



SONOFLOW® CO.56 Pro

Non-invasive Clamp-on FlowBubble Sensors

SONOTEC 

As both bubble detectors and flow sensors are elementary safety elements in medical devices, SONOTEC® has developed the SONOFLOW® CO.56 Pro ultrasonic sensor series, which combines both flow measurement and air bubble detection of liquids in one compact unit. The integrated electronics and the option to operate up to twelve independent sensors with only one control unit guarantee the world's smallest footprint for an OEM flow and bubble detector to be used in medical devices.

The non-invasive ultrasonic sensors operate without any media contact, they quickly perform bi-directional flow readings and can be easily clamped free-hanging on the tubing. The accuracy of the SONOFLOW® CO.56 Pro is up to two percent and the repeatability is as low as one percent, depending on where the sensor is mounted and which kind of liquid is measured. In addition to the measurement of flow conditions the sensor is able to detect air bubbles as small as one third of the inner diameter of the tube.



KEY FEATURES

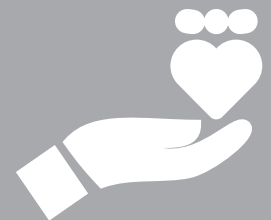
- Combined flow measurement & bubble detection
- Clamp-on sensor for non-invasive measurement
- Small footprint & lightweight sensor design
- Freely suspended
- Onboard electronics & data processing
- High bubble sensitivity
- Fast & bi-directional flow measurement
- Highly accurate & highly precise
- Available for all typical medical grade IV tubing



TECHNICAL SAFETY FEATURES

HARDWARE ADVANTAGES

One-channel architecture
Fail-Safe
Watchdog
Cyclical self test



REGULATORY SAFETY STANDARDS

MEDICAL SAFETY

IEC 60601-1
IEC 60601-1-2 (4th edition) – EMC

ACOUSTIC EMISSION

IEC 61157

RoHS COMPLIANCE


RoHS directive 011/65/EU



TECHNICAL DATA

MEASURING METHOD	Ultrasound for combined flow & bubble detection
CHANNEL WIDTH	8.2 mm 10.0 mm 12.3 mm
OUTER DIAMETER – TUBING	3/8" 7/16" 9/16"
MOUNTING	Clamped on the tubing, freely suspended
WEIGHT	approx. 100 g
INTERFACES	RS485

OPERATING VOLTAGE	5 VDC +0.5 / -0.1 VDC
CURRENT CONSUMPTION	≤ 50 mA
ELECTRICAL CONNECTION	UL-LifYDY / 5 x 0.08 mm ² / shielded / Ø 3.5 ± 0.1 mm
AMBIENT/MEDIA TEMPERATURE	+15 to +43 °C
STORAGE TEMPERATURE	-20 to +60 °C
PROTECTION CLASS	IP67

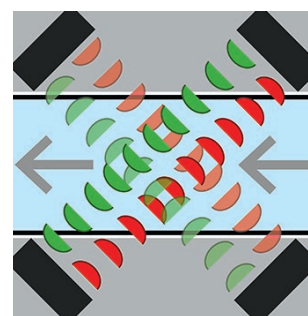
 **Bubble detection feature** | Detection of bubble sizes of 1/3 of the inner tube diameter

APPLIED MEASUREMENT METHODS

FLOW MEASUREMENT | ULTRASONIC TRANSIT TIME PRINCIPLE

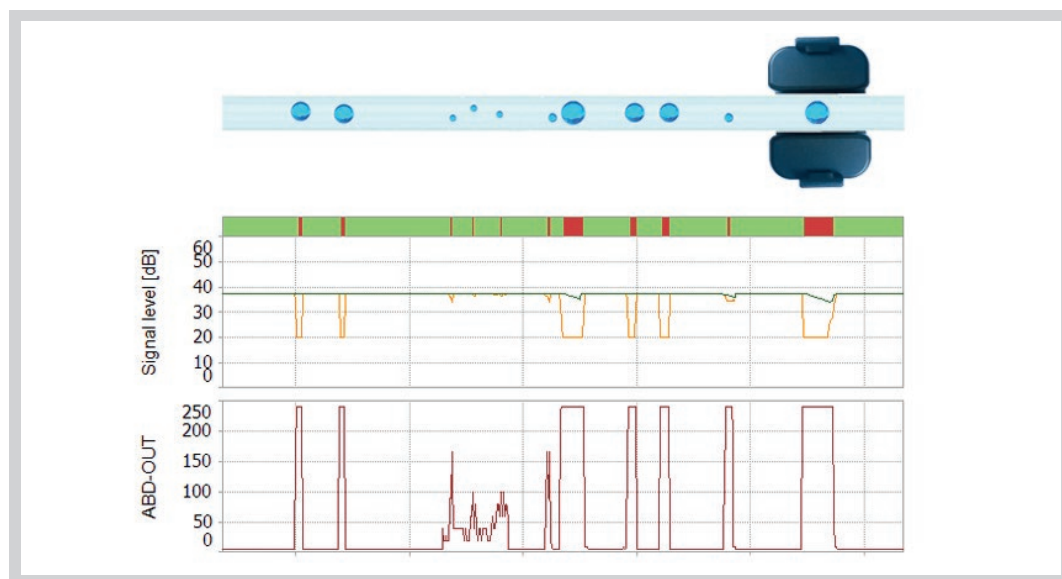


Four ultrasonic transducers are arranged in an X-pattern. The transducers emit pulsating ultrasonic waves in a given frequency from one side to the other. The resulting transit time difference is directly proportional to the mean flow velocity. The flow volume results from the product of this mean flow velocity and the cross-sectional area of the tubing.



BUBBLE DETECTION | ULTRASONIC TRANSMISSION TECHNOLOGY

The **SONOFLOW® CO.56 Pro FlowBubble Sensor** combines ultrasonic transit time principle for flow measurement with intelligent ultrasonic transmission technology for bubble detection and provides innovative safety concepts to guarantee maximum sensor reliability. The non-invasive flow-bubble sensor features an asymmetrical dynamic adjustment to set the optimal operating point at any condition.



SONOTEC® preserves the right to change technical specifications without further notice. (Rev. 1.2 / 2020-04-30)

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Certified according to ISO 9001 & EN ISO 13485