISO 2852, SMS 1145, DIN 11851, TRI-CLAMP®

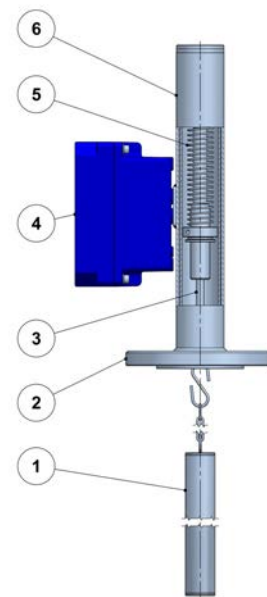
Others on request

- **Installation:** Vertically, on top of the tank or side mounted by means of external chamber

## Limit switches and transmitters

- **LP-AMM1 ... 2:** 1 or 2 adjustable micro-switches
- **LP-AMD1 ... 2:** 1 or 2 adjustable inductive detectors (+ relays on request)
- **TH7 ... TH7H:** 4-20 mA transmitter 2 wires HART protocol with model TH7H
- **TH7 Ex ... TH7H Ex:** 4-20 mA transmitter 2 wires Ex ia IIC T4 or T6 (ATEX). HART protocol with model TH7H Ex

## Materials



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

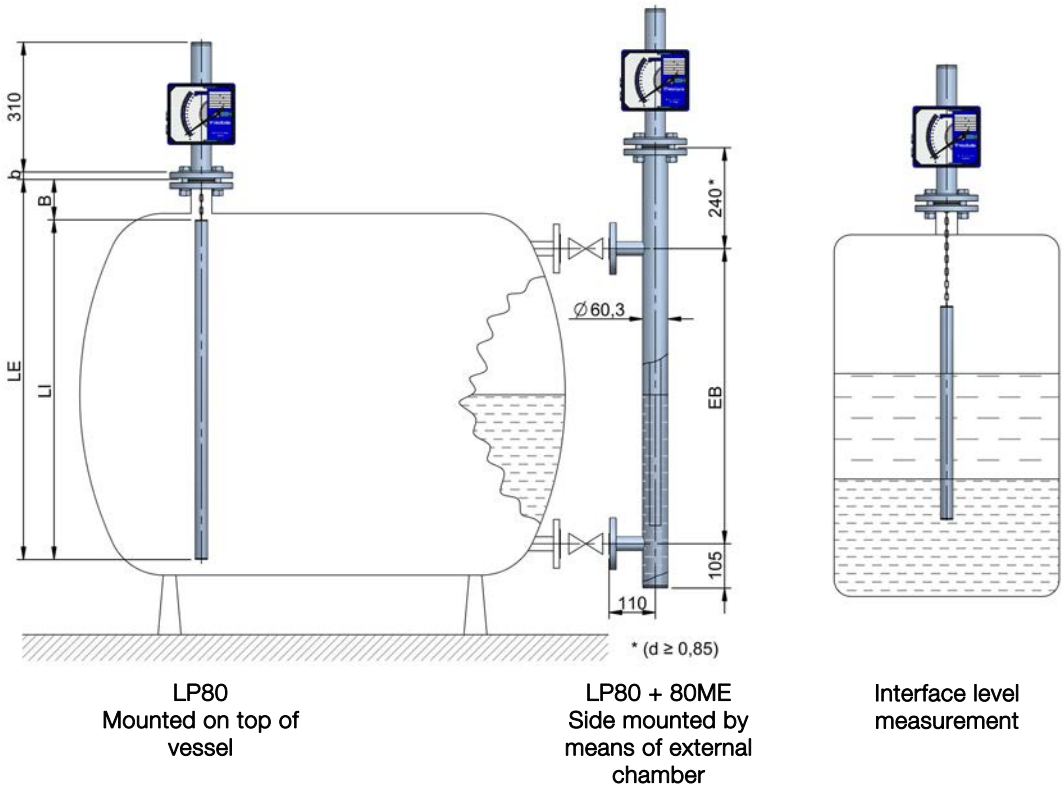
\* PVC, PP, PVDF on request

\*\* EN 1.4404 (AISI 316L) on request

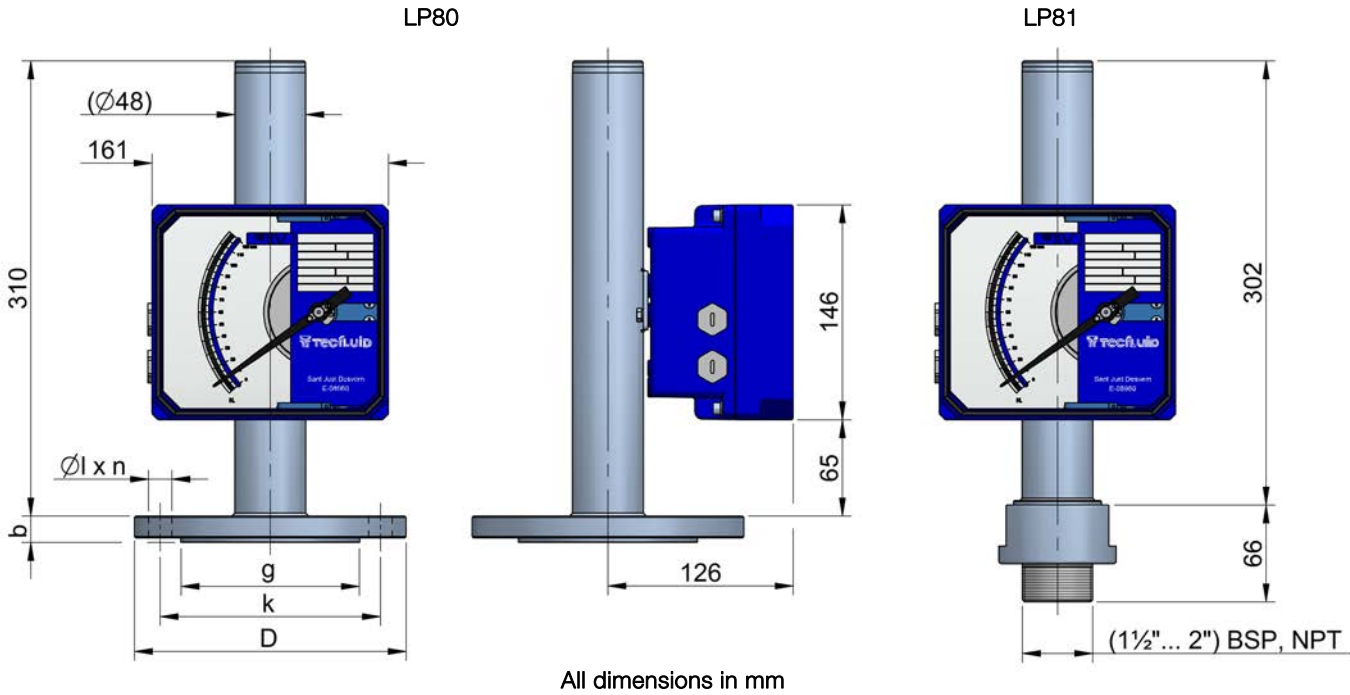
# Level displacers

## Series LP

### Mounting



### Dimensions



#### Model LP80 / LP80+80ME

DN	PN	D	k	g	Ø 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

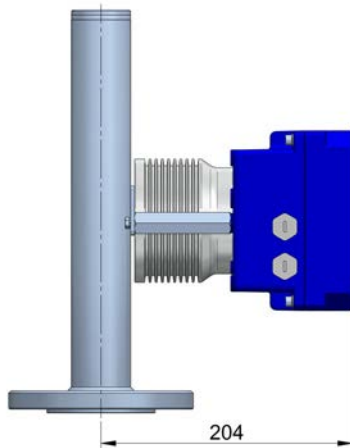
#### Model LP81

Dimensions according to drawing above.

Other connection standards and sizes on request

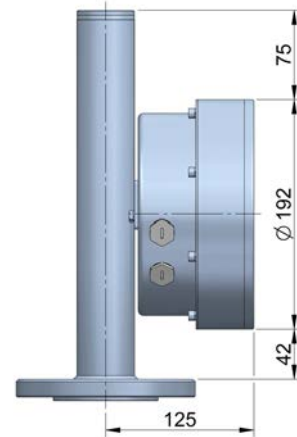
## Accessories

### Thermal separator



- Standard in aluminium, optional in EN 1.4404 (AISI 316L)
- For working with fluids at high and low temperatures
- Maximum temperature: 400°C
- Reference ambient temperature: 20°C

### Stainless steel 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 TH transmitters
- Ingress protection: IP67

## Limit switches

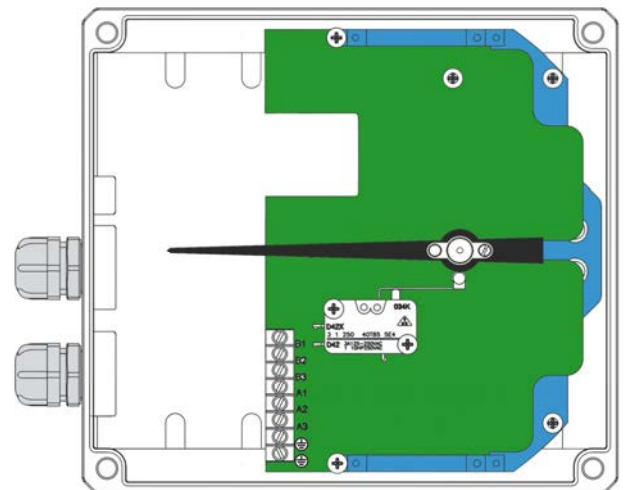
### Adjustable limit switch LP-AMM



Electrical micro-switch mounted in the indicator housing.

- LP-AMM1 ... 2: 1 ... 2 adjustable limit switches
- Ratings: 3(1) A, 250 V (VDE/CEE)
- Hysteresis:  $\pm 10\%$  of full scale value
- Ambient temperature: -25°C ... +80°C
- Mechanical life:  $10^7$  operations
- ATEX certificate Ex ia IIC T6

Gold plated contacts on request.



LP-AMM

### Adjustable limit switch LP-AMD



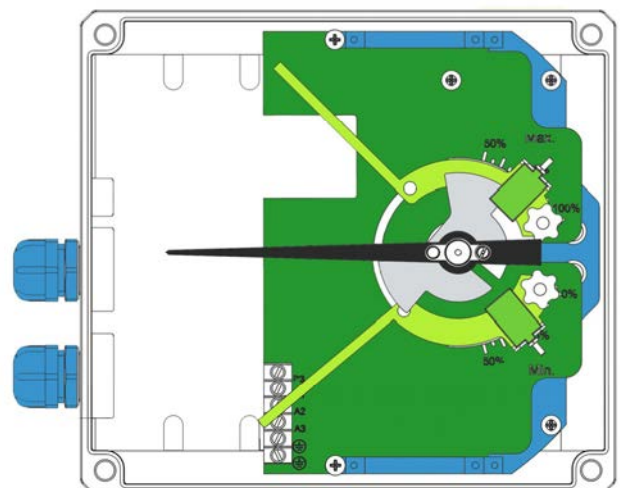
NAMUR (EN 60947-5-6) 3.5 mm slot type inductive detector activated by vane, mounted in the indicator housing.

- LP-AMD1 ... 2: 1 ... 2 adjustable limit switches
- Power supply: 8 VDC
- Ambient temperature: -25°C ... +70°C
- ATEX certificate Ex ia IIC T6

#### Control relay (on request)

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

- Power supply: 24 ... 253 VAC 50-60 Hz  
24 ... 300 VDC
- Input: NAMUR Ex ia IIC
- Output: 1 or 2 relay contacts
- Output rating: 2 A 250 VAC 100 VA / 1 A 24 VDC
- Ambient temperature: -20°C ... +60°C



LP-AMD

### Transmitters



#### Transmitter TH7

The TH7 electronic transmitters provide an analog output proportional to the flow rate 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
- TH7H transmitter + HART protocol

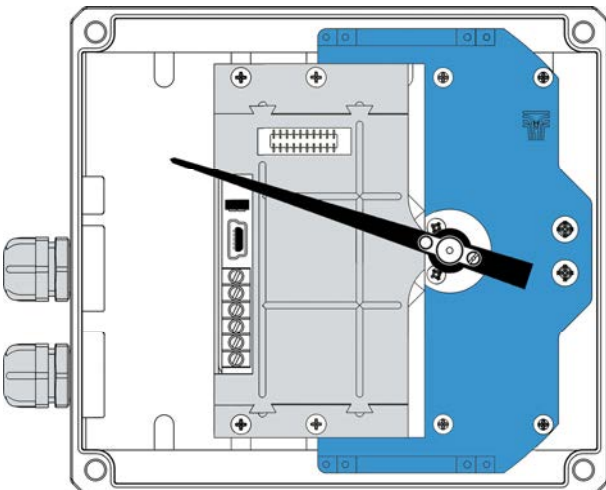
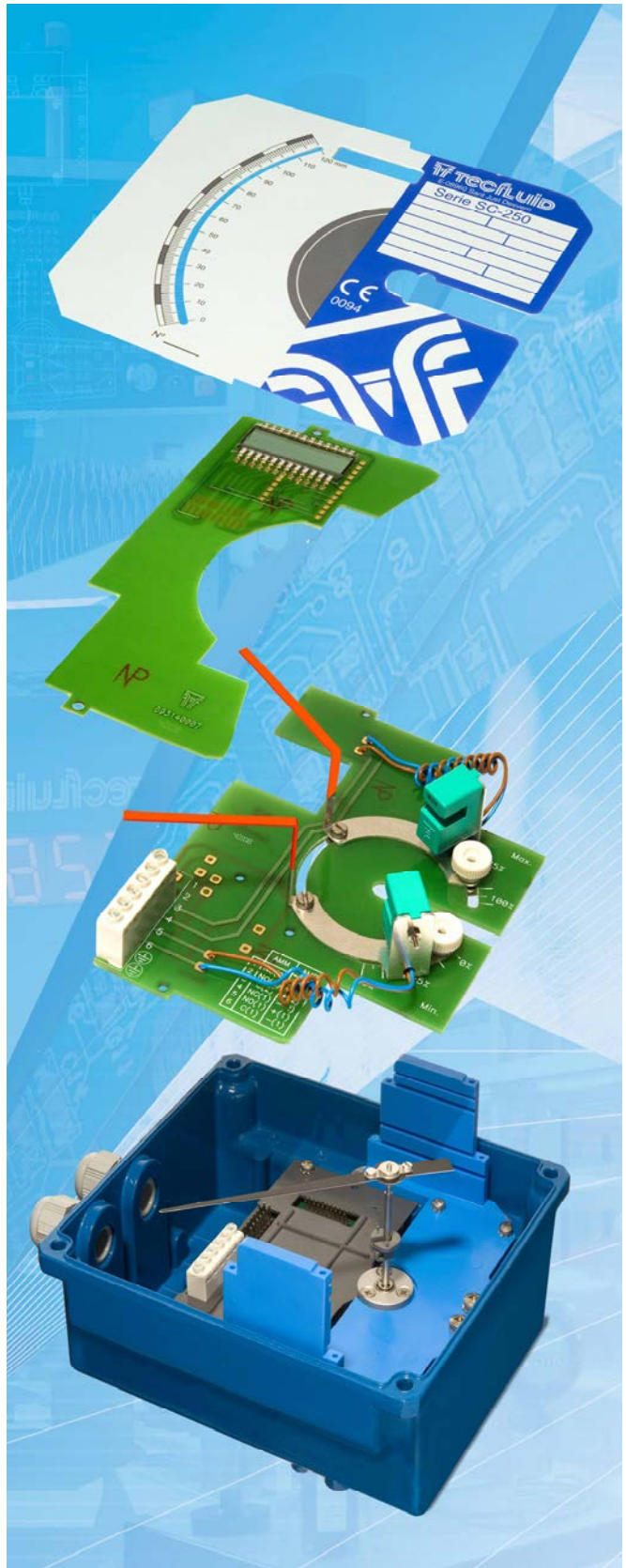
#### Technical data

- Power supply: 12 ... 36 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: 1.1 k $\Omega$  (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: -5°C ... +70°C
- Easy programmable by means of Tecfluid's Winsmeter TH7 software, available for download at [www.tecfluid.com](http://www.tecfluid.com)

#### ATEX version (Ex ia IIC T4 or T6)

#### Technical data

- ATEX certificate Ex II 1 GD
- 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  $\Omega$  (with 30 VDC power supply)
- Ambient temperature: -5°C ... +40°C



TH7

Modular housing

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

# PRESENCE IN MORE THAN 50 COUNTRIES ALL OVER THE WORLD



**Tecfluid S.A.**  
Narcís Monturiol 33  
08960 Sant Just Desvern  
Barcelona  
Tel: +34 93 372 45 11  
Fax: +34 93 473 44 49  
tecfluid@tecfluid.com  
[www.tecfluid.com](http://www.tecfluid.com)

Quality Management System ISO 9001 certified by **Applus<sup>®</sup>**

Pressure Equipment Directive 97/23/CE certified by **Lloyds Register**

ATEX European Directive 94/9/CE certified by



HART<sup>®</sup> is a registered trademark of HART Communication Foundation

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