PendoTECH® Air in Tube Detector

- Detects presence of air or liquid in tube
- Operates with sound waves and is non-invasive to fluid path - no product contact
- Ultrasonic detector works in all tubes even if not transparent
- Perfect for use in processes with single use fluid paths with no expendable costs
- Applications include:
  - Chromatography - to prevent air from being pumped into column
  - Depth Filtration - to detect end of batch or flush
  - Tangential Flow Filtration - to determine the end-point of fed-batch or buffer additions
  - Bioreactors - monitor bioreactor feed lines to notify if additional sources are empty

Additional Features

- Tube slides into device in seconds
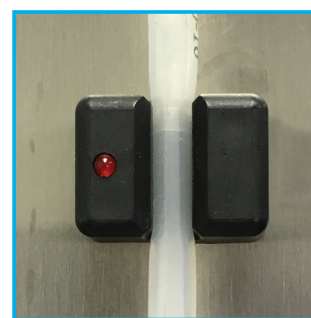- Uses the same technology that is used in critical medical applications

Operational Details

- Digital 5V Output with air = 5V output, liquid = 0V output
- Detects bulk air defined as over 1/2 the cross section empty
- Integral red-colored LED lit when liquid present
- Integral 8ft (2.4M) cable with M12 style connector (male)

Panel Mount Version

Features:

- Space-saving panel mount design for 1/8inch ID, 1/4inch OD tubing

- Wiring goes directly into panel from under unit so no exposed cables

Air Detectors for Direct Pump Interface

Features:

- Enables direct interface of air detector to pump shut-off

- 5 second delay built into the unit to prevent shut-off due to a stray bubble

- Interface signal to pump via dry contact relay

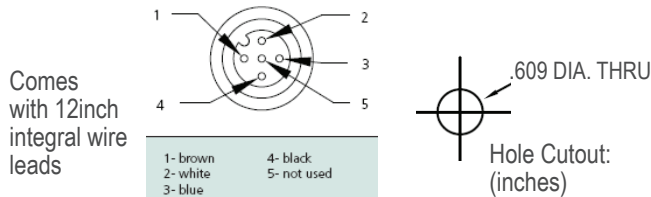- Cables available for most pump models

PendoTECH
Adding Value To Your Process

Specifications

| Power	AD-XX: 24VDC ADP-XX: 5VDC	
Current Consumption	50mA +/-	
Response Time	Wet to Dry (liquid to air) 200µS maximum	Dry to Wet (air to liquid) 11mS minimum
Output Pulse Width	The output will continue to indicate the presence of air for a minimum of 11 milliseconds after the bubble has passed through the sensor to allow fast moving bubbles to be detected	
Liquid	Bubbles will be detected when in the size of greater than 50% of the tubing inner diameter in almost any liquid, however, groups of micro-bubbles or foam will also be detected as bubbles	
Temperature Limits	Operating: +41° to +140°F (+5˚ to +60˚C)	
Humidity	0 to 95% Non-Condensing	
Output Signal	Digital 5V Output with air = 5V output, liquid = 0V output	
IP Rating	IP55	
Regulatory Compliance	CE, REACH, RoHS3	

AD-XX

Wiring Information				
Pin # (male)	1	2	3	4
Wire Color	Red	Orange	Black	Green
Function	+24VDC	Signal	Ground	Ground

Optional Panel Mount Female Receptacle
PART NUMBER: TU-FK- 4.5-0.5

Comes with 12inch integral wire leads

1- brown
2- white
3- blue
4- black
5- not used

.609 DIA. THRU

Hole Cutout: (inches)

Dimensional Information

	B	C
	inches	
AD-16	1.20	.70
AD-17	1.325	.825
AD-36	1.55	1.05
AD-73	1.65	1.15
AD-82	1.76	1.26
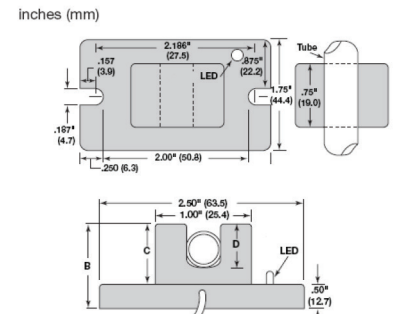
inches (mm)

ADP-16

Wiring Information				
Wire Color	Red	Orange	Black	Green
Function	+5 VDC	Signal	Ground	Ground

ADP Panel Mount
inches

(10) .125 DIA THRU

.500
.750
.200
.350
.040
.150
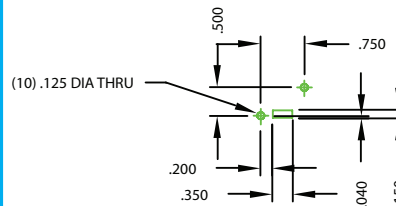
Dimensional Information
inches

1.00
.125
.75
.125
.75
.5
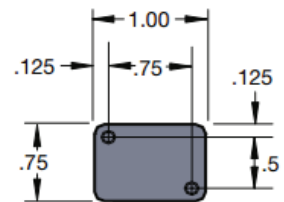
Ordering Information

Part Number*	AD-16	AD-17^	AD-36	AD-73	AD-82
Tubing OD**	1/4in	3/8in	9/16in	5/8in	3/4in

*Add -P to end of part # for Mini-Con connector to PendoTECH Systems
**Other sizes available, for more information contact PendoTECH
^ Also works with Size 24 tubing

ADP-16	Panel mount ultra-sonic air in tube detector - 1/4inch OD tube
AD-TTL-RLY	Air Detector 5V digital output signal to activate Solid State Relay Signal for 5-48VDC, 3amp MAX
AD-TTL-PLC	Air Detector 5V digital output signal converter to PLC input (provides a 7mA output to a 3K, 24V PLC logic input)
AD-24-V	24VDC to 5VDC DIN rail mount power converter to power ADP Air detector

Air Detectors for Direct Pump Interface

- Enables direct interface of air detector to pump
- 5 second delay* built into unit to prevent shut-off due to a stray bubble
- Interface signal to pump via dry contact relay (closed relay with liquid allows the pump to run)
- Cables available for most pump models
- Comes with 24VDC power supply

Sample of pump cable for
Masterflex® L/S pump

Ordering Information

AD-16-D	Ultra-sonic Air in Tube Detector with 5 second delay - 1/4inch OD tube, 24VDC
AD-16-D500	Ultra-sonic Air in Tube Detector with 0.5 second delay - 1/4inch OD tube, 24VDC
AD-17-D	Ultra-sonic Air in Tube Detector with 5 second delay - 3/8inch OD tube, 24VDC
AD-17-D500	Ultra-sonic Air in Tube Detector with 0.5 second delay - 3/8inch OD tube, 24VDC
AD-82-D	Ultra-sonic Air in Tube Detector with 5 second delay - 3/4inch OD tube, 24 VDC
AD-PUMP-BOX	Air Detector Pump Interface Box for Delay Detection Units, 24VDC (LxWxH 11.9cm x 11.9cm x 9cm, 4.69in x 4.69in x 3.54in)
AD-PB-MF18-BT	Cable from Air detector pump box (AD-PUMP-BOX or PMAT SS Enclosure) to Masterflex BT pump 18pin remote connector, 2m
AD-PB-MF9B	Cable from Air detector pump box (AD-PUMP-BOX or PMAT SS Enclosure) to Masterflex DB9 remote connector, 2m
AD-PB-MF15	Cable from Air detector pump box (AD-PUMP-BOX or PMAT SS Enclosure) to Masterflex DB15 remote connector, 2m
AD-PB-MF31	Cable from Air detector pump box (AD-PUMP-BOX or PMAT SS Enclosure) to Masterflex IP 31pin remote connector, 2m
AD-PB-MF25	Cable from Air detector pump box (AD-PUMP-BOX or PMAT SS Enclosure) to Masterflex DB25 remote connector, 2m
AD-PB-WM25	Cable from Air detector pump box (AD-PUMP-BOX or PMAT SS Enclosure) to Watson Marlow DB25 remote connector, 2m
AD-PB-Q1200HT	Cable from Air detector pump box (AD-PUMP-BOX or PMAT SS Enclosure) to Q1200HT Pump remote connector, 2m

*Other time delays available