

The air bubble detector **SONOCHECK ABD07/xx-1** is used to detect air or gas bubbles in flexible plastic tubes and is intended to prevent air infusions. The sensor has no contact with the liquid and is suitable for applications particularly in medical technology. Designed as a component for fixed installation in machines and equipment it can be mechanically and electrically integrated.

The sensor sensitivity can be adapted to the requirements of individual operating conditions.

## Technical data

SONOCHECK type ABD07/xx-1 Air Bubble Detector		
Measuring method	Ultrasound	
Bubble sensitivity	Bubbles larger than 30 % of the inner tube diameter are detected Adjustment of the bubble sensitivity on request	
Measuring cycle	200 µs	
Response time, Holding time	Minimum < 1 ms, typical 2 ms On request: Delays or holding times for bubble events	
Operating temperature	+5 °C to +60 °C	
Storage temperature	-20 °C to +85 °C	
Materials	Transducer and electronics potted in plastic housing	
Version/designs	The sensor version depends on the tube diameter, the hardness of the tube and its wall thickness.	
Requirements for tube	Parameter	Property
	Outer diameter	3.2 to 9.6 mm, according to specification of the sensor
	Wall thickness	Optimum: 10 to 20 % of outer diameter
	Material	Plastic, e.g. PVC, PE, silicone, PUR Other materials on request or after test only
	Special Features	Tube must be smooth on outside, no fabric tube
	Elasticity	Tube must be able to adjust flexibly
	Tube is inserted into sensor in dry condition	
Liquid requirements	Water, blood, solutions or other low-viscosity liquids containing no or few solids	

Mounting	On the rear side of the sensor are 2 recessed holes (Ø 2,5, depth 9 mm) for self-tapping screws; type: „Plastite Nr.4“; Ø 3 mm, length: 9.5 mm		
Protection	IP67		
Cleaning	<b>Caution!</b> Incorrect cleaning of the ABD07/xx-1 sensor and its components can present a hazard for the user. Cleaning is prohibited <ul style="list-style-type: none"><li>• in a steam sterilizer or with hot steam in general</li><li>• with white spirit or acetone</li><li>• by immersion in solvents or other liquids</li></ul>		
Operating voltage	+5 ± 0.2 VDC		
Current consumption	≤ 20 mA		
Connecting cable	4 x single wires; firmly connected to the sensor; length: 50 ± 2 cm		
Inputs and outputs	Color	Connection	
	Red	Operating voltage	
	Yellow	Test input (5 V logic, TTL) For test with simulated bubble, L-active	
	White	Output (5 V logic, TTL)	
	Blue	Ground (GND)	
Output	Default configuration		
	Condition	Signal at output (H/L: TTL output)	LED
	Air/Bubble	H	red
	Liquid	L	green
	Internal error (self-test)	H	---
	Alternative configurations		
	Switching output: the specification of the output levels can be adjusted		
	<ul style="list-style-type: none"><li>• Serial interface</li><li>• Pulse-width-modulation, width of pulse depends on bubble size</li></ul>		
Test input	Test with simulated bubble, time typically needed for complete test: 6 ... 10 ms		
Directives/standards	The sensors were developed to be tested with respect to the following standards: <ul style="list-style-type: none"><li>• Safety Requirements: IEC 60601-1:2005 (3rd edition)</li><li>• EMC: EN 60601-1-2:2007 (3rd edition)</li><li>• Acoustic Output (Ultrasonic): IEC 61157:2007</li></ul>		
Scope of delivery	<ul style="list-style-type: none"><li>• SONOCHECK air bubble detector, type ABD07/xx-1</li><li>• Operating manual</li></ul>		
Accessories/options	ABD Monitor for configuration and diagnostics, consisting of: <ul style="list-style-type: none"><li>• USB data converter (type 007_V001)</li><li>• USB cable, type A-B, length 1.5 m</li><li>• CD with ABD Monitor software</li></ul>		

Table 1: Technical data for SONOCHECK sensor type ABD07/xx-1

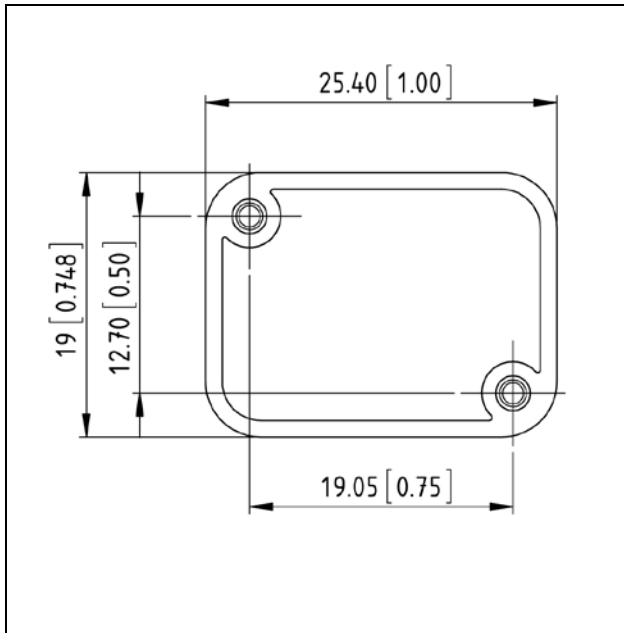
Technical drawings

Fig. 1: Sensor dimensions in mm [inch]  
(The drawings are not to scale)

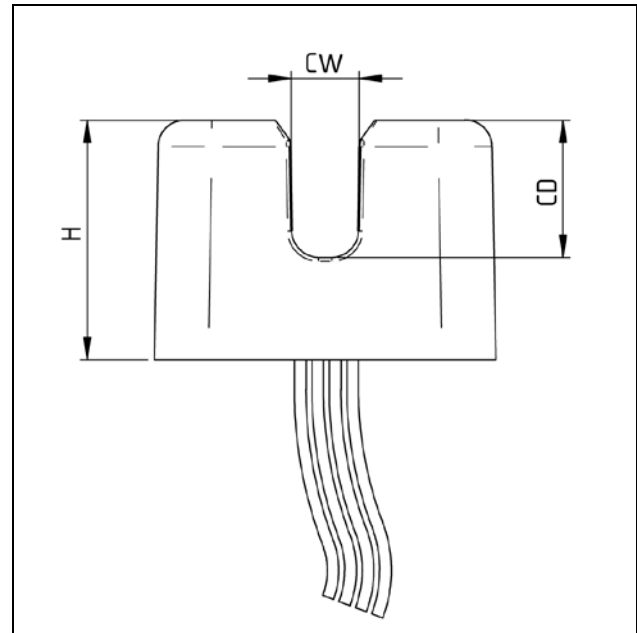


Fig. 2: Channel dimensions and sensor height

Information for ordering

Specification	ABD07/25-1		ABD07/30-1		ABD07/50-1		ABD07/80-1	
	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]
<b>Outer diameter of tube</b>	3.2	1/8	4.0	0.157	6.4	1/4	9.6	3/8
<b>CW: Channel width</b>	2.5	0.1	3.2	0.125	5.1	0.2	7.9	0.31
<b>CD: Channel depth</b>	8.25	0.325	8.9	0.35	10.2	0.4	13.3	0.524
<b>H: Sensor height</b>	15.75	0.62	16.5	0.65	17.8	0.7	21	0.827
<b>Order number</b>	200 02 0087		200 02 0088		200 02 0089		200 02 0090	

Table 2: Specifications for SONOCHECK sensor type ABD07/xx-1