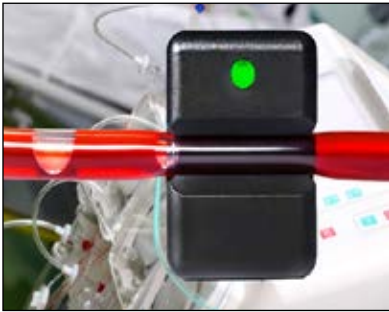


Series AD8/AD9 Non-Invasive Ultrasonic Air Bubble Sensor



AD8/AD9 non-invasive air bubble & air-in-line sensors incorporate the latest ultrasonic technology. Introtek AD8 (for rigid tubing) and AD9 (for soft tubing) sensors incorporate the latest generation of pulse-type ultrasonic circuitry. Integral to the sensor's assembly, the Micro-Electronic Controller (MEC) features programmable algorithms for functionality control. Response times, time delays and other functions are programmable to specific requirements.

Our patented pulse-type ultrasound provides highly reliable, non-invasive air detection capabilities in critical applications where the safety of a patient or the integrity of a process is essential.

PRODUCT HIGHLIGHTS / CUSTOMIZED OPTIONS

- Non-invasive ultrasonic
- Dry coupled
- Air detection threshold or bubble size can be set to customer's requirements.
- Optional self test safety features
- Accuracy not affected by fluid or tubing color
- Output options: CMOS Logic, Open collector, Analog
- Integrated electronics
- Compact, free-entry design
- Redundant safety designs
- Lower power input (3.3V, 5V)
- High EMI & RFI noise immunity
- Wide range of tubing sizes (custom prototypes)

GENERAL CHARACTERISTICS / Technical Data

Medium / Liquid	Saline, Blood, Water-based solutions, Low-viscosity liquids
Measurement Technology	Ultrasonic
Sensor Housing	AD9 : ABS plastics (other materials upon request); AD8 : Rubber, Polyurethane
Mounting	Fixed installation
LED Indicator	Bi-color LED indicates power on and liquid state. Green color for Wet; Red color for Dry. Other options available.
Input Voltage	3.3V, 5V & 12V
Response Time	Air Detection (Wet to Dry): 215 μ S typical Liquid Detection (Dry to Wet): 46 mS typical
Input Current	15 mA without LED, 24 mA with LED
Operating Temperature	+41 to +140 °F (+5 to +60 °C)
Humidity	0 – 95% Non-condensing
Output signal	CMOS levels yield high on wet, low on dry. Other output options available.
Self-test Input	Self-Test Input Provides an electronic check for false and wet output signals. Cyclical Self Test features available.

Certifications

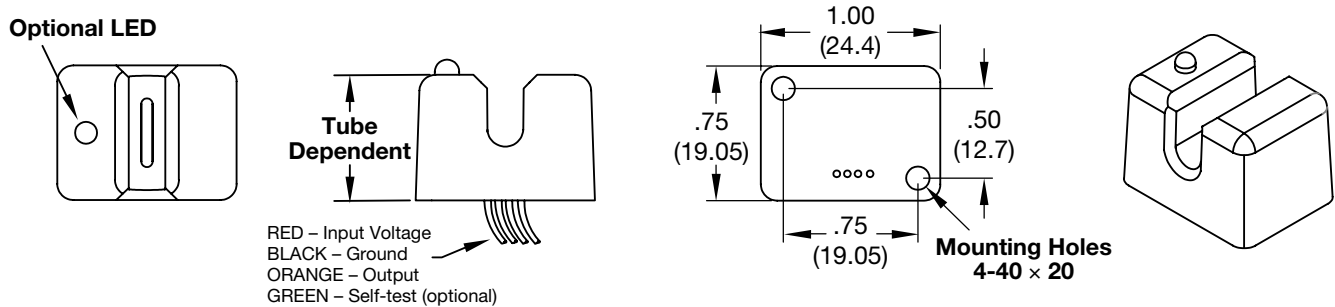


Series AD8/AD9 Sensor

THE GLOBAL LEADER IN NON-INVASIVE SENSING SOLUTIONS FOR MEDICAL APPLICATIONS SUCH AS:

- Hemodialysis
- Auto Transfusion
- Apheresis
- Chromatography
- Blood Processing
- DNA Analysis Machines
- Contrast Media
- Ablation
- Heart/Lung Machines
- Drug Delivery

Series AD8/AD9™ Sensor Dimensions – inches (mm)



VALIDATION TESTING

The AD8/9 Sensor was designed to be tested in conjunction with the following specifications:

Electrical Fast Transients:

IEC 61000-4-4:2012

Radiated Emissions, Group 1, Class B:

CISPR 11

Electrostatic Discharge:

IEC 61000-4-2:2008

Radiated Immunity:

IEC 61000-4-3:2006+AMD1:2007+AMD2:2010 CSV

Power Frequency Magnetic Fields:

Performed per

IEC 60601-1-2:2014 (4th Edition)

General Safety Requirements:

IEC 60601-1:2005+A1:2012 (E)

Detector Part Number

Please contact an Introtek Application Specialist to determine the optimal configuration for your application.