AIR-BUBBLE-DETECTION
from the outside
contact less
with ultrasound
THROUGH TUBES

SONOCHECK
Ultrasonic sensors

patented principle
highest safety for patients
easy + quickly
reasonably priced
Application

- The bubble detector serves for the detection of air bubbles in liquid filled plastic tubes. The bubble detector is also called air bubble detector (ABD) or bubble catcher in medicine.
- The air bubble detector can be used as wet/dry indicator at tubes, as well.
- The sensor is constructed as an element for the integration in machines and apparatuses. The sensor can be very easily integrated in mechanical and electrical control systems.
- The sensor does not get in contact with liquids and is especially convenient for the following applications:
  - medical technology
  - biotechnology
  - pharmaceutically industry
- The sensors are used in the medical technology, and are especially applied in the following applications:
  - blood separator
  - heart-lung apparatus
  - dialysis and transfusion devices
  - infusions- and heart pumps
  - alimentation pumps
  - contrast medium pumps
  - analytical diagnostically apparatuses and systems, e.g. chromatography
  - dosage devices

Advantages

- Non-invasive ultrasound technique, no coupling means required
- No influence because of substance colours e.g. human blood
- Users specific programmable micro-controller with extensible functions
- For the using on flexible tubes and measurement chamber
- No moveable parts/solid construction
- Users specific OEM-design
- Optional: Fail-safe

Technical specification

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Value</th>
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<tbody>
<tr>
<td>Measurement principle:</td>
<td>ultrasound</td>
</tr>
<tr>
<td>Measurement sequence:</td>
<td>measurement cycle approx. 200μs</td>
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<tr>
<td>Response time:</td>
<td>&lt; 0.5 ms (until the output of the control signal)</td>
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<tr>
<td>Bubble sensitivity:</td>
<td>Detection of bubbles with Ø 30 ... 50% of the inner diameter of the tube</td>
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<td>Temperature range:</td>
<td>Operating temperature: 5°C ... 60°C Storage temperature: -20°C ... +70°C</td>
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<tr>
<td>Power consumption:</td>
<td>≤ 60 mA</td>
</tr>
<tr>
<td>Operating voltage:</td>
<td>±5 VDC ±10%</td>
</tr>
<tr>
<td>Control input:</td>
<td>Reset/ controlling of the LED</td>
</tr>
<tr>
<td>Output:</td>
<td>5V logic, TTL</td>
</tr>
<tr>
<td>Casing:</td>
<td>plastic</td>
</tr>
<tr>
<td>EMC:</td>
<td>Conformity with the CE-regulations for the EMC, in case of extreme requirements of disturbing radiation (e.g. MRI) accomplishment with metal casing</td>
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<tr>
<td>Firmware:</td>
<td>The sensor can be adjusted customer specifically with the internal firmware</td>
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<td>Outer diameter of tube:</td>
<td>3 ... 20mm</td>
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<tr>
<td>Wall thickness of tube:</td>
<td>10 ... 20% of the outer diameter of tube Outer diameters and wall thicknesses on request</td>
</tr>
</tbody>
</table>

Optional: visual signal display (LED)