LMP 307T
Level and Temperature Transmitter
Stainless Steel Sensor

accuracy according to IEC 60770:
standard: 0.35 % FSO
option: 0.25 % FSO

Nominal pressure / nominal temperature
from 0 ... 1 mH₂O up to 0 ... 250 mH₂O
from 0 ... 30 °C up to 0 ... 70 °C
others on request

Output signals
2-wire: 4 ... 20 mA (pressure)
2-wire: 4 ... 20 mA (temperature)

Special characteristics
► diameter 26,5 mm
► separate output signals for pressure and temperature ranges
► easy handling
► low maintenance and wiring costs

Optional versions
► drinking water certificate according to DVGW and KTW
► different kinds of cables
► different kinds of seal materials
► customer specific versions

The stainless steel submersible probe LMP 307T, has been developed for continuous level and temperature measurement in water and in clean to lightly-soiled liquids.

The advantage: simultaneous recording of level and temperature with separate independent signal amplification. The maintenance and wiring costs are considerably reduced.

In addition to classical signal processing of the level, an additional signal circuit independent of the level which converts the temperature signal into a 4 ... 20 mA analogue signal in 2-wire technology is provided.

Typical application areas are, for example, drinking water purification, monitoring of rainwater overflow basins and river courses, in addition to level measurement in containers or tank batteries.

Preferred areas of use are

Water / filtrated sewage
  e.g. drinking water system
  water recycling

Fuel / Oil
  e.g. tank farm

www.sensorsone.com
**Input pressure range**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>0.1</th>
<th>0.16</th>
<th>0.25</th>
<th>0.4</th>
<th>0.6</th>
<th>1</th>
<th>1.6</th>
<th>2.5</th>
<th>4</th>
<th>6</th>
<th>10</th>
<th>16</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal pressure gauge [bar]</td>
<td>0.1</td>
<td>0.16</td>
<td>0.25</td>
<td>0.4</td>
<td>0.6</td>
<td>1</td>
<td>1.6</td>
<td>2.5</td>
<td>4</td>
<td>6</td>
<td>10</td>
<td>16</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Level [mH₂O]</td>
<td>1</td>
<td>1.6</td>
<td>2.5</td>
<td>4</td>
<td>6</td>
<td>10</td>
<td>16</td>
<td>25</td>
<td>40</td>
<td>60</td>
<td>100</td>
<td>160</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Overpressure [bar]</td>
<td>0.5</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>20</td>
<td>40</td>
<td>40</td>
<td>80</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Burst pressure [bar]</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>3</td>
<td>7.5</td>
<td>7.5</td>
<td>15</td>
<td>15</td>
<td>25</td>
<td>50</td>
<td>50</td>
<td>120</td>
<td>120</td>
<td></td>
</tr>
</tbody>
</table>

**Input temperature range**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>0.1</th>
<th>0.16</th>
<th>0.25</th>
<th>0.4</th>
<th>0.6</th>
<th>1</th>
<th>1.6</th>
<th>2.5</th>
<th>4</th>
<th>6</th>
<th>10</th>
<th>16</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature measuring range standard</td>
<td>0 ... 30 °C</td>
<td>0 ... 50 °C</td>
<td>0 ... 70 °C</td>
<td>others on request</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 min. temperature range: 30°C; max. temperature range: 80°C; min. temperature: -10°C; max. temperature: 70 °C

**Output signal / Supply**

- 2-wire (pressure) 2: 4 ... 20 mA / Vₕ = 10 ... 30 V_{OC}
- 2-wire (temperature): 4 ... 20 mA / Vₕ = 10 ... 30 V_{OC}

2 the circuits are galvanically isolated from each other

**Performance**

- **Accuracy (pressure)³**: standard: nominal pressure < 0.4 bar: ≤ ± 0.5 % FSO
  option 1: nominal pressure ≥ 0.4 bar: ≤ ± 0.35 % FSO
- **Accuracy (temperature)⁴**: ≤ ± 1 °C
- **Permissible load** Rₘₐₓ = [(Vₛ – Vₛ min) / 0.02 A] Ω
- **Influence effects**
  - supply: 0.05 % FSO / 10 V
  - load: 0.05 % FSO / kΩ
- **Long term stability** ≤ ± 0.1 % FSO / year at reference conditions
- **Response time** < 10 ms (for output signal 2-wire (pressure))

³ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

⁴ Pt 100 class B; compensation time up to 1h depending on constant temperature and environmental respectively mass conditions

**Thermal effects (Offset and Span)**

<table>
<thead>
<tr>
<th>Nominal pressure Pₙ [bar]</th>
<th>&lt; 0.40</th>
<th>≥ 0.40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tolerance band [% FSO]</td>
<td>≤ 1</td>
<td>≤ 0.75</td>
</tr>
<tr>
<td>in compensated range [°C]</td>
<td>0 ... 70</td>
<td></td>
</tr>
</tbody>
</table>

**Permissible temperatures**

- **Permissible temperatures**
  - medium: -10 ... 70 °C
  - storage: -25 ... 70 °C

**Electrical protection**

- **Short-circuit protection** permanent
- **Reverse polarity protection** no damage, but also no function
- **Electromagnetic compatibility** emission and immunity according to EN 61326

5 additional external overvoltage protection unit in terminal box KL 1 or KL 2 with atmospheric pressure reference available on request

**Electrical connection**

- **Cable with sheath material**: PVC (-5 ... 70 °C) grey
- **PUR (-10 ... 70 °C) black**
- **FEP (-10 ... 70 °C) black**
- **TPE-U (-10 ... 70 °C) blue (without/with drinking water certificate)**

6 cable with integrated air tube for atmospheric pressure reference

7 do not use freely suspended probes with an FEP cable if effects due to highly charging processes are expected

**Materials (media wetted)**

- **Housing** stainless steel 1.4404 (316L)
- **Seals** FKM, EPDM (without/with drinking water certificate) others on request
- **Diaphragm** stainless steel 1.4435 (316L)
- **Protection cap** POM-C

**Miscellaneous**

- **Drinking water certificate** according to DVGW W 270 and UBA KTW (with order the indication "with drinking water certificate" is necessary)

8 only possible with EPDM seal in combination with TPE-U cable
Wiring diagram

2x2-wire-system (current)

Pin configuration

<table>
<thead>
<tr>
<th>Electrical connection</th>
<th>Cable colours (IEC 60757)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply P+</td>
<td>wh (white)</td>
</tr>
<tr>
<td>Supply P-</td>
<td>bn (brown)</td>
</tr>
<tr>
<td>Supply T+</td>
<td>gy (gray)</td>
</tr>
<tr>
<td>Supply T-</td>
<td>pk (pink)</td>
</tr>
<tr>
<td>Shield</td>
<td>gnye (green-yellow)</td>
</tr>
</tbody>
</table>

Dimensions (in mm)

- Ø7.4
- 128
- Ø28.5
**Mounting flange with cable gland**

### Technical data

<table>
<thead>
<tr>
<th>Suitable for</th>
<th>all probes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flange material</td>
<td>stainless steel 1.4404 (316L)</td>
</tr>
<tr>
<td>Material of cable gland</td>
<td>standard: brass, nickel plated on request: stainless steel 1.4305 (303); plastic</td>
</tr>
<tr>
<td>Seal insert</td>
<td>material: TPE (ingress protection IP 68)</td>
</tr>
<tr>
<td>Hole pattern</td>
<td>according to DIN 2507</td>
</tr>
<tr>
<td><strong>Version</strong></td>
<td><strong>Size (in mm)</strong></td>
</tr>
<tr>
<td>DN25 / PN40</td>
<td>D = 115, k = 85, b = 18, n = 4, d= 14</td>
</tr>
<tr>
<td>DN50 / PN40</td>
<td>D = 165, k = 125, b = 20, n = 4, d= 18</td>
</tr>
<tr>
<td>DN80 / PN16</td>
<td>D = 200, k = 160, b = 20, n = 8, d= 18</td>
</tr>
<tr>
<td><strong>Ordering type</strong></td>
<td><strong>Ordering code</strong></td>
</tr>
<tr>
<td>DN25 / PN40 with cable gland brass, nickel plated</td>
<td>ZMF2540</td>
</tr>
<tr>
<td>DN50 / PN40 with cable gland brass, nickel plated</td>
<td>ZMF5040</td>
</tr>
<tr>
<td>DN80 / PN16 with cable gland brass, nickel plated</td>
<td>ZMF8016</td>
</tr>
</tbody>
</table>

### Terminal clamp

#### Technical data

<table>
<thead>
<tr>
<th>Suitable for</th>
<th>all probes with cable Ø 5.5 ... 10.5 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>standard: steel, zinc plated optionally: stainless steel 1.4301 (304)</td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 160 g</td>
</tr>
<tr>
<td><strong>Ordering type</strong></td>
<td><strong>Ordering code</strong></td>
</tr>
<tr>
<td>Terminal clamp, steel, zinc plated</td>
<td>Z100528</td>
</tr>
<tr>
<td>Terminal clamp, stainless steel 1.4301 (304)</td>
<td>Z100527</td>
</tr>
</tbody>
</table>

### Display program

- **CIT 200**: Process display with LED display
- **CIT 250**: Process display with LED display and contacts
- **CIT 300**: Process display with LED display, contacts and analogue output
- **CIT 350**: Process display with LED display, bargraph, contacts and analogue output
- **CIT 400**: Process display with LED display, contacts, analogue output and Ex-approval
- **CIT 600**: Multichannel process display with graphics-capable LC display
- **CIT 650**: Multichannel process display with graphics-capable LC display and datalogger
- **CIT 700**: Multichannel process display with graphics-capable TFT monitor, touchscreen and contacts
- **PA 440**: Field display with 4-digit LC display

© 2018 The specifications given in this document may be subject to modifications. We reserve the right to make modifications to the specifications and materials.
## Ordering code LMP 307T

<table>
<thead>
<tr>
<th>Pressure</th>
<th>in bar</th>
<th>in mH₂O</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>0.1</td>
<td>0.10</td>
<td>0.10</td>
</tr>
<tr>
<td>0.2</td>
<td>0.20</td>
<td>0.20</td>
</tr>
<tr>
<td>0.3</td>
<td>0.30</td>
<td>0.30</td>
</tr>
<tr>
<td>0.4</td>
<td>0.40</td>
<td>0.40</td>
</tr>
<tr>
<td>0.5</td>
<td>0.50</td>
<td>0.50</td>
</tr>
<tr>
<td>0.6</td>
<td>0.60</td>
<td>0.60</td>
</tr>
<tr>
<td>0.7</td>
<td>0.70</td>
<td>0.70</td>
</tr>
</tbody>
</table>

### Input [mH₂O] [bar]

<table>
<thead>
<tr>
<th>Pressure</th>
<th>in bar</th>
<th>in mH₂O</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8</td>
<td>0.80</td>
<td>0.80</td>
</tr>
<tr>
<td>0.9</td>
<td>0.90</td>
<td>0.90</td>
</tr>
<tr>
<td>1.0</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>1.1</td>
<td>1.10</td>
<td>1.10</td>
</tr>
<tr>
<td>1.2</td>
<td>1.20</td>
<td>1.20</td>
</tr>
<tr>
<td>1.3</td>
<td>1.30</td>
<td>1.30</td>
</tr>
<tr>
<td>1.4</td>
<td>1.40</td>
<td>1.40</td>
</tr>
<tr>
<td>1.5</td>
<td>1.50</td>
<td>1.50</td>
</tr>
<tr>
<td>1.6</td>
<td>1.60</td>
<td>1.60</td>
</tr>
</tbody>
</table>

### Input temperature [°C]

<table>
<thead>
<tr>
<th>Temperature</th>
<th>30</th>
<th>50</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.00</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.00</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Housing

<table>
<thead>
<tr>
<th>Material</th>
<th>Stainless steel 1.4404 (316L)</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>customer</td>
<td>9</td>
</tr>
</tbody>
</table>

### Diaphragm

<table>
<thead>
<tr>
<th>Material</th>
<th>Stainless steel 1.4408 (316L)</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>customer</td>
<td>9</td>
</tr>
</tbody>
</table>

### Output pressure

<table>
<thead>
<tr>
<th>Pressure</th>
<th>4 ... 20 mA / 2-wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>1</td>
</tr>
</tbody>
</table>

### Output temperature

<table>
<thead>
<tr>
<th>Pressure</th>
<th>4 ... 20 mA / 2-wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>1</td>
</tr>
</tbody>
</table>

### Seals

<table>
<thead>
<tr>
<th>Material</th>
<th>FKM</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EPDM</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>EPDM</td>
<td>3T</td>
</tr>
</tbody>
</table>

### Accuracy

<table>
<thead>
<tr>
<th>Pressure</th>
<th>Standard for Pₚ ≥ 0.4 bar</th>
<th>0.35 % FSO</th>
<th>Standard for Pₚ &lt; 0.4 bar</th>
<th>0.5 % FSO</th>
<th>Option 1 for Pₚ ≥ 0.4 bar</th>
<th>0.25 % FSO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>customer</td>
<td>3</td>
<td>customer</td>
<td>5</td>
<td>customer</td>
<td>2</td>
</tr>
</tbody>
</table>

### Electrical connection

<table>
<thead>
<tr>
<th>Cable</th>
<th>PVC cable</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PUR cable</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>FEP cable</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>TPE-U cable</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>TPE-U cable</td>
<td>4</td>
</tr>
</tbody>
</table>

### Cable length

<table>
<thead>
<tr>
<th>Length</th>
<th>PVC</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 m</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Special version

<table>
<thead>
<tr>
<th>Length</th>
<th>PVC</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 m</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

1. Drinking water certification only possible with EPDM seal (code 3T) in combination with TPE-U cable (code F).
2. Cable with integrated air tube for atmospheric pressure reference.

Standard lengths 3 / 5 / 10 / 15 / 20 m are available from stock, special lengths are manufactured order-related.