The intelligent transmitter 244LVP is designed to perform continuous measurements for liquid level, interface or density of liquids in the process of all industrial applications. The measurement is based on the proven Archimedes buoyancy principle and thus extremely robust and durable. Measuring values can be transferred analog and digital. Digital communication facilitates complete operation and configuration via PC or control system. The 244LVP measures with consistent reliability and high precision. For installations in contact with explosive atmospheres up to Zone 0, certificates are available. The 244LVP combines the abundant experience of FOXBORO with most advanced digital technology.

**FEATURES**

- HART Communication, 4 to 20 mA, or FOUNDATION Fieldbus
- Configuration via FDT-DTM
- Multilingual full text graphic LCD
- IR communication as a standard
- Easy adaptation to the measuring point without calibration at the workshop
- Linear or customized characteristic with 32 points
- Approved for SIL applications (with HART)
- Local display in %, mA or physical units
- Signal noise suppression by Smart Smoothing
- Continuous self-diagnostics
- Linear or customized characteristic
- Process temperature from –50 °C to +150 °C
- Static pressure up to PN 150, class 900
- Micro sintermetal sensor technology

**244LVP Levelstar** Intelligent Buoyancy Transmitter for Liquid Level, Interface and Density - Communication HART and Foundation Fieldbus -
TECHNICAL DATA

Data refer to the sensor material Type 316L (1.4404)

Explosion protection certificates must be observed!

Input / Output

Measuring ranges ........ 50 mm to 15 m, upper and lower range value continuously adjustable

Standard lengths of

Displacer (204DE) ........ 300 .. 3000 mm, 12 .. 118 in; further lengths on request

<table>
<thead>
<tr>
<th>Weight force lower range value</th>
<th>PN 40</th>
<th>PN 40 (&gt; 2.5 kg), PN 150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight force upper range value</td>
<td>5 N</td>
<td>5 N</td>
</tr>
<tr>
<td>Measuring span</td>
<td>2 .. 20 N</td>
<td>3.4 .. 34 N</td>
</tr>
</tbody>
</table>

Span ratio

Turn-down ........ 1:1 .. 1:10 (1:20 on request)

Accuracy 1) .................. ± 0.2 %; increased accuracy with customized adjustment

Transfer function .......... linear or customized with up to 32 setpoints

Configuration

- with FDT-DTM per HART protocol
- via 2-wire connection 4 .. 20 mA
- via IR communication
- with multi-lingual, full graphic LCD display with %, mA, physical units and 2 from the outside-to-use buttons

Load .......................... \( R_{\text{bmax}} = (U_S - 12 \text{ V}) / 23 \text{ mA} \)

Communication HART

Connection .................... Two-wire system

Supply voltage \( U_S \) 2) ........ > 12 V + \( R_b \times 0.024 \text{ A} \)

\( R_b \) is the total burden resistor for lines, HART measurement resistor and communication.

Current sink .................. max. 24 mA

Signal range .................. 4 to 20 mA

Operating range ............... 3.8 to 20.5 mA (acc. NE 43)

Critical error alarms in the 2-wire Communication .... < 3.6 mA and > 21 mA

HART Protocol
- 2-wire ....................... 1200 Baud, HART compliant
- IR communication ........... 19200 Baud

Communication Hardware
- Handterminal ................. HT 375/475
- PC Software .................. WIN xx and FDT/DTM

Communication FOUNDATION Fieldbus H1

Connection .................. twisted and shielded two wire cable acc. to recommendation based on IEC 1158-2

Supply voltage \( U_S \) 3) ........ 9 .. 30 V DC, \( V_{pp} \leq 1\% \)

Operating current ............ 10.5 mA ± 0.5 mA (base current)

Digital communication ........ FF specification ITK Profile 6, Link-Master (LAS), function blocks 2AI, PID, IS, OS, AR

Signal amplitude ............. ± 8 mA

Fault current .................. ≤ 13 mA

Operating values .............. according to IEC 1158-2

Bus connection ............... Fieldbus interface based on IEC 1158-2

Power supply .................. Power supply is achieved dependent on the application by means of segment coupler

File .......................... the actual file can be downloaded from our homepage

Configuration

Software ........................ National Instruments
- NI-FBUS Configurator

Hardware ....................... FBUS interfaces from National Instruments (USB-FBUS and PCMCIA-FBUS)

Control systems ............... FOUNDATION Fieldbus H1 compatible

Failure handling

Substitute value ............ last value or safety value

Safety value .................. adjustable -110 .. +110 % of out

Reset substitute value .... automatically or manual

1) Accuracy acc. ANSI / ISA - SS1.1 - 1979
2) \( U_S \) (max) with explosionproof device < 30 V, otherwise < 42 V
3) With explosionproof device 9 .. 24 V DC
**Operating conditions**

1. **Process temperature**
   - \(-50\, ^\circ\text{C} \ldots +150\, ^\circ\text{C}\)

2. **Pressure rating**
   - acc. to DIN: PN 16, 40, 63, 100, 150
   - acc. to ANSI: Class 150, 300, 600, 900

3. **Ambient temperature**
   - \(-40\, ^\circ\text{C} \ldots +70\, ^\circ\text{C}\)

4. **Relative humidity**
   - up to 100%

5. **Protection**
   - IP 66 (acc. DIN 40 050)

The device can be operated at a class D2 location in accordance with DIN IEC 654, part 1.

**Operation condition effects**

1. **Ambient temperature**
   - \(-10\, ^\circ\text{C} \ldots +70\, ^\circ\text{C}\)

2. **Zero**
   - \(<0.1\% / 10\, ^\circ\text{K}\)\(^4\)

3. **Span**
   - \(<0.07\% / 10\, ^\circ\text{K}\)

4. **Total**
   - \((0.1 \text{ max. sp.} \pm 0.07 \text{ measured value})\% / 10\, ^\circ\text{K}\)
   - \(\text{sp.} = \text{measuring span}\)
   - \(<-10\, ^\circ\text{C} / >+70\, ^\circ\text{C}\) \ldots twice the value

5. **Process temperature**
   - \(<0.1\% / 10\, ^\circ\text{K}\)\(^9\)

6. **Operating pressure**
   - no influence (vacuum resistant)

**Transitional behavior**

**Dynamic behavior**

- **Damping** (90 %-time) \(.0 \ldots 32\, \text{s}\)
- **Switch-on time** \(.7\, \text{s}\)
- **Step response** (63 %-time) \(.250\, \text{ms}\)
- **Update rate** \(.10\, /\, \text{s}\)
- **Long term stability** \(.< 0.2\% / 6\, \text{months at } 20\, ^\circ\text{C}\)\(^9\)

**Noise suppression**

- **Common mode voltage** \(<250\, \text{V}_{\text{eff}}\)
- **Common mode rejection** \(120\, \text{dB}\)
- **Series mode rejection** \(50\, \text{dB}\)
- **Filter** \(\text{Smart Smoothing}\)

---

1) Not with all materials - see Table of Comparison of Materials page 6
2) \(-50\, ^\circ\text{C} \text{ on request}\)
3) Display not readable at \(T < -20\, ^\circ\text{C} \text{ or } T > +70\, ^\circ\text{C}\)
4) For max. measuring span
Materials (Table of Comparison see page 6)

Sensor
Measuring cell ........... 316L (1.4404 / 1.4435)
Fill fluid ................ silicone oil
Filling volume ............ approx. 0.3 cm³
Displacer 204DE .......... 316L (1.4404 / 1.4435),
PTFE, PTFE with 25% carbon or
Hastelloy C
Suspension ............ 316L
(1.4404 / 1.4435 / 1.4436)
Connection flange ........ 316Ti (1.4571)
(Alloy No GD-Al Si 12),
(PTFE with 25% carbon or
Hastelloy C)
Amplifier housing ........ Aluminium
(Alloy No GD-Al Si 12),
Polyurethan coated, or
Stainless Steel 316L (1.4404)
For Sour Gas applications according to NACE Standard
MR-0175-2003:
Diaphragm ............ 316L (1.4404 / 1.4435)
Flange ............... 316Ti (1.4571)

Mounting
Mounting method ........ flange mounted
acc. DIN ........... DN 50, DN 80, DN 100
acc. ANSI ........... 2 inch, 3 inch, 4 inch

Weight
Transmitter ............ see table page 6
Displacer ............ see table page 10

Electrical connection
Cable entry thread ........ M20x1.5 or 1/2-14 NPT
Cable gland and screwed sealing plug have to be ordered separately under model code BUSG ...
For equipment in Ex d version, 1 screwed sealing plug made of stainless steel is included in delivery.
Screw terminals ............ wire cross-section up to 2.5 mm²
Test sockets ............ Ø 2 mm

Electromagnetic compatibility EMC
Operating conditions ........ industrial environment, measuring instruments, living area
Immunity and Emission according to
EN 55011 / IEC - CISPR 11 ........ 2011-4 fulfilled
EN / IEC 61000-4-2, 3, 4, 5, 6, 11 . 2011-9 fulfilled
EN / IEC 61000-6-2, 3, 4 ........... 2011-9 fulfilled
EN / IEC 61326-1 ............... 2006-10 fulfilled
NAMUR recommendation NE 21 . . 2012 fulfilled

SAFETY REQUIREMENTS

CE Label
Electromagnetic compatibility ....... 2004/108/EG
Low-voltage regulation ............. not applicable
Explosion protection acc to ATEX . . 94/9/EG

Safety
According to EN 61010-1
(resp. IEC 1010-1) ........ safety class III
Internal fuses ............ none (or not replaceable by
(customer)
External fuses ............ Limitation of power supplies
for fire protection have to be observed due to EN 61010-1,
appendix F (resp. IEC 1010-1)
### Electrical classification ATEX \(^{1,2}\)

- **Explosion-proof:**
  - AD 931  Housing  II 2 G Ex d IIC T6 Gb  PTB 02 ATEX 1025 X  Zone 1

- **Intrinsically Safe and auxiliary protection:**
  - AID421  Housing  II 2 G Ex d ia IIC T6 Gb  PTB 04 ATEX 2011 X  Zone 1

- **Zone 2:**
  - AID 421  HART electronics  II 3 G Ex ia/ib IIC T4 Gc  Manufacturer’s Declaration  Zone 2

---

### International Certificates

- **FM Certification *:**
  - Intrinsically Safe
  - Nonincendive
  - Explosion proof
  - Dust-Ignitionproof / II, III / 1 / EFG / T6

  - Further protection types of on request -

---

* pending

1) With appropriate order only

2) National requirements have to be observed
### TABLE OF MATERIALS

#### Comparison of Material

<table>
<thead>
<tr>
<th>Code</th>
<th>WNr</th>
<th>DIN</th>
<th>Remarks</th>
<th>equivalent to</th>
</tr>
</thead>
<tbody>
<tr>
<td>X6 CrNiMoTi 17 12 2</td>
<td>1.4571</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X2 CrNiMo 17 13 2</td>
<td>1.4404</td>
<td></td>
<td></td>
<td>~ ASTM Typ 316Ti</td>
</tr>
<tr>
<td>X2 CrNiMo 18 14 3</td>
<td>1.4435</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X5 CrNiMo 17 13 3</td>
<td>1.4436</td>
<td></td>
<td></td>
<td>ASTM Typ 316L</td>
</tr>
<tr>
<td>NiMo 16 Cr 15 W</td>
<td>2.4819</td>
<td>17 744</td>
<td></td>
<td>equivalent to Hastelloy C-276</td>
</tr>
<tr>
<td>GD - AlSi 12</td>
<td>3.2582.05</td>
<td>17 007</td>
<td></td>
<td>Al - Diecasting</td>
</tr>
</tbody>
</table>

#### Service Limits 244LVP

<table>
<thead>
<tr>
<th>Nominal pressure</th>
<th>316 / 316L (1.4404 / 1.4571)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max. operating pressure in bar at temperature in °C</td>
</tr>
<tr>
<td></td>
<td>−50 ... −10</td>
</tr>
<tr>
<td>DIN</td>
<td></td>
</tr>
<tr>
<td>PN 40 DIN 2635</td>
<td>40</td>
</tr>
<tr>
<td>PN 63</td>
<td>63</td>
</tr>
<tr>
<td>PN 100</td>
<td>100</td>
</tr>
<tr>
<td>PN 160</td>
<td>150</td>
</tr>
<tr>
<td>ANSI</td>
<td></td>
</tr>
<tr>
<td>Class 150</td>
<td>19</td>
</tr>
<tr>
<td>Class 300</td>
<td>49</td>
</tr>
<tr>
<td>Class 600</td>
<td>99</td>
</tr>
<tr>
<td>Class 900</td>
<td>148</td>
</tr>
</tbody>
</table>

#### Table of Weights

<table>
<thead>
<tr>
<th>Transmitter, with flange</th>
<th>Weight [kg]</th>
<th>DIN PN</th>
<th>ANSI Class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>16</td>
<td>25</td>
</tr>
<tr>
<td>DN 50 / 2 inch</td>
<td>4.9</td>
<td>4.9</td>
<td>4.9</td>
</tr>
<tr>
<td>DN 80 / 3 inch</td>
<td>7.2</td>
<td>7.2</td>
<td>7.2</td>
</tr>
<tr>
<td>DN 100 / 4 inch</td>
<td>-</td>
<td>7.7</td>
<td>7.7</td>
</tr>
</tbody>
</table>
CONNECTIONS, OPERATIONAL ELEMENTS

1 Cover for terminal compartment
2 Cable gland (as ordered)
3 Plug, interchangable by Pos. 2
4 External ground connection
5 Internal ground connection
6 Terminals (+/-)
7 Test sockets Ø 2 mm integrated in terminals
9 Security lock for Ex d version
10 Cover for amplifier housing (with local display)
14 LCD indicator shows Measuring variable Engineering unit and Messages
21 Local key 1 for local operation
22 Local key 2 for local operation
50 Overvoltage protection
## MODEL CODES 244LVP

<table>
<thead>
<tr>
<th>Intelligent Buoyancy Transmitter with Displacer</th>
<th>244LVP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flange Material:</strong> (Process wetted)</td>
<td>1.4571 (316Ti)</td>
</tr>
<tr>
<td><strong>Sensor Material:</strong> (Process Wetted)</td>
<td>316L / 1.4435 / 1.4404</td>
</tr>
<tr>
<td><strong>Flange Size</strong></td>
<td></td>
</tr>
<tr>
<td>DN 50</td>
<td>5</td>
</tr>
<tr>
<td>DN 80</td>
<td>8</td>
</tr>
<tr>
<td>DN 100 (PN 25 / PN 40 only)</td>
<td>9</td>
</tr>
<tr>
<td>2-Inch</td>
<td>2</td>
</tr>
<tr>
<td>3-Inch</td>
<td>3</td>
</tr>
<tr>
<td>4-Inch</td>
<td>4</td>
</tr>
<tr>
<td><strong>Flange Pressure Rating &amp; Contact Face</strong></td>
<td>(a)</td>
</tr>
<tr>
<td>PN16 to PN40, B1 (DIN EN 1092-1)</td>
<td>B1</td>
</tr>
<tr>
<td>PN16 to PN40, B2 (DIN EN 1092-1)</td>
<td>B2</td>
</tr>
<tr>
<td>PN63, B2 (DIN EN 1092-1)</td>
<td>B3</td>
</tr>
<tr>
<td>PN100, B2 (DIN EN 1092-1)</td>
<td>B4</td>
</tr>
<tr>
<td>PN160, B2 (DIN EN 1092-1)</td>
<td>B5</td>
</tr>
<tr>
<td>PN16 to PN40, D (DIN EN 1092-1)</td>
<td>D1</td>
</tr>
<tr>
<td>PN63, D (DIN EN 1092-1)</td>
<td>D2</td>
</tr>
<tr>
<td>PN100, D (DIN EN 1092-1)</td>
<td>D3</td>
</tr>
<tr>
<td>PN160, D (DIN EN 1092-1)</td>
<td>D4</td>
</tr>
<tr>
<td>ANSI Class 150, RF RF/SF (RF125)</td>
<td>R1</td>
</tr>
<tr>
<td>ANSI Class 300, RF RF/SF (RF125)</td>
<td>R2</td>
</tr>
<tr>
<td>ANSI Class 600, RF RF/SF (RF125)</td>
<td>R3</td>
</tr>
<tr>
<td>ANSI Class 900, RF RF/SF (RF125)</td>
<td>R4</td>
</tr>
<tr>
<td>ANSI Class 150, RJF</td>
<td>J1</td>
</tr>
<tr>
<td>ANSI Class 300, RJF</td>
<td>J2</td>
</tr>
<tr>
<td>ANSI Class 600, RJF</td>
<td>J3</td>
</tr>
<tr>
<td>ANSI Class 900, RJF</td>
<td>J4</td>
</tr>
<tr>
<td><strong>Version</strong></td>
<td>N</td>
</tr>
<tr>
<td>Base Version LEVELSTAR</td>
<td></td>
</tr>
<tr>
<td><strong>Cable Entry</strong></td>
<td>M</td>
</tr>
<tr>
<td>M20x1.5 without Cable Gland</td>
<td></td>
</tr>
<tr>
<td>1/2-14 NPT without Cable Gland</td>
<td>N</td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td>H</td>
</tr>
<tr>
<td>HART</td>
<td></td>
</tr>
<tr>
<td>FOUNDATION Fieldbus H1</td>
<td>(o)</td>
</tr>
<tr>
<td><strong>Electrical Classification</strong></td>
<td>B</td>
</tr>
<tr>
<td>ATEX intrinsic safe, Zone 1 - IIC T4</td>
<td>1C4</td>
</tr>
<tr>
<td>ATEX intrinsic safe, Zone 1 - IIC T6</td>
<td>1C6</td>
</tr>
<tr>
<td>ATEX intrinsic safe, Zone 2 - IIC T4</td>
<td>2C4</td>
</tr>
<tr>
<td>ATEX intrinsic safe, Zone 2 - IIC T6</td>
<td>2C6</td>
</tr>
<tr>
<td>ATEX intrinsic safe, Zone 1 - IIB T6</td>
<td>D1B</td>
</tr>
<tr>
<td>ATEX explosionproof, Zone 1 - IIC T6</td>
<td>D1C</td>
</tr>
<tr>
<td>FM Nonincendive</td>
<td>(m)</td>
</tr>
<tr>
<td>FM Explosionproof</td>
<td>(d)</td>
</tr>
<tr>
<td>GOST-R Intrinsically Safe Zone 1 - IIC T6</td>
<td>GA1</td>
</tr>
<tr>
<td>GOST-R Intrinsically Safe Zone 2 - IIC T6</td>
<td>GA2</td>
</tr>
<tr>
<td>GOST-R explosion proof Zone 1 - IIC T6</td>
<td>GD1</td>
</tr>
<tr>
<td>Nepsi Intrinsically Safe T6</td>
<td>(d)</td>
</tr>
<tr>
<td>Nepsi explosion proof</td>
<td>(d)</td>
</tr>
<tr>
<td>Brasil Intrinsically Safe T6</td>
<td>(d)</td>
</tr>
<tr>
<td>Brasil explosion proof</td>
<td>(d)</td>
</tr>
</tbody>
</table>

(continued on next page)
## MODEL CODES 244LVP (continued)

<table>
<thead>
<tr>
<th>Electrical Classification (cont’d)</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSA Explosionproof (m)(d) CDZ</td>
<td>Housing Complete Stainless Steel Without</td>
</tr>
<tr>
<td>FM Intrinsically Safe (m) FAA</td>
<td>External Pushbuttons</td>
</tr>
<tr>
<td>CSA Intrinsically Safe (d) CAA</td>
<td>Interface measurement, Displacer &gt; 2.5 kg</td>
</tr>
<tr>
<td>For General Purpose Areas, not Explosionproof ZZZ</td>
<td>(5.5 lb) (t)</td>
</tr>
</tbody>
</table>

### OPTIONS

- Housing Complete Stainless Steel Without External Pushbuttons: **-H**
- External Pushbuttons for Maintenance: **-M**
- Interface measurement, Displacer > 2.5 kg (5.5 lb): **-I**
- Stainless Steel Label Fixed With Wire: **-L**
- Stainless Steel Label Fixed On Amplifier: **-F**

### Certificates

- EN 10204-2.1, Certificate Of Compliance: **-1**
- EN 10204-2.2, Specific Test Report (Calibration): **-2**
- EN 10204-3.1, Inspection Certificate Of Process Wetted Metallic Material: **-3**
- Comply with NACE Standard MR-01-75: **-6**
- SIL 2 Certificate: **-Q**
- Amplifier for selected code (244LVP-********-X): **-X**

(a) Available with Flange Size 5, 8, 9
(b) Available with Flange Size 2, 3, 4
(c) Available with Flange Size 2, 3
(d) Pending
(e) Only with Sensor Material S
(f) Restrictions concerning the limit of application for the used materials are considerable (NACE Standard MR-0175/2003, resp. ISO 15156-3)
(i) Only with Electrical Classification 1C4, 1C6, D1B, D1C, 2C4, GA1, GA2, GD1, NA6, NDZ, BA6, BDZ, ZZZ
(k) Pending for Version N 1C6, 1B6
(m) Only Version N
(n) Not with Options -H
(o) With Electrical Classification D1B or ZZZ
(r) Available with Flange Size 8, 9
(s) Available with Flange Size 3, 4
(t) Only with Flange Pressure and Contact Face: B1, B2, B3, B4, D1, D2, D3, J1, J2, J3, J4, R1, R2, R3, R4
## Accessories for Transmitter 244LVP LevelStar: Displacer 204DE

### Typical Dimensions and Weights for Density Ranges $\Delta \rho$

<table>
<thead>
<tr>
<th>Material</th>
<th>Code</th>
<th>$\Delta \rho$</th>
<th>Code</th>
<th>$\Delta \rho$</th>
</tr>
</thead>
<tbody>
<tr>
<td>316L (1.4404 / 1.4435)</td>
<td>-S (PN 100)</td>
<td>$\rho$</td>
<td>-T (PN 40 / 63)</td>
<td>-S (PN 250)</td>
</tr>
</tbody>
</table>

### Density Ranges

<table>
<thead>
<tr>
<th>$\Delta \rho$</th>
<th>Code</th>
<th>$\rho$</th>
<th>Code</th>
<th>$\rho$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$250 \ldots 1500 \text{ kg/m}^3$</td>
<td>-S (PN 100)</td>
<td>300</td>
<td>-T (PN 40 / 63)</td>
<td>60</td>
</tr>
<tr>
<td>$300 \ldots 600 \text{ kg/m}^3$</td>
<td>-S (PN 250)</td>
<td>400</td>
<td>-S (PN 500)</td>
<td>200</td>
</tr>
<tr>
<td>$400 \ldots 2000 \text{ kg/m}^3$</td>
<td>-S (PN 250)</td>
<td>300</td>
<td>-S (PN 500)</td>
<td>1500</td>
</tr>
<tr>
<td>$200 \ldots 1500 \text{ kg/m}^3$</td>
<td>-S (PN 100 / 160)</td>
<td>300</td>
<td>-S (PN 100 / 160)</td>
<td>3000</td>
</tr>
</tbody>
</table>

### Typical Dimensions and Weights

<table>
<thead>
<tr>
<th>Code</th>
<th>$\rho$</th>
<th>Code</th>
<th>$\rho$</th>
</tr>
</thead>
<tbody>
<tr>
<td>-S (PN 100)</td>
<td>300</td>
<td>-T (PN 40 / 63)</td>
<td>60</td>
</tr>
<tr>
<td>-S (PN 250)</td>
<td>400</td>
<td>-S (PN 500)</td>
<td>200</td>
</tr>
<tr>
<td>-S (PN 250)</td>
<td>300</td>
<td>-S (PN 500)</td>
<td>1500</td>
</tr>
<tr>
<td>-S (PN 100 / 160)</td>
<td>300</td>
<td>-S (PN 100 / 160)</td>
<td>3000</td>
</tr>
</tbody>
</table>

### Accessories

For Displacer Chamber 204DC, Flange combination 204FK and Cover Flange Kit 204BCF see PSS EML0901, 204xx Accessories for Buoyancy Transmitter.
### MODEL CODES 204DE

**Displacer for Buoyancy Transmitters from 2N buoyancy up to 20N**

#### RANGE OF APPLICATION: (a)

- **Liquid Level - Media: Liquid / Gas or Air**
  - (Density difference = 250 kg/m³ to 2000 kg/m³)
  - ( = 9x10⁻³ lbm/in³ to 72.2x10⁻³ lbm/in³) [S]
- **Interface Level / Density - Media: Liquid 1 / Liquid 2**
  - (Density difference = 300 kg/m³ to 600 kg/m³)
  - ( = 10.8x10⁻³ lbm/in³ to 22.7x10⁻³ lbm/in³) [T]

#### DISPLACER MATERIAL:

- 316L (1.4404 / 1.4435 / 1.4571) [S]
- 321 (1.4541) [H]
- PTFE (not for applications in Zone 0) [P]
- PTFE with 25% Carbon [O]
- Hastelloy C [C]
- Inconel 625 (2.4856) [R]
- Monel 400 (2.4360) [M]
- Titan (3.7035) [T]

#### PRESSURE RATING:

- Up to PN 100 / Class 600 [D]
- Up to PN 160 / Class 900 [E]
- Up to PN 250 / Class 1500 [F]
- Up to PN 500 / Class 2500 [G]

#### SUITABLE FOR FLANGE SIZE: (at Top of vessel/chamber)

- DN 50: 0
- DN 70: 1
- DN 80: 2
- DN 100: 3
- DN 150: 4
- 2 inch: 5
- 3 inch: 6
- 4 inch: 7
- 6 inch: 8

#### DISPLACER LENGTH "L": (inches are approx.)

- for Displacer Material codes P and O:
  - 300 mm (12 in) to 2000 mm (79 in) without partitioning [A]
  - 2001 mm (79 in) to 4000 mm (157 in) One partition point [B]
  - 4001 mm (157 in) to 6000 mm (236 in) Two partition points [C]
  - 6001 mm (236 in) to 8000 mm (315 in) Three partition points [D]
  - 8001 mm (315 in) to 10000 mm (394 in) Four partition points [E]
  - 10001 mm (394 in) to 12000 mm (472 in) Five partition points [F]

- for Displacer Material S, H, C, R, M and T:
  - 300 mm (12 in) to 3000 mm (118 in) without partitioning [K]
  - 3001 mm (118 in) to 6000 mm (236 in) One partition point [L]
  - 6001 mm (236 in) to 9000 mm (354 in) Two partition points [M]
  - 9001 mm (354 in) to 12000 mm (472 in) Three partition points [N]
  - 12001 mm (472 in) to 15000 mm (591 in) Four partition points [O]

#### MATERIAL AND LENGTH OF THE SUSPENSION: (Length "b") (d)

- 316L / 1.4404 / ... Standard length of Suspension [S]
- 316L / 1.4404 / ... Customized Suspension Length [S]
- 321 / 1.4541 Standard length of Suspension [H]
- 321 / 1.4541 Customized Suspension Length [H]
- Hastelloy C Standard length of Suspension [C]
- Hastelloy C Customized Suspension Length [C]
- Inconel Standard length of Suspension [I]
- Inconel Customized Suspension Length [I]
- Monel Standard length of Suspension [M]
- Monel Customized Suspension Length [M]
- Titan Standard length of Suspension [T]
- Titan Customized Suspension Length [T]

(continued on next page)
MODELS 204DE (continued)

OPTIONS:

For application in Zone 0 (Additional grounding rope) (not available with Displacer Material: P) ..............-E
Damping Spring (Mat. 1.4310, max. 250 °C (482 °F)) .........................................................-D
Damping Spring (Mat. HC, max 350 °C (662 °F)) .....................................................................-C
Free of oil and fat ......................................................................................................................-O
Density difference > 300 kg/m³ .................................................. (a) .................................................................-K
Tag No. Labeling Stainless Steel Label Fixed With Wire (Text required) ..............................................-L

Certificates

EN 10204-2.1 Certificate Of Compliance .........................................................................................-1
EN 10204-3.1 Inspection Certificate Of Process Wetted Material (not available with Displacer Material: P and O) ....-3
PMI - Test (not available with Displacer Material: P and O) ..........................................................-5

(a) Upper and Lower Medium Density required (at operating temperature)
(b) Only in connection with Modelcode 204DC
(c) Exact length required (Contact face of flange to upper end of displacer)
(d) +/- 8 mm (+/- 0.3 inch)
(e) On ECEP request
(f) Required for 244LD with Option -G
(g) Only with PRESSURE RATING: D. Consult factory if pressure rating is F or G
(h) Option K required
DIMENSIONS 244LVP with Displacer Element 204DE

1 Connecting compartment cover
2 Cable entry with screwed gland
3 Amplifier housing
4 Disconnection of sensor from the amplifier
5 Connection flange (as per DIN / ANSI)
6 Measuring cell
7 Suspension
8 Displacer 204DE
9 Steel label with Tag.No.

* Suited to the dimensions of FOXBORO - displacer, other lengths on request
** L (measuring range) see table page 10.