1. Product description

Application according to instructions
The probes USE3000, USE6000 and USE15000 are sensors for level measuring of liquid media in non-explosive areas in tank systems, the probes XM and XT outside at tank systems. The probes USE3200, USE6200, USE15200, XM(i) and XT(i) are sensors for level measuring of liquid media in explosive areas and must be used only according to Ex-approval TÜV 01 ATEX 1717. The probes USE3200-... USE6200-... and USE15200-... are installed in explosive areas category 1 (Zone 0), whereas the terminal box has to be located in category 2 (Zone 1). The probes Type XMI-... and XTi-... without float are use only in explosive areas category 2 (Zone 1). The transducer MU3L transforms the level-dependent resistance signal of the probes (for non-explosive areas) into an analog output signal of 4...20 mA and is mounted in the terminal box of the probe (KLS). The transducer MUEx transforms the level-dependent resistance signal of the probes (for explosive areas) into an analog output signal of 4...20 mA and is mounted in the terminal box of the probe (KLS).

2. Installation

The transmitters can be installed in the pressureless tank from outside through the tank top or tank bottom by using a mounting plug or flange. The mounting position is vertical with a maximum angle of inclination of 30 degrees. The maximum operating pressure (depends on the mounting elements and the float) must not be exceeded. The electrical connection has to be according to the connection scheme shown inside the cover of the terminal box. The supply voltage shown on the type label must not be exceeded. Please note the output signal shown on the type label.

3. Operation

During operation the float of the probe moves up and down with the upper liquid level and produces a resistance (voltage divider signal proportional to the tank level. This signal can be evaluated directly or be transformed into an 2-wire 4...20mA current output signal. A standard built-in wire-break protection reduces the output current to 3.5 mA in case of wire break. The level evaluation / display is possible with Barksdale UAS / UAD-units as well as with other data acquisition units (e.g. SPS). Customer specific sensor or transmitter adjustments are available, please note special documentation.

4. Maintenance

The USE-probes are maintenance-free in non-depositing media. In media with residues the sensor as well as the float must be wiped off regularly depending on the degree of contamination. The MU3L and MUEx-transducers are maintenance-free.

Probe accuracy (without transducer)
Depending on requirements and model various screen sizes are available:
R12 - (1/4" = 6.4 mm), accuracy approx. 0.3% bei 3000 mm - standard
R08 - (1/6" = 4.2 mm), accuracy approx. 0.1% bei 3000 mm - on request

The measuring accuracy of the probes can be calculated with following formula (depending on the measuring length):

\[
\pm \frac{(\text{screen : 2})}{\text{Measur. length Lm}} \times 100\%
\]

e. g.: \( \pm \frac{(6.4 \text{ mm : 2})}{1000 \text{ mm}} \times 100\% = 0.32\% \)

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Art.-Nr.: 923-1103
Index F, 25. 07. 2003
Due to technical changes
### Technical Data

(Necessary data for Ex-probes)

<table>
<thead>
<tr>
<th>Model</th>
<th>USE 3200</th>
<th>USE 6200</th>
<th>USE 15200</th>
<th>XMi</th>
<th>XTi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total length L₀</td>
<td>max. 3000 mm</td>
<td>max. 6000 mm</td>
<td>max. 15000 mm</td>
<td>max. 6000 mm</td>
<td>max. 6000 mm</td>
</tr>
<tr>
<td>Float</td>
<td>VX 44</td>
<td>VX 52</td>
<td>VX 80</td>
<td>BN 42, Ø 42 mm, oval</td>
<td>HY 102</td>
</tr>
<tr>
<td>Min. spec. gravity in g/cm³</td>
<td>0,9</td>
<td>0,73</td>
<td>0,5</td>
<td>0,62</td>
<td>0,55</td>
</tr>
<tr>
<td>Max. operating pressure (bar)</td>
<td>15</td>
<td>25</td>
<td>16</td>
<td>32</td>
<td>15</td>
</tr>
<tr>
<td>Max. temperature (Medium)</td>
<td>T₁...T₄ to +100 °C</td>
<td>T₁...T₄ to +100 °C</td>
<td>T₁...T₅ to +60 °C</td>
<td>T₁...T₅ to +60 °C</td>
<td>T₁...T₄ to +100 °C</td>
</tr>
<tr>
<td></td>
<td>T₅ to +65 °C</td>
<td>T₅ to +65 °C</td>
<td>T₅ to +65 °C</td>
<td>T₆ to +50 °C</td>
<td>T₆ to +50 °C</td>
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<td></td>
<td>T₆ to +50 °C</td>
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<td>T₆ to +50 °C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Approvals

- USE 3200: TÜV 01 ATEX 1717
- USE 6200: TÜV 01 ATEX 1717
- USE 15200: TÜV 01 ATEX 1717

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**USE 3200**

- Ref. edge
- Immersion depth at density 1
- L₀ = LM + 26 + float height + X
- X = 0 mm (Flange) 20 mm (T₂)

**USE 6200**

- Ref. edge
- Immersion depth at density 1
- L₀ = LM + 26 + float height + X
- X = 0 mm (Flange) 20 mm (T₂)

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**USE 15200**

**XMi / XTi**

- Headless screw
- Clamp block (XMi)
- Transducer (XTi)
- Special

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Barksdale
## Technical Data

<table>
<thead>
<tr>
<th>Model</th>
<th>USE 3000</th>
<th>USE 6000</th>
<th>XM</th>
<th>XT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total length $L_0$</td>
<td>max. 3000 mm</td>
<td>max. 6000 mm</td>
<td>max. 6000 mm</td>
<td>max. 6000 mm</td>
</tr>
<tr>
<td>Float</td>
<td>VA 44</td>
<td>VA 52</td>
<td>VA 80</td>
<td></td>
</tr>
<tr>
<td>Min. spec. gravity in g/cm³</td>
<td>0.9</td>
<td>0.74</td>
<td>0.5</td>
<td>0.62</td>
</tr>
<tr>
<td>Max. operating pressure (bar)</td>
<td>15</td>
<td>25</td>
<td>16</td>
<td>32</td>
</tr>
<tr>
<td>Max. temperature (Medium)</td>
<td>$-10^\circ\text{C}...+90^\circ\text{C}$ - Standard $-50^\circ\text{C}...+150^\circ\text{C}$ - High temp.</td>
<td>$-10^\circ\text{C}...+90^\circ\text{C}$ - Standard $-50^\circ\text{C}...+150^\circ\text{C}$ - High temp.</td>
<td>$-10^\circ\text{C}...+90^\circ\text{C}$ - Stand. $-50^\circ\text{C}...+150^\circ\text{C}$ - H. temp.</td>
<td>$-10^\circ\text{C}...+90^\circ\text{C}$ - Stand. $-50^\circ\text{C}...+150^\circ\text{C}$ - H. temp.</td>
</tr>
</tbody>
</table>

### USE 3000

- **Tank screw**
  - DIN 910

- **A:** L0 - Reference edge
- **B:** Immersion depth at density 1
- **L0** = $L_0 = L_0 + 20 + \text{float height} + X$
- **X:** 0 mm (Flange) 20 mm (T2)

### USE 6000

- **Tank screw**
  - DIN 910

- **A:** L0 - Reference edge
- **B:** Immersion depth at density 1
- **L0** = $L_0 = L_0 + 20 + \text{float height} + X$
- **X:** 0 mm (Flange) 20 mm (T2)

### XM / XT

- **Seal**
- **Clamp block (XM)**
- **Transducer (XT)**
- **Headless screw**
- **Hose clamp**
- **Board with shrink sleeve**

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**Note:** The diagrams illustrate the installation and connection details for each model. The technical specifications are crucial for ensuring proper installation and maintenance of the devices.
### Technical Data MU3L

**Power Supply**: 8...35 V DC  
**Output Signal**: 4...20 mA  
**Updating Time**: 135 ms  
**Load**:  
\[
\left( \frac{UB-8}{0.023 \, \text{ohm}} \right) < \pm 0.01\% \text{ f.s.} / 100 \, \text{Ohm}
\]

**Signal at Wire Breaking**: 3.5 mA  
**Response Time**: 0.33 sec  
**Accuracy**: 0.2% f.s.  
**Max. Ambient Temperature**: -40 °C...+85 °C  
**Level Indication Circuit**: 3-wire potentiometer circuit

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### Technical Data MUEX

**Power Supply**: 8...24 V DC  
**Intrinsically safe power supply**:  
**Output Signal**: 4...20 mA  
**Updating Time**: 135 ms  
**Load**:  
\[
\left( \frac{UB-8}{0.023 \, \text{ohm}} \right) < \pm 0.01\% \text{ f.s.} / 100 \, \text{Ohm}
\]

**Signal at Wire Breaking**: 3.5 mA  
**Response Time**: 0.33 sec  
**Accuracy**: 0.2% f.s.  
**Max. Ambient Temperature**: T1 to T4: -40 °C...+85 °C  
T5 to T6: -40 °C...+60 °C  
**Level Indication Circuit**: 3-wire potentiometer circuit  
**Approval**: Cenelec EEx ia IIC T1...T6  
ATEX Ex II 1 G, application in category 1, 2, 3  
**Certificate No.**: DEMKO 99 ATEX 126 964  
**Ex-data**:  
\[
\begin{align*}
U & = 24 \, \text{V DC} \\
I & = 120 \, \text{mA DC} \\
P & = 0.84 \, \text{W} \\
L & \leq 10 \, \mu\text{H} \\
C & \leq 1 \, \text{nF}
\end{align*}
\]