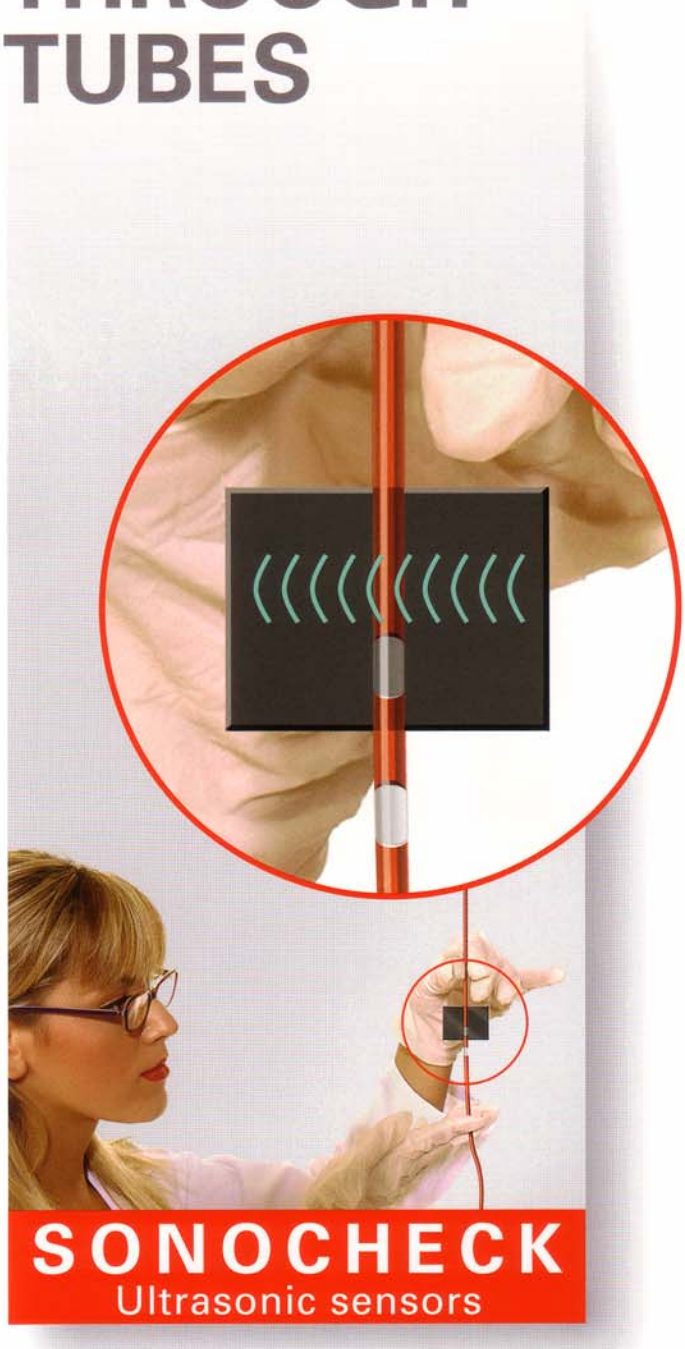
# AIR-BUBBLE-DETECTION

*from the outside*
*contact less*
*with ultrasound*

# THROUGH TUBES




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

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# SONOCHECK
## Safe detection of air

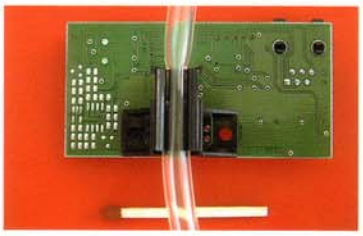
fig (top order) sensors in dialysis apparatus
fig (lower order) e.g. contrast medium injectors

## Application

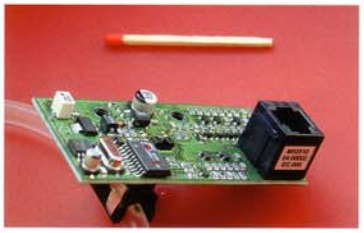
- The bubble detector serves for the detection of air bubbles in liquid filled plastic tubes. The bubble detector is also called air bubble detector (ABD) or bubble catcher in medicine.
- The air bubble detector can used as wet/dry indicator at tubes, as well.
- The sensor is constructed as an element 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

Sensor with separated electronic assembly group and inserted, flexibly plastic tube

Customer specific sensor with integrated electronic assembly group



Comparison of the size with a customer specific sensors



Air bubble detector with integrated tube and (optional) with unscrewable cover for fastening of tube.

## 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

| | |
|---|---|
| Measurement principle: | ultrasound |
| Measurement sequence: | measurement cycle approx. 200µs |
| Response time: | < 0,5 ms (until the output of the control signal) |
| Bubble sensitivity: | Detection of bubbles with Ø 30 ... 50% of the inner diameter of the tube |
| Temperature range: | Operating temperature: +5°C ... +60°C<br>Storage temperature: -20°C ... +70°C |
| Power consumption:<br>Operating voltage:<br>Control input:<br>Output: | ≤ 60 mA<br>+5 VDC ±10%<br>Reset/ controlling of the LED<br>5V-logic, TTL |
| Casing: | plastic |
| EMC: | conformity with the CE-regulations for the EMC, in case of extreme requirements of disturbing radiation (e.g. MRI) accomplishment with metal casing |
| Firmware: | The sensor can be adjusted customer specifically with the internal firmware. |
| Outer diameter of tube: | 3 ... 20mm |
| Wall thickness of tube: | 10 ... 20% of the outer diameter of tube Outer diameters and wall thicknesses on request. |
| Optional: | visual signal display (LED) |

SONOTEC
certified with
DIN EN ISO 9001:2000 TÜV Cert

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