SONOCHECK® ABD
Non-Invasive Medical Air Bubble Detectors

The non-invasive SONOCHECK air bubble sensor series of ABD05, ABD07, and ABD08 have been designed for high safety requirements in medical devices. The compact and light-weight sensors detect air and gas bubbles in flexible plastic tubes filled with liquids such as blood, blood plasma, water or saline solution. Intelligent ultrasonic transmission technology and innovative safety concepts guarantee maximum sensor reliability for highest patient safety. The modular design of the sensor offers various possibilities for application-specific adaptations.

- Non-invasive air bubble or full/empty detection
- Compact sensor designed for dry coupling on flexible tubing
- Application-specific microbubble detection
- Dynamic compensation to changing acoustic conditions ensuring reliable bubble detection
- High safety standards for maximum patient safety
- Built-in electronics, no external electronic board required
- Customization and miniaturization of sensor

Technical Safety Features

- Advanced fail-safe architecture
- Cyclical self-tests ensuring functionality of all essential components
- Watchdog to detect malfunctions
- Initial test procedure after power on or software reset
- Safe operation in electromagnetically sensitive environments

Product Portfolio Medical Air Bubble Detectors

SONOCHECK® ABD05

SONOCHECK® ABD05

SONOCHECK® ABD07

SONOCHECK® ABD08

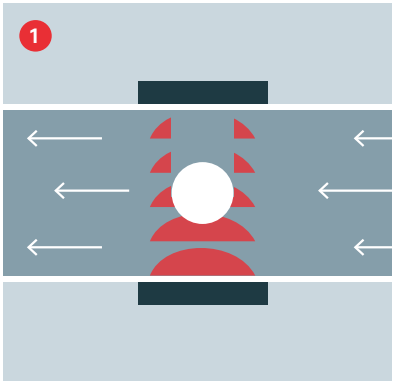
Technical Data

SENSORS	SONOCHECK ABD05	SONOCHECK ABD07	SONOCHECK ABD08
Input / Output	TTL/PWM	TTL/PWM	TTL/PWM
Serial Interface	RS-232	RS-232	RS-232
Cyclical Self-Tests	✓	✓	✓
Fail-Safe	✓		✓
Redundant Design			✓
Outer Tube Diameter	2.4 ... 6.8 mm	3.2 ... 9.6 mm	4.0 ... 5.3 mm
Operating Temperature	+5 °C ... + 45 °C	+5 °C ... +60 °C	+5 °C ... + 60 °C

Measurement Principle

Ultrasonic Transmission Technology

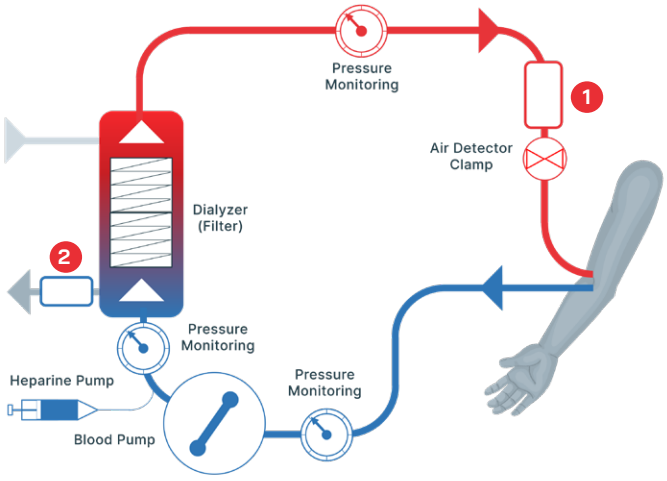
SONOCHECK ABD bubble sensors are based on intelligent ultrasonic transmission technology. Existing air bubbles and obstructions are detected by means of dynamic amplitude monitoring. When an air bubble passes the sensor channel, the signal level of the transmitted sound wave drops. The higher the drop of the signal level, the larger the size of the air bubble.



1 Amplitude monitoring for bubble detection

Application Example | Hemodialysis

As an extracorporeal circuit, the dialysis machine substitutes the kidney's function during treatment. SONOCHECK ABD air bubble sensors are applied for fast and safe air bubble detection in the venous path of the extracorporeal blood circulation as existing air bubbles may result in life-threatening air embolisms. Additionally, an undetected membrane rupture in the dialyzer can lead to unwanted blood loss of the patient during dialysis treatment. Thus the discharged dialysate has to be constantly examined for blood traces by the optical sensor Blood Leak Detector BLD03. The non-invasive sensor detects smallest amounts of blood in the dialysate.



1 Air Bubble Detector SONOCHECK ABD

2 Blood Leak Detector BLD03

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SONOTEC GmbH certified acc. to ISO 9001 and EN ISO 13485

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