

### **Your Partner from Prototype to Production**





Precision Tuned Products for Maximum Performance





Email: INDUSTRIAL@AIRMAR.COM

### **PRODUCT OVERVIEW**

Model	Frequency	Diameter	Typical Range	Beamwidth		Model	Model Frequency	Model Frequency Diameter	Model Frequency Diameter Typical Range
ART15						ARK50	ARK50	ARK50	ARK50
-	15 kHz	ø 169 mm	1 m to 60 m	6°			50 kHz	50 kHz ø 92.2 mm	50 kHz ø 92.2 mm 35 cm to 10 m
4.020						ARK75-T	PVDF housing fo		PVDF housing for chemically aggressive environments
AR20									
AR30	19.5 kHz	ø 205 mm	80 cm to 40 m	7°		7	75 kHz	75 kHz ø 40.6 mm 1.5" pipe thread	1.5″pipe
	-					AT75			PVDF housing for chemically aggressive environmen
	30 kHz	ø 106 mm	80 cm to 25 m	12°					
ARK30							75 kHz	75 kHz Ø 38 mm	75 kHz ø 38 mm 25 cm to 7 m
						ATK75	ATK75	ATK75	ATK75
	30 kHz PVDF housing	ø 106 mm for chemically age	80 cm to 25 m gressive environment	<b>12°</b>			75 kHz	75 kHz Ø 38 mm	75 kHz ø 38 mm 25 cm to 7 m
AR41						AT120		•	PVDF housing for chemically aggressive environmer
$ \mathbf{n} $	41 kHz	ø 92.2 mm	35 cm to 15 m	14°		ATTZO			
V							125 kHz	125 kHz Ø 25 mm	125 kHz Ø 25 mm 20 cm to 3 m
ARK41						ATK120	ATK120	ATK120	ATK120
	41 kHz		<b>35 cm to 15 m</b> gressive environmen	14°			125 kHz	125 kHz ø 25 mm	125 kHz ø 25 mm 20 cm to 3 m
	1 VDI Housing	nor chemically ag					-		PVDF housing for chemically aggressive environmer
AR50				420		ARK 120-	ARK120-THD		ARK120-IHD
	50 kHz	ø 92.2 mm	30 cm to 10 m	12°			125 kHz	125 kHz ø 40.6 mm 1.5" pipe	
AR50CH							PVDE housing	PVDE housing for chemically a	PVDF housing for chemically aggressive environmer
ARSOCF	50 kHz	ø 57 mm	30 cm to 10 m	12°		AT200		,	· · · · · ·
	30 KH2	0 37 mm	50 cm to 10 m	12			200 kHz	200 kHz ø 16 mm	200 kHz Ø 16 mm 12 cm to 2 m
ARK50-	THD								
	50 kHz	ø 51 mm	35 cm to 10 m	10°		ATK200	ATK200	ATK200	ATK200
5		2" pipe thread					200 kHz		
AT50	PVDF housing for chemically aggressive environments				AT225	-		PVDF housing for chemically aggressive environmer	
A	50 kHz	ø 57 mm	35 cm to 10 m	12°			228 kHz		
ATK50	1					AT300	AT300	AT300	AT300
	50 kHz	ø 57 mm	35 cm to 10 m	10°			300 kHz	300 kHz ø 12 mm	300 kHz Ø 12 mm 5 cm to 50 cm
	PVDF housing	for chemically ag	gressive environmen	ts					*
	IPN		9			As Airmar constan		As Airmar constantly improves its products, all specification	©Airmar Technology Corporation Airducer_Catalog. As Airmar constantly improves its products, all specifications are subject to change w specifications typical at 22°C (72°F). Pulse-Echo Mode. Minimum and maximum rang
ТЕСН	NOLOGY CC	RPORATION	RoHS (S	آ		scenarios. Actual r approved models	scenarios. Actual range may vary, depe approved models suitable for: Class I, I	scenarios. Actual range may vary, depending on drive circu approved models suitable for: Class I, Division 1, Hazardous	specifications typical at 22°C (72°F). Puise-Ecno Mode. Minimum and maximum rang scenarios. Actual range may vary, depending on drive circuitry and signal processing approved models suitable for: Class I, Division 1, Hazardous Locations. AIRDUCER' is a trademark of Airmar Technology Corporation. AMPHENOL is a registered trademark o

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specifications typical at 22°C (/2°F). Pulse-Echo Mode. Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Factory Mutua approved models suitable for: Class I, Division 1, Hazardous Locations. AIRDUCER' is a registered trademark of Airmar Technology Corporation. AMPHENOL is a registered trademark of Amphenol Corporation. Other company or product names mentioned in this document may be trademarks or registered trademarks of their respective companies, which are not affiliated with Airmar.

## **AIRMAR TECHNOLOGY CORPORATION**

Airmar Technology Corporation designs and manufactures the most advanced ultrasonic transducers on the market today. Pushing the boundaries of technology and delivering creative solutions that meet customers' unique demands has made us a world leader in the advancement of ultrasonic sensor technology.

#### **The Company**

Founded in 1982, Airmar has grown to employ over 400 employees at our 11 global locations, 3 of which are state-of-the-art facilities capable of executing every stage of the design and manufacturing process. From 3D modeling to injection molding, and from encapsulation to environmental testing, all work is completed in-house, allowing for endto-end control and ISO 9001:2015 Certification. Airmar holds dozens of U.S. and foreign patents.

#### **The Products**

Airmar's teams of scientists, engineers and technicians design our multi-use ultrasonic transducers for a wide variety of applications and environments. Our transducers deliver proven non-contact sensing performance from equipment such as asphalt pavers, agricultural machinery and water/wastewater systems, as well as many other challenging applications.

Safe, compact and reliable, Airmar's ultrasonic transducers serve as critical components in the development of a myriad of sensors and measurement systems in fields requiring liquid or solid levels, flow control, automation control, proximity sensing, obstacle avoidance, distance measurement, inventory control and more

#### The Ultrasonic Advantage

Manufactured and factory-tuned in the U.S.A., Airmar's ultrasonic transducers are built for lasting durability and function well in harsh environments. They are rated IP68 and have no moving parts to wear out, so no maintenance is needed. Unlike most alternative measurement solutions, ultrasonic transducers can detect clear, transparent or shiny objects, and are unaffected by color.

Airmar's highly accurate ultrasonic transducers are available in various diameters with and without threads. They operate within a frequency range of 15 kHz to 1 MHz and achieve a sensing range from 5 cm (2 in) to 60 m (196.85 ft). Airmar also offers customized designs to bring your innovative products from concept to production.

#### The Measuring Principle of Airducer<sup>®</sup> Ultrasonic Sensors

Sound generated above the human hearing range (typically above 20 kHz) is called ultrasonic. The frequencies of Airmar's standard product line range from 19.5 kHz to 300 kHz. Ultrasonic transducers operate by emitting short bursts of high-frequency sound waves in a cone-shaped pattern (also known as a beam). The echoes reflected by the target are received by the transducer and are used to determine position or measure distance. The distance can be computed using the speed of sound in the transmission medium by measuring the time it takes for the echo to return to the transducer. Using air as an example, at 22°C sound travels at an approximate rate of 345 meters per second. Changes in environmental conditions such as temperature, humidity and pressure can cause a change in the speed of sound in air.



### **Typical Applications** For AIRDUCER<sup>®</sup> Ultrasonic Sensors

#### Level and Flow Measurement and Control

- Liquids, bulk solids, or grains
- In pipe and open channel flow

#### **Process Control**

- Distance measurement
- Web tension, roll diameter, web edge, or break detection
- Counting, sorting, or monitoring parts
- Determining loop measurement
- Collision avoidance or proximity sensing
- Robotics

**Medical Applications** 

Bubble detection



Airmar ultrasonic transducers deliver the highest level of performance in the most challenging environments and they are the key component for our customers success and their applications. Our precision tuned air-ranging transducers are tried and true performers, even when used for difficult tasks. American-made from the highest guality materials, Airmar's ultrasonic transducers provide reliable, long-lasting excellence to any measurement system.

### **ART15**



#### **SPECIFICATIONS**

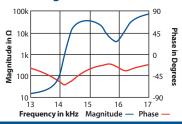
Best operating frequency: 15 kHz +/-0.5 kHz Minimum Transmit Sensitivity at Best Transmit Frequency: 123 dB re 1µPa/V at 1 m Minimum Receive Sensitivity at Best Receive Freq .: -148 dB re 1V/µPa Minimum Parallel Resistance @15kHz: 100 Ohm Minimum and Maximum Sensing Range\*: 1-60 m Beamwidth (@ -3 dB Full Angle): 6° +/-2° Maximum Driving Voltage (2% Duty Cycle Tone Burst): 900 V Operating Temperature: -30°C to 60°C Thermistor Operating Range: -20°C to 60°C Weight: 2.6 lbs / 1.18 kg Cable Length: 10 m Housing Material: Aluminum, static dissipative Kynar, static dissipative PE Acoustic Window: LDPE

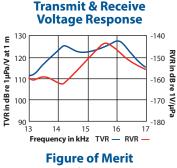
\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing.

Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.

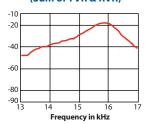


#### Impedance **Magnitude & Phase**





(Sum of TVR & RVR)



### 15 kHz

#### AIRDUCER<sup>®</sup> Ultrasonic Transducer

#### Applications

- Silos
- Wells
- Wastewater facilities
- Large capacity tanks
- River crossings/bridges

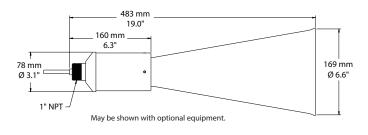
#### Features

- Delivers long range level measurements up to 60 m (197')
- Extended range without the cost of radar
- Built-in thermistor

#### **Options**

- Cable length can be customized
- Also available without thermistor
- Optional cable, cap and thermistor

#### **Dimensions**



#### Additional Resources



Applying Ultrasonic Technology



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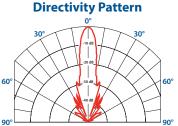
Airmar ultrasonic transducers deliver the highest level of performance in the most challenging environments and they are the key component for our customers success and their applications. Our precision tuned air-ranging transducers are tried and true performers, even when used for difficult tasks. American-made from the highest guality materials, Airmar's ultrasonic transducers provide reliable, long-lasting excellence to any measurement system.

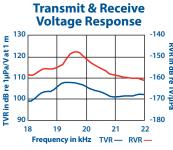


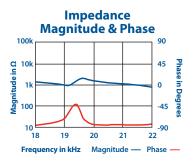
#### SPECIFICATIONS

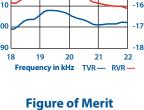
Best Operating Frequency: 19.5 kHz, ±4% Typical Sensing Range: 80 cm to 40 m Beamwidth (@ -3 dB Full Angle): 7°, ±2° **Operating Temperature:** -40°C to 60°C Weight: 7.25 kg Housing Material: Glass filled polyester Acoustic Window: Glass reinforced epoxy

Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.









(Sum of TVR & RVR) -20 -40 -60 -80 -100 18 19 20 21 22

Frequency in kHz

## 19.5 kHz

#### AIRDUCER<sup>®</sup> Ultrasonic Transducer

#### **Applications**

- Long-range level measurement
- Powder, granular, and liquid, (40 m slurry tanks)

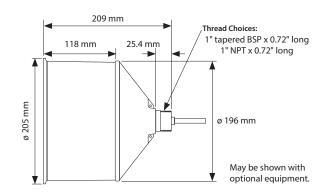
#### **Features**

- Long-term reliability
- Low maintenance
- Non-contact
- No moving parts

#### **Options**

- Cap with stainless steel 1" NPT or BSP thread mounts
- Cable length can be customized

#### **Dimensions**



#### **Additional Resources**



Applying Ultrasonic Technology



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### **AR30**



#### SPECIFICATIONS

Best Operating Frequency: 30 kHz, ±4%

Minimum Transmit Sensitivity at Best Transmit Frequency: 105 dB re  $1\mu$ Pa/V at 1 m

Minimum Receive Sensitivity at Best Receive Frequency:  $-155 \text{ dB re } 1V/\mu Pa$ 

Minimum Parallel Resistance: 700  $\Omega$ , ±30%

Minimum and Maximum Sensing Range\*: 60 cm to 30 m

Typical Sensing Range: 80 cm to 25 m

Free (1 kHz) Capacitance: 5,700 pF, ±20% pF

Beamwidth (@ -3 dB Full Angle): 12°, ±2°

Maximum Driving Voltage (2% Duty Cycle Tone Burst): 2,200 V

**Operating Temperature:** -40°C to 90°C

Weight: 800 g

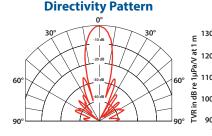
Housing Material: Glass filled polyester

Acoustic Window: Glass reinforced epoxy

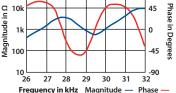
\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Note: Optimally, performance measurements should be taken when the transducer

**Note:** Optimally, performance measurements should be taken when the transducer reaches a steady state.

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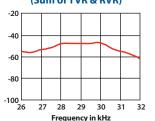






120 100 100 100 26 27 28 29 30 31 32 Frequency in kHz TVR — RVR —

Figure of Merit (Sum of TVR & RVR)



### 30 kHz

### AIRDUCER® Ultrasonic Transducer

#### **Applications**

- Level measurement
- Proximity
- Obstacle avoidance
- Traffic control

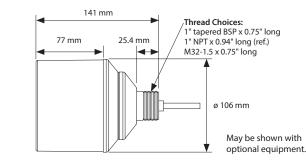
#### Features

- Rugged sealed construction
- Housing design will accommodate transceiver and signal processing electronics
- Standard internal shielding

#### **Options**

- Cylinder housing available with mounting cap kit
- Cable length can be customized
- Mounting cap available in BSP, NPT, or M32 threads
- 10 KΩ thermistor available for temperature compensation
- Available in PVDF housing for use in chemically aggressive environments (ARK30)
- Cap kit sold separately

#### Dimensions



#### **Additional Resources**





T1 Developer

Airmar's T1 Developer's Transceiver Module can be used for evaluation of AIRDUCER® Transducers.





### **ARK30**





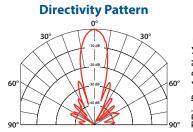
Optional cap kit

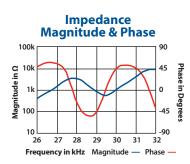
#### **SPECIFICATIONS**

Best Operating Frequency: 30 kHz, ±4% Minimum Transmit Sensitivity at Best Transmit Frequency: 105 dB re 1µPa/V at 1 m Minimum Receive Sensitivity at Best Receive Frequency: -155 dB re 1V/µPa Minimum Parallel Resistance: 700 Ω, ±30% Minimum and Maximum Sensing Range\*: 60 cm to 30 m Typical Sensing Range: 80 cm to 25 m Free (1 kHz) Capacitance: 5,700 pF, ±20% pF Beamwidth (@ -3 dB Full Angle): 12°, ±2° Maximum Driving Voltage (2% Duty Cycle Tone Burst): 2,200 V pp Operating Temperature: -40°C to 90°C **Weight:** 800 g Housing Material: Kynar® 720 Acoustic Window: Kynar® 720

\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing.

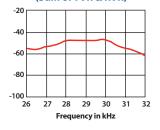
Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.





#### **Transmit & Receive** Voltage Response E <sup>130</sup> 150 **1лРа/V at 1** 110 -160 RVR in dB 170 re 1V/µPa ē 떙 100 180 ž 90 -190 29 32 26 27 28 30 31 Frequency in kHz TVR - RVR

**Figure of Merit** (Sum of TVR & RVR)



### 30 kHz

### AIRDUCER<sup>®</sup> Ultrasonic Transducer

#### **Applications**

- Level measurement
- Level measurement in chemically aggressive environments
- Food and beverage processing
- Proximity sensing
- Obstacle avoidance

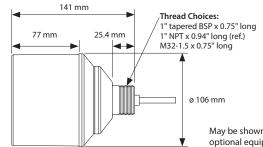
#### Features

- Rugged sealed construction
- Housing design will accommodate transceiver and signal processing electronics
- Standard internal shielding

#### Options

- Cable length can be customized
- 10 KΩ thermistor available for temperature compensation
- Mounting caps available in BSP, NPT, or M32 threads
- Available in alternate housing material (AR30)

#### **Dimensions**



May be shown with optional equipment.

**T1** 

#### **Additional Resources**



Applying Ultrasonic Technology





Airmar's T1 Developer's Transceiver Module can be used for evaluation of AIRDUCER® Transducers.



ARK30\_rT 04/11/24 As Airmar Technology Corporation ARK30\_rT 04/11/24 As Airmar constantly improves its products, all specifications are subject to change without notice. All pecifications typical at 22°C. Factory Mutual approved models suitable for: Class I, DAWISION 1, Hazardous ocations. AIRDUCER' is a registered trademark of Airmar Technology Corporation. AMPHENOL is a egistered trademark of Amphenol Corporation. Other company or product names mentioned in this locument may be trademarks or registered trademarks of their respective companies, which are not fifiliated with Airmar. KYNAR' is a registered trademark of Arkema.



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Optional cap kit

#### **SPECIFICATIONS**

Best Operating Frequency: 41 kHz, ±4% Minimum Transmit Sensitivity at Best Transmit Frequency:

110 dB re 1µPa/V at 1 m

Minimum Receive Sensitivity at Best Receive Frequency: -160 dB re 1V/µPa

**Minimum Parallel Resistance:** 150  $\Omega$ , ±30%

Minimum and Maximum Sensing Range\*: 30 cm to 20 m

Typical Sensing Range: 35 cm to 15 m

Free (1 kHz) Capacitance: 5,000 pF, ±20% pF

Beamwidth (@ -3 dB Full Angle): 14°, ±2°

Maximum Driving Voltage (2% Duty Cycle Tone Burst): 1,800 V

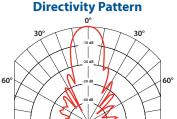
**Operating Temperature:** -40°C to 90°C

**Weight:** 560 g

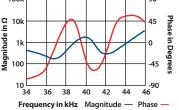
Housing Material: Glass filled polyester

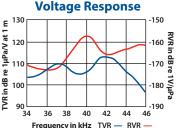
Acoustic Window: Glass reinforced epoxy

\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.



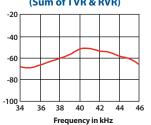






**Transmit & Receive** 

**Figure of Merit** (Sum of TVR & RVR)



### 41 kHz

### AIRDUCER® Ultrasonic Transducer

#### **Applications**

- Level measurement
- Proximity
- Obstacle avoidance
- Traffic control
- Flow measurement

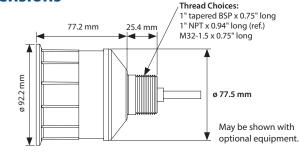
#### **Features**

- Rugged sealed construction
- Housing design will accommodate transceiver and signal processing electronics
- Standard internal shielding

#### Options

- Cable length can be customized
- Mounting cap available in BSP, NPT, or M32 threads
- Available in PVDF housing for use in chemically aggressive environments (ARK41)
- 10 KΩ thermistor available for temperature compensation

#### **Dimensions**



#### **Additional Resources**

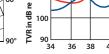




回必 **T1** Developer Board

Airmar's T1 Developer's Transceiver Module can be used for evaluation of AIRDUCER® Transducers.

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#### SPECIFICATIONS

Best Operating Frequency: 41 kHz, ±4% Minimum Transmit Sensitivity at Best Transmit Frequency:

108 dB re 1µPa/V at 1 m

Minimum Receive Sensitivity at Best Receive Frequency: -175 dB re 1V/µPa

**Minimum Parallel Resistance:** 200  $\Omega$ , ±30%

Minimum and Maximum Sensing Range\*: 30 cm to 20 m

Typical Sensing Range: 35 cm to 15 m

Free (1 kHz) Capacitance: 5,000 pF, ±20% pF

Beamwidth (@ -3 dB Full Angle): 14°, ±2°

Maximum Driving Voltage (2% Duty Cycle Tone Burst): 1,800 V

**Operating Temperature:** -40°C to 90°C

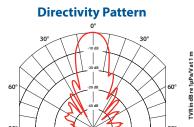
Weight: 560 g

Housing Material: Kynar<sup>®</sup> 720

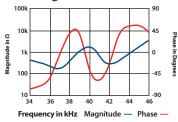
Acoustic Window: Kynar<sup>®</sup> 720

\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing.

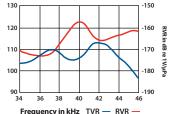
Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.transducer reaches a steady state.



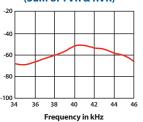
#### Impedance **Magnitude & Phase**



#### Transmit & Receive Voltage Response



#### **Figure of Merit** (Sum of TVR & RVR)



### 41 kHz

### **AIRDUCER® Ultrasonic Transducer**

#### **Applications**

- Level measurement in chemically aggressive environments
- Food and beverage processing
- Flow monitoring

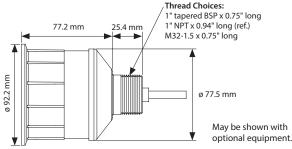
#### **Features**

- Rugged one-piece PVDF housing is U.S. FDA compliant
- Housing design will accommodate transceiver and signal processing electronics
- Standard internal shielding

#### Options

- Cable length can be customized
- 10 KΩ thermistor available for temperature compensation
- Mounting caps available in BSP, NPT, or M32 threads
- Available in alternate housing material (AR41)

#### **Dimensions**



#### **Additional Resources**



Applying Ultrasonic Technology



Τ1

Airmar's T1 Developer's Transceiver Module can be used for evaluation of AIRDUCER® Transducers.

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Optional cap kit

#### SPECIFICATIONS

Best Operating Frequency: 50 kHz, ±4%

**Minimum Transmit Sensitivity at Best Transmit Frequency:** 106 dB re 1µPa/V at 1 m

Minimum Receive Sensitivity at Best Receive Freq.: -162 dB re  $1V/\mu$ Pa Minimum Parallel Resistance: 450  $\Omega$ , ±30%

Minimum and Maximum Sensing Range\*: 25 cm to 15 m

Typical Sensing Range: 30 cm to 10 m

**Free (1 kHz) Capacitance:** 5,700 pF, ±20% pF

Beamwidth (@ -3 dB Full Angle): 12°, ±2°

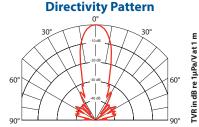
Maximum Driving Voltage (2% Duty Cycle Tone Burst): 1,500 V

Operating Temperature: -40°C to 90°C

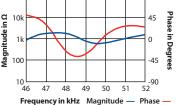
Weight: 560 g

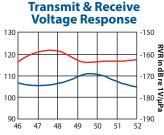
Housing Material: Glass filled polyester Acoustic Window: Glass reinforced epoxy

\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.



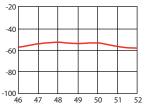






Frequency in kHz TVR — RVR Figure of Merit





Frequency in kHz

### 50 kHz

### AIRDUCER® Ultrasonic Transducer

#### **Applications**

- Level measurement
- Open channel flow
- Obstacle avoidance
- Proximity

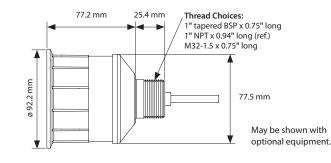
#### **Features**

- Rugged sealed construction
- Housing design will accommodate transceiver and signal processing electronics
- Standard internal shielding

#### **Options**

- Cable length can be customized
- Mounting cap available in BSP, NPT, or M32 threads
- 10 KΩ thermistor available for temperature compensation
- Available in PVDF housing for use in chemically aggressive environments (ARK50)

#### Dimensions



#### **Additional Resources**



Applying Ultrasonic Technology





Airmar's T1 Developer's Transceiver Module can be used for evaluation of AIRDUCER® Transducers.

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100k



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### AR50CH



#### **SPECIFICATIONS**

Best Operating Frequency: 50 kHz, ±4%

Minimum Transmit Sensitivity at Best Transmit Frequency: 106 dB re 1µPa/V at 1 m

Minimum Receive Sensitivity at Best Receive Freq.: -162 dB re 1V/µPa

Minimum Parallel Resistance: 450 Ω, ±30%

Minimum and Maximum Sensing Range\*: 25 cm to 15 m

Typical Sensing Range: 30 cm to 10 m

Free (1 kHz) Capacitance: 5,700 pF, ±20% pF

Beamwidth (@ -3 dB Full Angle): 12°, ±2°

Maximum Driving Voltage (2% Duty Cycle Tone Burst): 1,500 V

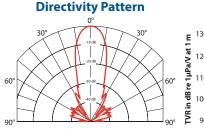
Operating Temperature: -40°C to 90°C

Weight: 160 g

Housing Material: Glass filled polyester

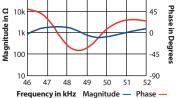
Acoustic Window: Glass reinforced epoxy

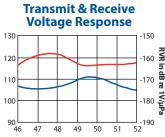
\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.





100

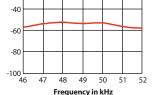




Frequency in kHz TVR - RVR -**Figure of Merit** (Sum of TVR & RVR)

-20





### 50 kHz

### **AIRDUCER® Ultrasonic Transducer**

#### **Applications**

- Level measurement
- Open channel flow
- Obstacle avoidance
- Proximity
- Robotics

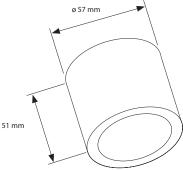
#### **Features**

- Improved deadband performance as compared to AT50
- Rugged sealed construction
- Cylindrical design allows for installation in various applications

#### Options

- 10 KΩ thermistor available for temperature compensation
- Available in alternate housing material (ATK50)

#### **Dimensions**



#### **Additional Resources**



Applying Ultrasonic Technology

Τ1 Developer Board



Airmar's T1 Developer's Transceiver Module can be used for evaluation of AIRDUCER® Transducers.

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### ARK50-THD



#### SPECIFICATIONS

Best Operating Frequency: 50 kHz, ±4%

Minimum Transmit Sensitivity at Best Transmit Frequency: 105 dB re 1µPa/V at 1 m

**Minimum Receive Sensitivity at Best Receive Freq.:** -170 dB re 1V/µPa

**Minimum Parallel Resistance:** 350  $\Omega$ , ±30%

Minimum and Maximum Sensing Range\*: 30 cm to 15 m

Typical Sensing Range: 35 cm to 10 m

Free (1 kHz) Capacitance: 5,000 pF, ±20% pF

Beamwidth (@ -3 dB Full Angle): 10°, ±2°

Maximum Driving Voltage (2% Duty Cycle Tone Burst): 1,000  $V_{pp}$ 

Operating Temperature: -40°C to 90°C

Weight: 250 g

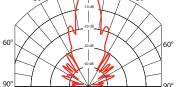
Housing Material: Kynar<sup>®</sup> 720

Acoustic Window: Kynar® 720

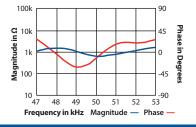
\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.

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Impedance Magnitude & Phase



### Transmit & Receive Voltage Response

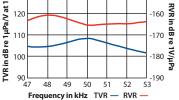
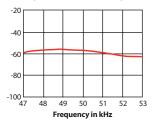


Figure of Merit (Sum of TVR & RVR)



### 50 kHz

#### AIRDUCER® Ultrasonic Transducer

#### **Applications**

- Level measurement in chemically aggressive environments
- · Food and beverage processing
- Flow monitoring

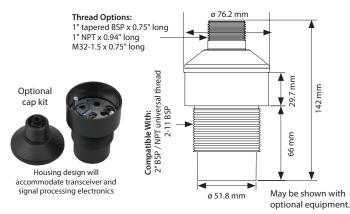
#### **Features**

- Rugged one-piece PVDF housing is U.S. FDA compliant
- Threaded design allows for installation in various applications
- Standard internal shielding

#### Options

- Nut—2" BSP thread
- Complete assembly available with standard cable lengths
- 10 KΩ thermistor available for temperature compensation
- 12 mm extension sleeve
- Mounting caps available in BSP, NPT, or M32 threads
- Optional PCB standoff configuration lengths available

#### **Dimensions**



#### **Additional Resources**



Applying Ultrasonic Technology



Airmar's T1 Developer's Transceiver Module can be used for evaluation of AIRDUCER® Transducers.

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### **AT50**



#### **SPECIFICATIONS**

Best Operating Frequency: 50 kHz, ±4%

Minimum Transmit Sensitivity at Best Transmit Frequency: 106 dB re 1µPa/V at 1 m

Minimum Receive Sensitivity at Best Receive Freq .:- 162 dB re 1V/µPa Minimum Parallel Resistance: 450 Ω, ±30%

Minimum and Maximum Sensing Range\*: 30 cm to 15 m

Typical Sensing Range: 35 cm to 10 m

Free (1 kHz) Capacitance: 5,700 pF, ±20% pF

Beamwidth (@ -3 dB Full Angle): 12°, ±2°

Maximum Driving Voltage (2% Duty Cycle Tone Burst): 1,500 V

Operating Temperature: -40°C to 90°C

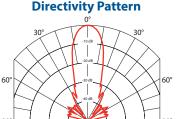
Weight: 160 g

Housing Material: Glass filled polyester

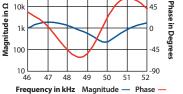
Acoustic Window: Glass reinforced epoxy

\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.

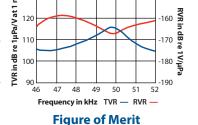
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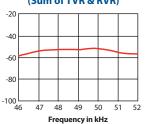








(Sum of TVR & RVR)



### 50 kHz

### AIRDUCER® Ultrasonic Transducer

#### **Applications**

- Level measurement
- Open channel flow
- Proximity
- Obstacle avoidance
- Robotics

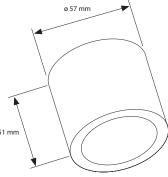
#### **Features**

- Rugged sealed construction
- Cylindrical design allows for installation in various applications

#### Options

10 KΩ thermistor available for temperature compensation

#### **Dimensions**



### **Additional Resources**







Airmar's T1 Developer's Transceiver Module can be used for evaluation of AIRDUCER® Transducers.

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### **ATK50**



#### **SPECIFICATIONS**

Best Operating Frequency: 50 kHz, ±4%

Minimum Transmit Sensitivity at Best Transmit Frequency: 105 dB re 1µPa/V at 1 m

Minimum Receive Sensitivity at Best Receive Freq .:- 170 dB re 1V/µPa

Minimum Parallel Resistance: 350 Ω, ±30%

Minimum and Maximum Sensing Range\*: 30 cm to 15 m

Typical Sensing Range: 35 cm to 10 m

Free (1 kHz) Capacitance: 5,000 pF, ±20% pF

Beamwidth (@ -3 dB Full Angle): 10°, ±2°

Maximum Driving Voltage (2% Duty Cycle Tone Burst): 1,000 V

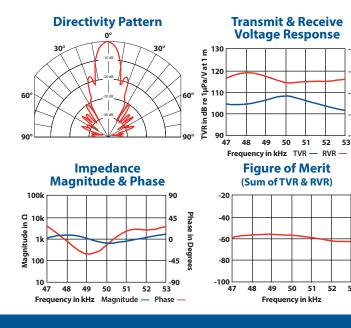
Operating Temperature: -40°C to 90°C

Weight: 190 g

Housing Material: Kynar® 720

Acoustic Window: Kynar® 720

\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.



### 50 kHz

#### **AIRDUCER® Ultrasonic Transducer**

#### **Applications**

- Level measurement in chemically aggressive environments
- Food and beverage processing
- Proximity sensing
- Obstacle avoidance

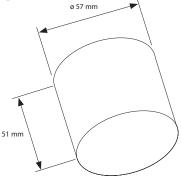
#### Features

- Rugged one-piece PVDF housing is U.S. FDA compliant
- Cylindrical design allows for installation in various applications

#### Options

10 KΩ thermistor available for temperature compensation

#### **Dimensions**



#### **Additional Resources**



150 -160 RVR in

180

190

53

dB re 1V/µF 170



回议 Developer Board

**T1** 

Airmar's T1 Developer's Transceiver Module can be used for evaluation of AIRDUCER® Transducers.

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#### **SPECIFICATIONS**

Optional cap kit

Best Operating Frequency: 50 kHz, ±4%

Minimum Transmit Sensitivity at Best Transmit Frequency: 105 dB re 1µPa/V at 1 m

Minimum Receive Sensitivity at Best Receive Freq.: -170 dB re 1V/µPa

Minimum Parallel Resistance: 350 Ω, ±30%

Minimum and Maximum Sensing Range\*: 30 cm to 15 m

Typical Sensing Range: 35 cm to 10 m

Free (1 kHz) Capacitance: 5,000 pF, ±20% pF

Beamwidth (@ -3 dB Full Angle): 10°, ±2°

Maximum Driving Voltage (2% Duty Cycle Tone Burst): 1,000 V

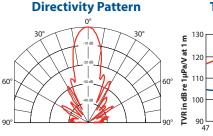
Operating Temperature: -40°C to 90°C

Weight: 250 g

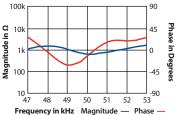
Housing Material: Kynar® 720

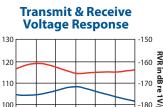
Acoustic Window: Kynar<sup>®</sup> 720

\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.



Impedance **Magnitude & Phase** 



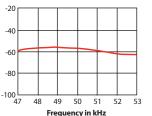


50 Frequency in kHz TVR - RVR **Figure of Merit** 

51 52 53

48 49 190

(Sum of TVR & RVR)



### 50 kHz

#### **AIRDUCER® Ultrasonic Transducer**

#### **Applications**

- Level measurement in chemically aggressive environments
- · Food and beverage processing
- Flow monitoring
- Proximity sensing

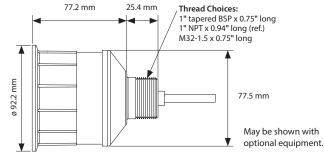
#### Features

- Rugged one-piece PVDF housing is U.S. FDA compliant
- Housing design will accommodate transceiver and signal processing electronics
- Standard internal shielding

#### **Options**

- Cable length can be customized
- 10 KΩ thermistor available for temperature compensation
- Mounting cap available in BSP, NPT or M32 threads
- Available in alternate housing (AR50)

#### **Dimensions**



#### **Additional Resources**



Applying Ultrasonic Technology



Airmar's T1 Developer's Transceiver Module can be used for evaluation of AIRDUCER® Transducers.

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### ARK75-THD



#### SPECIFICATIONS

Best Operating Frequency: 75 kHz, ±4%

**Minimum Transmit Sensitivity at Best Transmit Frequency:** 106 dB re 1µPa/V at 1 m

Minimum Receive Sensitivity at Best Receive Freq.: -165 dB re 1V/µPa

Minimum Parallel Resistance: 150 Ω, ±30%

Minimum and Maximum Sensing Range\*: 20 cm to 10 m

Typical Sensing Range: 25 cm to 7 m

Free (1 kHz) Capacitance: 1,850 pF, ±20% pF

Beamwidth (@ -3 dB Full Angle): 14°, ±2°

Maximum Driving Voltage (2% Duty Cycle Tone Burst): 1,000 V

Operating Temperature: -40°C to 90°C

Weight: 250 g

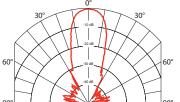
Housing Material: Kynar® 720

Acoustic Window: Kynar<sup>®</sup> 720

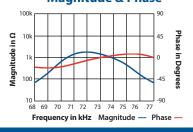
\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.

E 130

#### **Directivity Pattern**



#### Impedance Magnitude & Phase





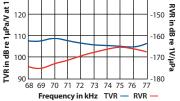
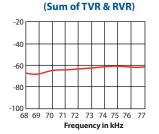


Figure of Merit



### 75 kHz

#### AIRDUCER<sup>®</sup> Ultrasonic Transducer

#### **Applications**

- Level measurement in chemically aggressive environments
- · Food and beverage processing
- Flow monitoring

#### **Features**

- Rugged one-piece PVDF housing is U.S. FDA compliant
- Threaded design allows for installation in various applications
- Standard internal shielding

#### **Options**

- Nut—1.5" BSP thread
- Cable length can be customized
- 10 K $\Omega$  thermistor available for temperature compensation
- 12 mm extension sleeve
- Mounting caps available in BSP, NPT, or M32 threads
- Optional PCB standoff configuration lengths available

#### Dimensions



optional equipment.

#### **Additional Resources**





T1 Developer 200 Board

Airmar's T1 Developer's Transceiver Module can be used for evaluation of AIRDUCER  $^{\circ}$  Transducers.

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### **AT75**



#### SPECIFICATIONS

Best Operating Frequency: 75 kHz, ±4% Minimum Transmit Sensitivity at Best Transmit Frequency: 111 dB re 1µPa/V at 1 m

Minimum Receive Sensitivity at Best Receive Freq .: -162 dB re 1V/µPa

Minimum Parallel Resistance:  $170 \Omega$ ,  $\pm 30\%$ 

Minimum and Maximum Sensing Range\*: 20 cm to 10 m

Typical Sensing Range: 25 cm to 7 m

Free (1 kHz) Capacitance: 1,850 pF, ±20% pF

Beamwidth (@ -3 dB Full Angle): 15°, ±2°

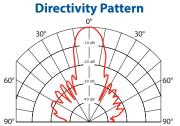
Maximum Driving Voltage (2% Duty Cycle Tone Burst): 1,000 V Operating Temperature: -40°C to 90°C

Weight: 45 g

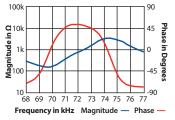
Housing Material: Glass filled polyester

Acoustic Window: Glass reinforced epoxy

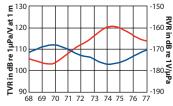
\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.



Impedance **Magnitude & Phase** 

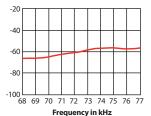


#### **Transmit & Receive** Voltage Response



Frequency in kHz TVR - RVR

**Figure of Merit** (Sum of TVR & RVR)



## 75 kHz

AIRDUCER<sup>®</sup> Ultrasonic Transducer

#### **Applications**

- Level measurement
- Open channel flow
- Proximity
- Obstacle avoidance
- Robotics

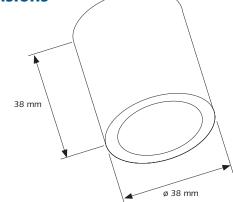
#### Features

- Rugged sealed construction
- Cylindrical design allows for installation in various applications

#### **Options**

- Complete assembly or kit versions
- Available in PVDF housing for use in chemically aggressive environments (ATK75)
- 10 KΩ thermistor available for temperature compensation

#### **Dimensions**



### **Additional Resources**

Airmar Technol



Airmar's T1 Developer's Transceiver Module can be used for evaluation of AIRDUCER® Transducers.



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### ATK75



#### SPECIFICATIONS

Minimum Transmit Sensitivity at Best Transmit Frequency: 111 dB re 1µPa/V at 1 m Minimum Receive Sensitivity at Best Receive Freq.: -162 dB re 1V/µPa Minimum Parallel Resistance: 170  $\Omega$ , ±30% Minimum and Maximum Sensing Range\*: 20 cm to 10 m Typical Sensing Range: 25 cm to 7 m Free (1 kHz) Capacitance: 1,850 pF, ±20% pF Beamwidth (@ -3 dB Full Angle): 15°, ±2° Maximum Driving Voltage (2% Duty Cycle Tone Burst): 1,000 V<sub>pp</sub> Operating Temperature: -40°C to 90°C Weight: 45 g Housing Material: Glass filled polyester

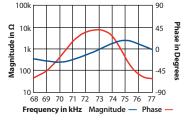
Acoustic Window: Glass reinforced epoxy

Best Operating Frequency: 75 kHz, ±4%

\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.



Impedance Magnitude & Phase



#### Transmit & Receive Voltage Response

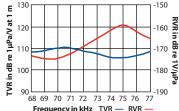
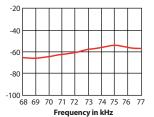


Figure of Merit (Sum of TVR & RVR)



## 75 kHz

#### AIRDUCER<sup>®</sup> Ultrasonic Transducer

#### **Applications**

- Level measurement in chemically aggressive environments
- Automation control
- Food and beverage processing
- Proximity sensing
- Obstacle avoidance

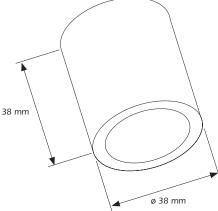
#### **Features**

- Rugged one-piece PVDF housing is U.S. FDA compliant
- Cylindrical design allows for installation in various applications

#### **Options**

- 10 KΩ thermistor available for temperature compensation
- Available in alternate housing (AT75)

#### **Dimensions**



#### **Additional Resources**



Airmar's T1 Developer's Transceiver Module can be used for evaluation of AIRDUCER® Transducers.



www.airmar.com

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### AT120

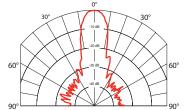


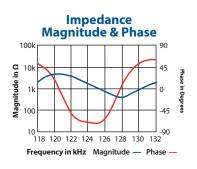
#### SPECIFICATIONS

Best Operating Frequency: 125 kHz,  $\pm 4\%$ Minimum Transmit Sensitivity at Best Transmit Frequency: 107 dB re 1µPa/V at 1 m Minimum Receive Sensitivity at Best Receive Freq.: -169 dB re 1V/µPa Minimum Parallel Resistance: 420  $\Omega$ ,  $\pm 30\%$ Minimum and Maximum Sensing Range\*: 15 cm to 7 m Typical Sensing Range: 20 cm to 3 m Free (1 kHz) Capacitance: 1,000 pF,  $\pm 20\%$  pF Beamwidth (@ -3 dB Full Angle): 12°,  $\pm 2°$ Maximum Driving Voltage (2% Duty Cycle Tone Burst): 800 V pp Operating Temperature: -40°C to 90°C Weight: 20 g Housing Material: Glass filled polyester Acoustic Window: Glass reinforced epoxy

\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.

#### **Directivity Pattern**





#### Transmit & Receive Voltage Response

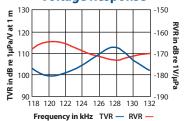
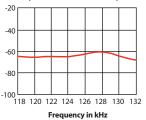


Figure of Merit (Sum of TVR & RVR)



### **125 kHz** AIRDUCER<sup>°</sup> Ultrasonic Transducer

#### Applications

- Level measurement
- Automation control
- Proximity
- Obstacle avoidance
- Robotics

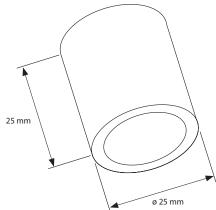
#### **Features**

- Rugged sealed construction
- Cylindrical design allows for installation in various applications

#### **Options**

- Available in PVDF housing for use in chemically aggressive environments (ATK120)
- 10 K $\Omega$  thermistor available for temperature compensation

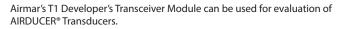
#### **Dimensions**



#### **Additional Resources**



T1 🔲 Developer 🐱 Board



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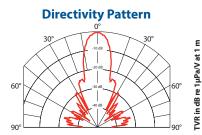
### ATK120

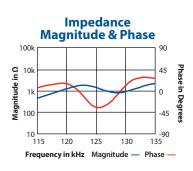


#### SPECIFICATIONS

Best Operating Frequency: 125 kHz, ±4% Minimum Transmit Sensitivity at Best Transmit Frequency: 102 dB re 1µPa/V at 1 m Minimum Receive Sensitivity at Best Receive Freq.: -172 dB re 1V/µPa Minimum Parallel Resistance: 500  $\Omega$ , ±30% Minimum and Maximum Sensing Range\*: 15 cm to 5 m Typical Sensing Range: 20 cm to 3 m Free (1 kHz) Capacitance: 1,000 pF, ±20% pF Beamwidth (@ -3 dB Full Angle): 10°, ±2° Maximum Driving Voltage (2% Duty Cycle Tone Burst): 800 V<sub>pp</sub> Operating Temperature: -40°C to 90°C Weight: 30 g Housing Material: Kynar<sup>®</sup> 720 Acoustic Window: Kynar<sup>®</sup> 720

\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.





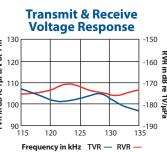
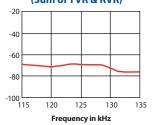


Figure of Merit (Sum of TVR & RVR)



### 125 kHz

#### AIRDUCER<sup>®</sup> Ultrasonic Transducer

#### **Applications**

- Level measurement in chemically aggressive environments
- Automation control
- Food and beverage processing
- Proximity sensing
- Obstacle avoidance

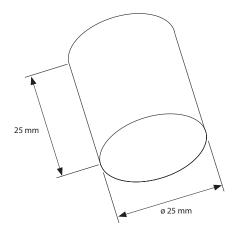
#### **Features**

- Rugged one-piece PVDF housing is U.S. FDA compliant
- Cylindrical design allows for installation in various applications

#### **Options**

- 10 KΩ thermistor available for temperature compensation
- Available in alternate housing (AT120)

#### **Dimensions**



#### **Additional Resources**





T1 🔳 🔅 Developer 🗟 Board



Airmar's T1 Developer's Transceiver Module can be used for evaluation of AIRDUCER® Transducers.



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#### SPECIFICATIONS

Best Operating Frequency: 125 kHz, ±4%

Minimum Transmit Sensitivity at Best Transmit Frequency: 102 dB re  $1\mu$ Pa/V at 1 m

Minimum Receive Sensitivity at Best Receive Freq.: -172 dB re 1V/µPa

Minimum Parallel Resistance:  $500 \Omega$ ,  $\pm 30\%$ 

Minimum and Maximum Sensing Range\*: 15 cm to 5 m

Typical Sensing Range: 20 cm to 3 m

Free (1 kHz) Capacitance: 1,000 pF, ±20% pF

Beamwidth (@ -3 dB Full Angle):  $12^{\circ}$ ,  $\pm 2^{\circ}$ 

Maximum Driving Voltage (2% Duty Cycle Tone Burst): 800 V

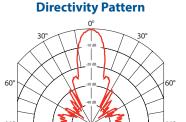
Operating Temperature: -40°C to 90°C

Weight: 250 g

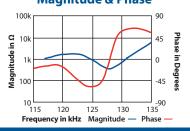
Housing Material: Kynar® 720

Acoustic Window: Kynar® 720

\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.



Impedance Magnitude & Phase



#### Transmit & Receive Voltage Response

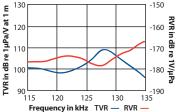
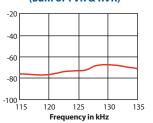


Figure of Merit (Sum of TVR & RVR)



### **125 kHz** AIRDUCER<sup>®</sup> Ultrasonic Transducer

#### **Applications**

- Level measurement in chemically aggressive environments
- · Food and beverage processing

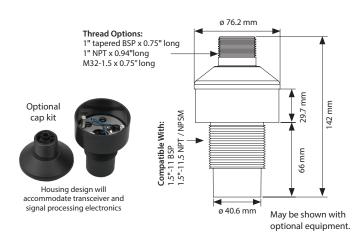
#### **Features**

- Rugged one-piece PVDF housing is U.S. FDA compliant
- Threaded design allows for installation in various applications
- Standard internal shielding

#### **Options**

- Nut—1.5" BSP thread
- Complete assembly available with standard cable lengths
- 10 KΩ thermistor available for temperature compensation
- 12 mm extension sleeve
- PCB standoff configuration lengths available

#### **Dimensions**



#### **Additional Resources**



Applying I Ultrasonic Technology

T1 Developer 2008 Board



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### **AT200**



#### SPECIFICATIONS

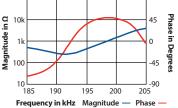
Best Operating Frequency: 200 kHz,  $\pm 4\%$ Minimum Transmit Sensitivity at Best Transmit Frequency: 105 dB re 1µPa/V at 1 m Minimum Receive Sensitivity at Best Receive Freq.: -174 dB re 1V/µPa Minimum Parallel Resistance: 180  $\Omega$ ,  $\pm 30\%$ Minimum and Maximum Sensing Range\*: 10 cm to 3 m Typical Sensing Range: 12 cm to 2 m Free (1 kHz) Capacitance: 500 pF,  $\pm 20\%$  pF Beamwidth (@ -3 dB Full Angle): 12°,  $\pm 2°$ Maximum Driving Voltage (2% Duty Cycle Tone Burst): 500 V operating Temperature: -40°C to 90°C Weight: 6 g Housing Material: Glass filled polyester

Acoustic Window: Glass reinforced epoxy

\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.







#### Transmit & Receive Voltage Response

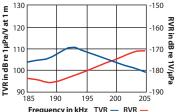
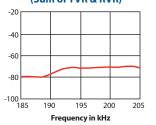


Figure of Merit (Sum of TVR & RVR)



## 200 kHz

**AIRDUCER<sup>°</sup> Ultrasonic Transducer** 

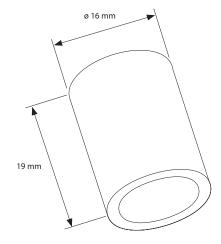
#### **Applications**

- Level measurement
- Automation control
- Proximity
- Obstacle avoidance
- Robotics

#### **Features**

- Rugged sealed construction
- Cylindrical design allows for installation in various applications
- Available in PVDF housing for use in chemically aggressive environments (ATK200)

#### **Dimensions**



#### **Additional Resources**



Applying 🔲 Ultrasonic 🏹 Technology 🔐



Airmar's T1 Developer's Transceiver Module can be used for evaluation of AIRDUCER® Transducers.



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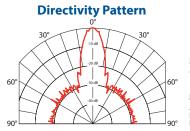
### ATK200

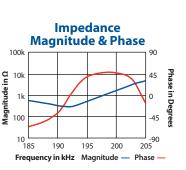


#### SPECIFICATIONS

Best Operating Frequency: 200 kHz, ±4% Minimum Transmit Sensitivity at Best Transmit Frequency: 102 dB re 1µPa/V at 1 m Minimum Receive Sensitivity at Best Receive Freq.: -180 dB re 1V/µPa Minimum Parallel Resistance: 300  $\Omega$ , ±30% Minimum and Maximum Sensing Range\*: 10 cm to 3 m Typical Sensing Range: 12 cm to 2 m Free (1 kHz) Capacitance: 500 pF, ±20% pF Beamwidth (@ -3 dB Full Angle): 10°, ±2° Maximum Driving Voltage (2% Duty Cycle Tone Burst): 500 V<sub>pp</sub> Operating Temperature: -40°C to 60°C Weight: 6 g Housing Material: Kynar<sup>®</sup> 720 Acoustic Window: Kynar<sup>®</sup> 720

\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.





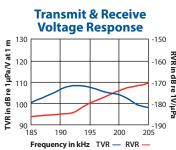
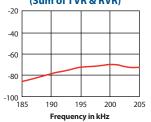


Figure of Merit (Sum of TVR & RVR)



### 200 kHz

#### AIRDUCER<sup>®</sup> Ultrasonic Transducer

#### **Applications**

- · Level measurement in chemically aggressive environments
- Automation control
- Food and beverage processing
- Proximity sensing
- Obstacle avoidance
- Flow monitoring

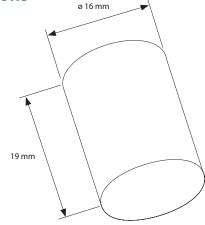
#### **Features**

- Rugged one-piece PVDF housing is U.S. FDA compliant
- Cylindrical design allows for installation in various applications

#### **Options**

• Available in alternate housing (AT200)

#### **Dimensions**

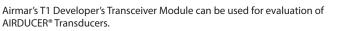


#### **Additional Resources**



Applying Ultrasonic Technology





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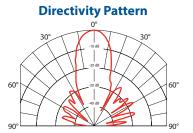
### AT225

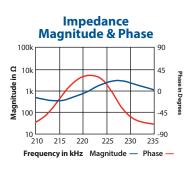


#### SPECIFICATIONS

Best Operating Frequency: 228 kHz,  $\pm 4\%$ Minimum Transmit Sensitivity at Best Transmit Frequency: 101 dB re 1µPa/V at 1 m Minimum Receive Sensitivity at Best Receive Freq.: -180 dB re 1V/µPa Minimum Parallel Resistance: 400  $\Omega$ ,  $\pm 30\%$ Minimum and Maximum Sensing Range\*: 8 cm to 2.5 m Typical Sensing Range: 10 cm to 1.5 m Free (1 kHz) Capacitance: 450 pF,  $\pm 20\%$  pF Beamwidth (@ -3 dB Full Angle): 15°,  $\pm 2^{\circ}$ Maximum Driving Voltage (2% Duty Cycle Tone Burst): 500 V operating Temperature: -40°C to 90°C Weight: 4 g Housing Material: Glass filled polyester Acoustic Window: Glass reinforced epoxy

\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.





#### Transmit & Receive Voltage Response

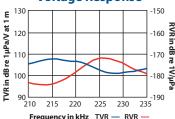
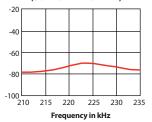


Figure of Merit (Sum of TVR & RVR)



### 228 kHz

AIRDUCER<sup>®</sup> Ultrasonic Transducer

#### **Applications**

- Level measurement
- Automation control
- Proximity
- Obstacle avoidance
- Robotics
- Flow

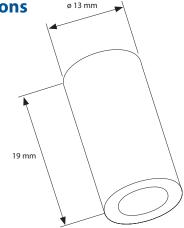
#### **Features**

- Rugged sealed construction
- Cylindrical design allows for installation in various applications

#### **Options**

- Optional circuit board mounting pins
- 2 wire version is standard. Also available with coaxial cable.

#### Dimensions

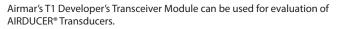


#### **Additional Resources**



Applying Ultrasonic Technology







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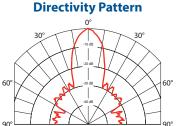
### AT300



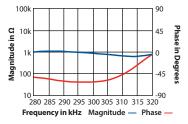
#### SPECIFICATIONS

Best Operating Frequency: 300 kHz,  $\pm 4\%$ Minimum Transmit Sensitivity at Best Transmit Frequency: 95 dB re 1µPa/V at 1 m Minimum Receive Sensitivity at Best Receive Freq.: -180 dB re 1V/µPa Minimum Parallel Resistance:  $650 \Omega$ ,  $\pm 30\%$ Minimum and Maximum Sensing Range\*: 4 cm to 1 m Typical Sensing Range: 5 cm to 50 cm Free (1 kHz) Capacitance: 450 pF,  $\pm 20\% \text{ pF}$ Beamwidth (@ -3 dB Full Angle):  $10^\circ$ ,  $\pm 2^\circ$ Maximum Driving Voltage (2% Duty Cycle Tone Burst):  $200 V_{pp}$ Operating Temperature:  $-40^\circ$ C to  $70^\circ$ C Weight: 4 g Housing Material: Glass filled polyester Acoustic Window: Glass reinforced epoxy

\*Pulse-Echo Mode: Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Note: Optimally, performance measurements should be taken when the transducer reaches a steady state.



Impedance Magnitude & Phase



#### Transmit & Receive Voltage Response

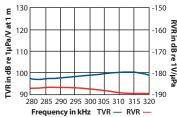
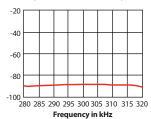


Figure of Merit (Sum of TVR & RVR)



### 300 kHz

AIRDUCER<sup>®</sup> Ultrasonic Transducer

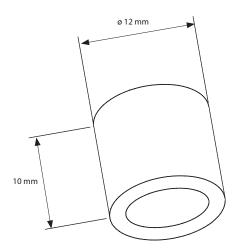
#### **Applications**

- Level measurement
- Automation control
- Proximity
- Obstacle avoidance
- Robotics

#### **Features**

- Rugged sealed construction
- Cylindrical design allows for installation in various applications
- Short-range measurement capabilities

#### Dimensions

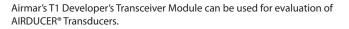


### **Additional Resources**









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### Ultrasonic Air Transducer Transceiver Module

Technical Data Sheet

### **T1** Developer's Module for Evaluation of AIRDUCER® Transducers

Designed for fast and easy evaluation of Airmar's Ultrasonic Transducers, we are pleased to offer our versatile, T1 Transceiver Module. The entire frequency range of 30 kHz to 300 kHz Airmar transducers can be driven by the T1. With transmit voltage output of 200  $V_{pp}$  to 500  $V_{pp}$  and adjustable pulse width and frequency, the suitability of a piezoelectric transducer for a specific application can be clearly assessed.

A selectable receiver gain up to 60 dB allows amplification of echoes and viewing of waveforms on any oscilloscope. The T1 is a compact printed circuit board 76 mm x 76 mm and offers convenient connections to our ultrasonic transducer and your power supply.



### 30-300 kHz

Transceiver Module

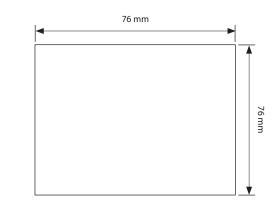
#### **Applications**

- Echo-ranging
- Liquid-level detection
- Obstacle avoidance
- Proximity sensing

#### **Features**

• Frequency and pulse width adjustable

#### **Dimensions**



#### **Additional Resources**

Theory of Operations



Applying Ultrasonic Technology





www.airmar.com

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SPECIFICATIONS

Transmit Voltage:  $200 V_{pp}$  to  $500 V_{pp}$ Selectable Receiver Gain: 0 dB, 20 dB, 40 dB, or 60 dB

Frequencies:

30 kHz, 41 kHz, 50 kHz, 75 kHz, 120 kHz, 200 kHz, 225 kHz or 300 kHz Supply Voltage: 15 VDC

Printed Circuit Board Size: 76 mm x 76 mm