

## Ultrasonic Transducers for Level and Flow



*Sensor technology for your environment.*



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 **AIMMAR**<sup>®</sup>  
TECHNOLOGY CORPORATION



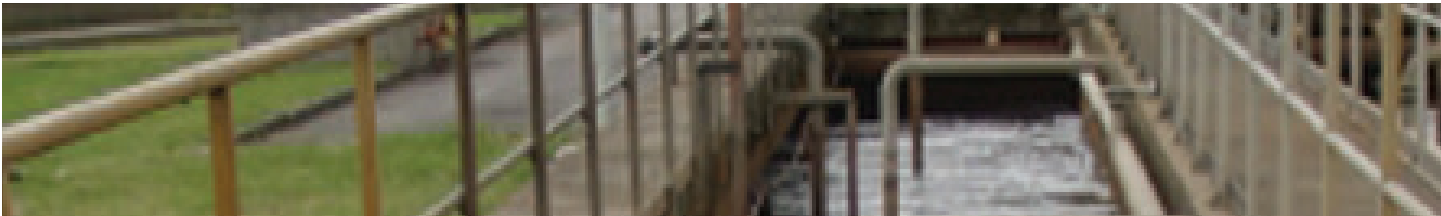


# Ultrasonic Air Ranging Transducers

AIRMAR's precision tuned ultrasonic transducers provide non-contact solutions for your toughest sensing problems. Safe, rugged and reliable, our transducers function extremely well in harsh environments. Airducers® are rated IP68 and have no movable parts to break down. Typical applications include level and flow measurement and control.

Model		Frequency	Diameter	Typical Range	Beamwidth
ART15		15 kHz	ø 169 mm	1 m to 60 m	6°
AR20		20 kHz	ø 205 mm	80 cm to 40 m	7°
AR30		30 kHz	ø 106 mm	80 cm to 25 m	12°
ARK30		30 kHz	ø 106 mm	80 cm to 25 m	12°
	PVDF housing for chemically aggressive environments				
AR41		41 kHz	ø 92.2 mm	35 cm to 15 m	14°
ARK41		41 kHz	ø 92.2 mm	35 cm to 15 m	14°
	PVDF housing for chemically aggressive environments				
AR50		50 kHz	ø 92.2 mm	30 cm to 10 m	12°
AR50CH		50 kHz	ø 57 mm	30 cm to 10 m	12°
ARK50-THD		50 kHz	ø 51 mm 2" pipe thread	35 cm to 10 m	10°
	PVDF housing for chemically aggressive environments				
AT50		50 kHz	ø 57 mm	35 cm to 10 m	12°
ATK50		50 kHz	ø 57 mm	35 cm to 10 m	10°
	PVDF housing for chemically aggressive environments				

Model		Frequency	Diameter	Typical Range	Beamwidth
ARK50		50 kHz	ø 92.2 mm	35 cm to 10 m	10°
	PVDF housing for chemically aggressive environments				
ARK75-THD		75 kHz	ø 40.6 mm 1.5" pipe thread	25 cm to 7 m	14°
	PVDF housing for chemically aggressive environments				
AT75		75 kHz	ø 38 mm	25 cm to 7 m	15°
ATK75		75 kHz	ø 38 mm	25 cm to 7 m	14°
	PVDF housing for chemically aggressive environments				
AT120		125 kHz	ø 25 mm	20 cm to 3 m	12°
ATK120		125 kHz	ø 25 mm	20 cm to 3 m	10°
	PVDF housing for chemically aggressive environments				
ARK120-THD		125 kHz	ø 40.6 mm 1.5" pipe thread	20 cm to 3 m	12°
	PVDF housing for chemically aggressive environments				
AT200		200 kHz	ø 16 mm	12 cm to 2 m	12°
ATK200		200 kHz	ø 16 mm	12 cm to 2 m	10°
	PVDF housing for chemically aggressive environments				
AT225		225 kHz	ø 13 mm	10 cm to 1.5 m	15°
AT300		300 kHz	ø 12 mm	5 cm to 50 cm	10°

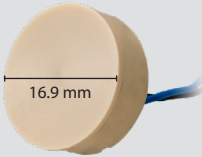


# Pipe Flow Products

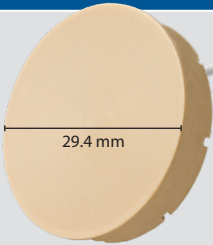
## 1 MHz Transducers for Flow Measurement in Pipes

AIRMAR's new, low profile ultrasonic transducer features a robust PEEK housing suitable for in-pipe flow monitoring systems. OEM's have their choice of M16, M28 or un-threaded housings.

SPECIFICATIONS M16
Nominal Operating Frequency: 1 MHz
Nominal TVR: 165 dB
Nominal RVR: -200 dB
Q: 5
Minimum Parallel Resistance: 235Ω
Free (1kHz) Capacitance: 800pF
Nominal Beam Width (@-3 dB Full Angle): 8°
Max Driving Voltage (2% Duty Cycle Tone Burst): 250V <sub>pp</sub>
Operating Temperature: -20°C to 60°C
Dimensions: 16.9 mm diameter
Weight: 3 g
Housing Material: PEEK






SPECIFICATIONS M28
Nominal Operating Frequency: 1 MHz
Nominal TVR: 176 dB
Nominal RVR: -203 dB
Q: 4
Minimum Parallel Resistance: 35Ω
Free (1kHz) Capacitance: 3500pF
Nominal Beam Width (@-3 dB Full Angle): 4°
Max Driving Voltage (2% Duty Cycle Tone Burst): 200V <sub>pp</sub>
Operating Temperature: -20°C to 60°C
Dimensions: 29.4 mm diameter
Weight: 10 g
Housing Material: PEEK



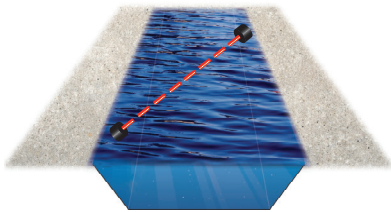
# Open Channel Flow

## Tune-In with Broadband Technology for Flow Measurement Applications

AIRMAR's broadband transducers achieve superior results by using a new technology that allows our transducers to operate over a wide range of frequencies without sacrificing acoustic sensitivity. This enables designers to use frequency modulated (FM); a.k.a CHIRP, and coded transmissions. Outstanding resolution can be obtained using pulse compression techniques.

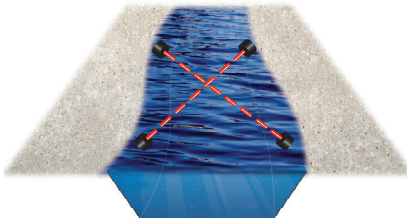
Model		Frequency	Diameter	Pulsed Power	Beamwidth
<b>SS538</b>		80-130 kHz 130-210 kHz 160-260 kHz	ø 108 mm	2 kW	13° to 8° 8° to 4° 5° to 4°
<b>M194</b>		160-260 kHz	ø 110 mm	500 W	8° to 10°
<b>SS510</b>		160-260 kHz (Surface temp. and XID also available)	ø 70 mm	500 W	8° to 10°

## Typical Configurations for Open Channel Flow Measurement



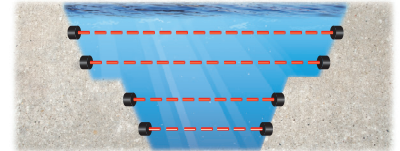
### Single-Path System / Time of Flight

One transducer is placed upstream and one is placed downstream. Flow velocity is determined by comparing the measured velocity with the velocity of sound through the media.



### Cross-Path System

Recommended when the flow is not ideal. For increased accuracy in nonuniform situations.



### Multiple Level System

Multiple transducers perform better under variable and/or non-ideal velocity profile distribution situations caused by upstream and downstream flow disturbances.



[www.airmar.com](http://www.airmar.com)

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As Airmar constantly improves its products, all specifications are subject to change without notice. All specifications typical at 22°C (72°F). Pulse-Echo Mode. Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing. Factory Mutual approved models suitable for: Class I, Division 1, Hazardous Locations. AIRDUCER® is a registered trademark of Airmar Technology 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.

