

The redundant bubble sensor **SONOCHECK ABD08.xx** is used to detect air and gas bubbles in plastic tubes, filled with liquid and is intended to prevent air infusions.

The detector works with ultrasound. It has no contact with the liquid and is suitable for applications in medical and food technology. The sensor is best suited for disposable tubes.

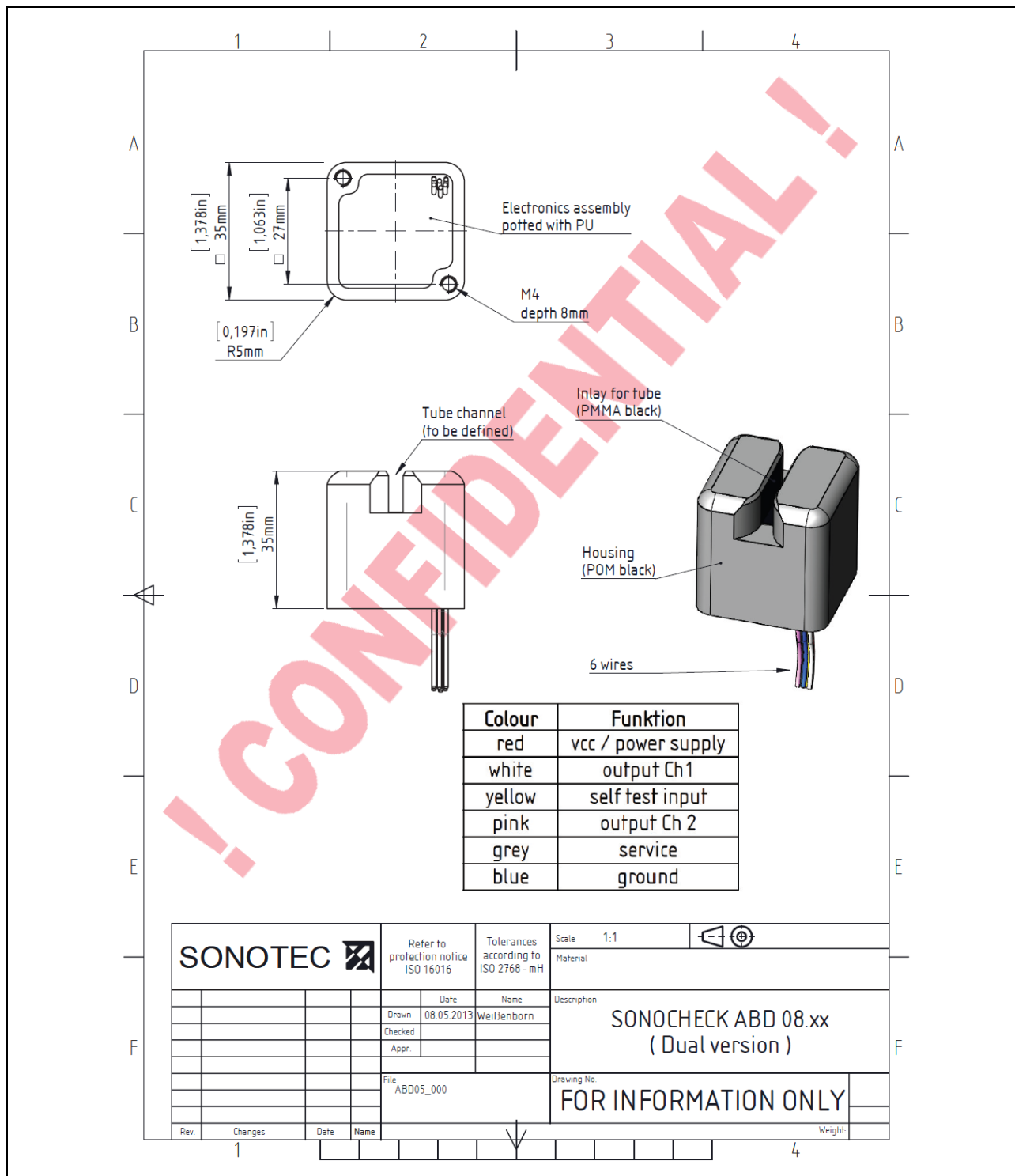
The redundant version, described in this data sheet includes one ultrasonic sender, two ultrasonic receivers and two electronics. That means, except for the sender, the sensor is fully redundant. This concept is superior to a concept with two completely independent sensors in one housing, as one sender excludes the risk of cross-talking between both channels.

Technical data

SONOCHECK type ABD08.xx	
Redundant Bubble Sensor	
Measuring method	Ultrasound, with one sender, two receivers and two electronics
Bubble sensitivity	Bubbles larger than 1/3 of internal tube diameter are detected
Measuring cycle	200 µs
Response time	Minimum < 0.5 ms, typical 1 ms
Holding time	On request: Delays or holding times for bubble events
Operating temperature	+5 °C to +60 °C
Storage temperature	-20 °C to +70 °C
Materials	Housing: POM, black; Measuring cell: PMMA; Potting: PUR
Channel width / Tube	To be defined: according to tube diameter, the hardness of tube and its wall thickness (please provide us with a tube sample); Tube is inserted dry
Requirements for liquid	Low-viscosity liquids containing no or few solids
Mounting	Rectangular design, 2 x recessed M4 threaded holes on rear of sensor
Protection	IP67
Operating voltage	+5 ± 0.2 VDC
Current consumption	≤ 120 mA

Connecting cable	0.5 m (other lengths on request) stranded wires, fixed connection to sensor	
Inputs and outputs	Color	Function
	Red	Operating voltage +5 ± 0.2 VDC
	White	Output 1 (5 V logic, TTL)
	Yellow	Self-test input of sensor (if configured: simulates a bubble)
	Pink	Output 2 (5 V logic, TTL)
	Grey	Service pin
	Blue	Ground (GND)
Output specification (default)	Condition	Signal at output 1 and 2 (H/L: TTL output)
	Air/bubble	H
	Liquid	L
	Internal error (sensor performs continuous self-test)	H
Configuration	Default configuration in mode 0, means: Output 1 / 2: Switching output Self-test input and service pin: Serial input Other configurations (e.g. serial interface/ PWM) on request.	
Labeling	Laser engraved label on housing: Type and serial number	
Directives/standards	The sensors were developed to be tested with respect to the following standards: <ul style="list-style-type: none"> • Safety Requirements: IEC 60601-1:2005 (3rd edition) • EMC: EN 60601-1-2:2007 (3rd edition) • Acoustic Output (Ultrasonic): IEC 61157:2007 	
Scope of delivery	Air bubble detector type ABD08.xx, Data sheet	
Accessories/ options	ABD Monitor for configuration and diagnostics, consisting of: <ul style="list-style-type: none"> • USB data converter (type 007_V001) • USB cable, type A-B, length 1.5 m • CD with ABD Monitor software 	

Table 1: Technical data for redundant air bubble detector SONOCHECK ABD08.xx

Technical Drawings*(The drawings are not to scale)*

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