

Introtek's 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.

Introtek 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         | <b>AD9:</b> ABS plastics (other materials upon request); <b>AD8:</b> 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 $\mu$ S typical<br>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. |

## The Introtek Advantage

provides products of unsurpassed quality, functionality and dependability that are manufactured to the highest medical device standards and backed by a three-year warranty.

### Certifications

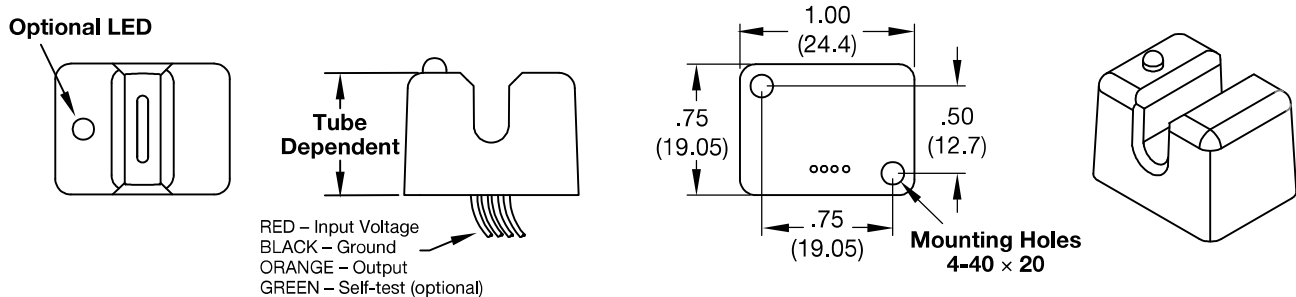


## Series AD8/AD9 Sensor

### 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.

### Three-Year Warranty

All Introtek systems are warranted free of defects in materials or workmanship for three full years from the date of original factory shipment.

If returned within the warranty period, with no modifications to the sensor; the original manufacturing label intact; and, upon factory inspection of the unit, the cause of the malfunction is determined to be defective material or workmanship; Introtek will repair or replace the system at no cost to the purchaser (or owner) other than transportation.

**If a unit is returned without an original label, the warranty is void.**

Introtek shall not be liable for misapplication, labor claims, direct or consequential damage or expense arising from the installation or use of the equipment. There are no other warranties expressed or implied except special written warranties covering some Introtek products.

**INTROTEK**  
Excellence in Ultrasonic Technology™

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