

# Transmitters for Liquid Level, Interface and Density

## Pneumatic Buoyancy Transmitter with Torque Tube

Type: 167 LP



### Technical Information

01/2010

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Technical Information 167LP  
Rev. 0  
01/2010  
Subject to technical alteration.

## Decription

The 167LP pneumatic buoyancy transmitter is designed to perform measurements for liquid level, interface and density of liquids. The measeurement is based on the Archimedes buoyancy principle

## Features

◆	Level transmission between vessel and transmitter by torque tube.
◆	For operating tepeatures from -196 °C to + 400 °C and operation pressures up to PN250
◆	The span can be set over a 1:5 ratio
◆	A wide selection of materials facilitates service under corrosive conditions.
◆	Material certificates acc. DIN 50049-3.1.B available
◆	Various licences in accordance with national regulations available

## Technische Daten

### Eingang:

Measuring span	3...15 N
Density range	100 < $\rho$ < 1600 kg/dm <sup>3</sup>
Displacer 104DE	
Lengths	350...3000 mm 14..120 inch
Weight of Displacer	max. 25 N

**Output:** 0,2...1 bar / 3...15 psi / 20...100 kPa / 0,2...1,0 kp/cm<sup>2</sup>

**Supply air:** 1,4 ± 0,1 bar or 20 ± 1,4 psi

### Transitional behaviour:

Relative Error	< 1 %
Sensitivity	< 0,1 %
Ambient temperature influence	<0,2 %/10 K
Process temperature influence	<0,1 %/10K
Supply air influence	<0,2 %/0,1 bar
Air consumption	<200 l/h
Air capacity	1200 l/h
Load effect (meas. at 0,6 bar)	+3 % for 400 l/h exhausted flow -3 % for 400 l/h delivered flow

### Operation conditions

Process temperature	-196 °C...+400 °C
Pressure rating	
- acc. DIN	PN16, 40, 63, 100, 160, 250
- acc- ANSI	Class 150, 300, 600, 900, 1500
- with heating jacket	Wafer body max. PN160 / Class 900; Heating jacket PN 25 Heating with saturated steam or thermal oils
Ambient temperature	-40...+90 °C
Relative humidity	bis zu 100 %
Condensation	permitted
Transportation / Storage temp.	-40...+90 °C
Protection class	IP55 (nach DIN 40 050)

The device can be operated at a class D2 location acc. DIN EC 654, part 1.

## Mounting

Mounting method	sandwich mounted
acc. DIN	DN 80, DN 100
acc. ANSI	3", 4"
Pneumatic connections	Internal thread DIN 45141-Q ¼-18 NPT

## Ordering informationen

### Model code

Code	Description
167LP	<b>Pneumatic Buoyancy Transmitter with Torque Tube for liquid level, interface and density</b>
	<b>Wafer body with indicator (Flange size &amp; Pressure rating)</b>
	<b>Flange size</b>
<b>20</b>	DN 80
<b>21</b>	DN 80
<b>22</b>	DN 80
<b>23</b>	DN 100
<b>24</b>	DN 100
<b>25</b>	DN 100
<b>31</b>	3"
<b>32</b>	3"
<b>34</b>	3"
<b>41</b>	4"
<b>42</b>	4"
<b>44</b>	4"
	<b>Pressure rating</b>
	PN 16...PN 40 (only contact face C)
	PN 16...PN 160 (only contact face U, N)
	PN 16...PN 250 (only contact face E, L)
	PN 16...PN 40 (only contact face C)
	PN 16...PN 160 (only contact face U, N)
	PN 16...PN 250 (only contact face E, L)
	ANSI Cl. 150
	ANSI Cl. 300/600
	ANSI Cl. 1500
	ANSI Cl. 150
	ANSI Cl. 300/600
	ANSI Cl. 1500
	<b>Wafer Body contact face</b>
<b>C</b>	Form C/C (Rz40-160) DIN 2526 (only 20, 25)
<b>E</b>	Form E/E (Rz 0-16) DIN 2526 (only 22, 24)
<b>U</b>	Form N/F DIN 2512 (only 21, 23)
<b>N</b>	Form N/N DIN 2512 (only 21, 23)
<b>L</b>	Form L/L DIN 2696 (only 22, 24)
<b>R</b>	Form RF/RF Raised Face n. ANSI B16.5 (all ANSI)
<b>J</b>	Form RJF/RJF Ring Joint Face n. ANSI B16.5 (all ANSI)
<b>S</b>	Form SF/SF Smooth Finish (125 micro inch) (all ANSI)
	<b>Wafer body material (process wetted)</b>
<b>K</b>	Carbon steel 1.0460 (A105)
<b>S</b>	1.4404 (316L)
<b>C</b>	Hastelloy C
	<b>Wafer mounting direction (transmitter on body)</b>
<b>R</b>	Right hand mounted
<b>L</b>	Left hand mounted
	<b>Torque tube material (process wetted)</b>
<b>S</b>	1.4571/1.4404/1.4435 (316)
<b>C</b>	Hastelloy C
<b>I</b>	Inconel 600
<b>M</b>	Monel
	<b>Signal range</b>
<b>1</b>	0,2...1 bar
<b>2</b>	3...15 psi
<b>3</b>	20...100 kPa
<b>4</b>	0,2...1 kp/cm <sup>2</sup>

(Options next page)

<b>Options</b>	
<b>D</b>	Oil Damping
<b>Electrical Certificates</b>	
<b>E</b>	ATEX – II 1/2 G c IIC (Zone 0) for media AI, AII, B (c)
<b>P</b>	ATEX – II 2 G c IIC (Zone 1) for media AI, AII, B (c)
<b>V</b>	Overfill protection acc. WHG for environmental pollution fluids (e)
<b>Certificates</b>	
<b>1</b>	EN 10204-2.1 (DIN 50 049-2.1) Certificate of Compliance
<b>2</b>	EN 10204-2.3 (DIN 50 049-2.3) Specific Test Report (Calibration)
<b>3</b>	EN 10204-3.1.B (DIN 50 049-3.1.B) Inspection certificate of process wetted material
<b>4</b>	PED 97/23/EC additional unit verification, acc. to module F/G
<b>6</b>	Comply with NACE Standard MR-01-75 (only wafer body material S & torque tube material-Wst. C, I or M)
<b>9</b>	Wasserstand 100
<b>Material test</b>	
<b>7</b>	X-Ray and isotope test for weldings
<b>8</b>	Dye penetration test
<b>Tag-No. Labelling</b>	
<b>S</b>	Stamped with weather resistant colour
<b>L</b>	Stainless steel label fixed with wire

(c) only contact face E, N, R & S

(e) not with wafer body 33, 34, 43, 44



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### Flow measurement



Itabar®-Flow Sensor



IntraSonic IS210 Ultrasonic Flow Meter

### Level measurement



ITA-mag. Level Gauge



MAGLINK Level Indicator

### Other Measurement Tasks:



DigiFlow Flow and Level Computers



IntraCon Digital Controllers



IntraDigit Digital Indicators / Meters



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