



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.

Miniaturized Air Bubble Sensor

Introtek[®] miniaturized ultrasonic air bubble, air-in-line and liquid level sensors. The Next Generation in air bubble, air-in-line sensors technology.



PROTOTYPE CONFIGURATION



STANDALONE CHIP-LEVEL INTEGRATION (ACTUAL SIZE)

INTROTEK[®] miniaturized sensors incorporate the latest generation of pulse-type ultrasonic circuitry. Each sensor is built to INTROTEK unsurpassed quality and is 100% factory-tested before shipment. As a value-added provider, INTROTEK will integrate special components to supply custom sensor package.

TECHNOLOGY

INTROTEK 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. Many of the variables which affect the accuracy of amplitude based on continuous wave ultrasound are greatly reduced, if not eliminated, by pulse-type technology.

HIGHLIGHTS

- Non-invasive ultrasonic
- Compact, free-entry design
- Small footprint
- Low cost
- Low power consumption
- High EMI and RFI noise immunity
- Wide range of tubing sizes.
- Integratable electronics
- Programmable electronics available

INTROTEK CERTIFICATIONS



APPLICATIONS

- Air bubble, air-in-line and end-of-sample sensing
- Patient-connected medical devices including:
 - Apheresis
 - Auto-transfusion
 - Infusion pumps
 - Heart-lung bypass
 - Dialysis
 - Cardiac assist pumps
- Chromatography and separation technologies
- Liquid and chemical dispensing
- Blood processing equipment
- Immunoassay and diagnostic equipment
- Hemodialysis

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DETECTOR PART NUMBER

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

FUNCTIONAL SPECIFICATIONS

Sensor:

The miniaturized Air bubble air-in-line sensor is made of injection-molded ABS plastics that will accept softer, more pliable tubing (consult Introtek for rigid tubing applications).

Supply Voltage:

5.0 VDC \pm 10% (consult INTROTEK for other voltage)

Supply Current:

24 mAmp maximum

Self-test Input:

Provides electronic check for false wet output signals

Liquid:

Bubbles will be detected in almost any liquid

Calibration:

Customized threshold calibration

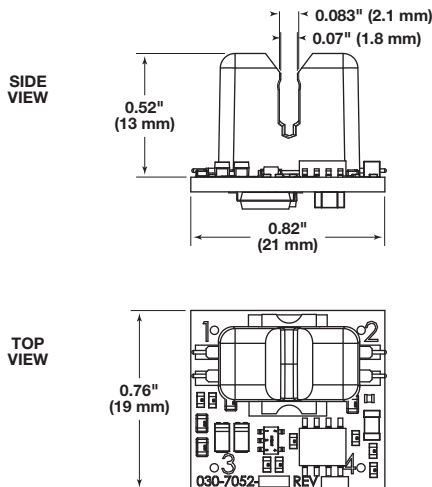
Temperature Limits:

Operating: +41° to +140°F (+5° to +60°C)

Storage: -4° to + 185°F (-20° to +85°C)

Humidity:

0 to 95%, non-condensing



Mini Air Bubble Sensor Dimensions
inches (mm)

OPTIONS

- Programmable electronics available
- Custom-engineered OEM designs

VALIDATION TESTING

The miniaturized air bubble sensor was designed to be tested in conjunction with the following specifications:

Electrical Fast Transients:

IEC 61000-4-4:2004

Radiated Emissions, Group 1, Class B:

CISPR 11

Electrostatic Discharge:

IEC 61000-4-2:2002

Radiated Immunity:

IEC 61000-4-3:2002

Power Frequency Magnetic Fields:

IEC 60601-1-2:2007 (3rd Edition)

General Safety Requirements:

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

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.



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Performance specifications are effective with date of issue and are subject to change without notice

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