MiniUAC-4001

Panoramic 3D Sonar

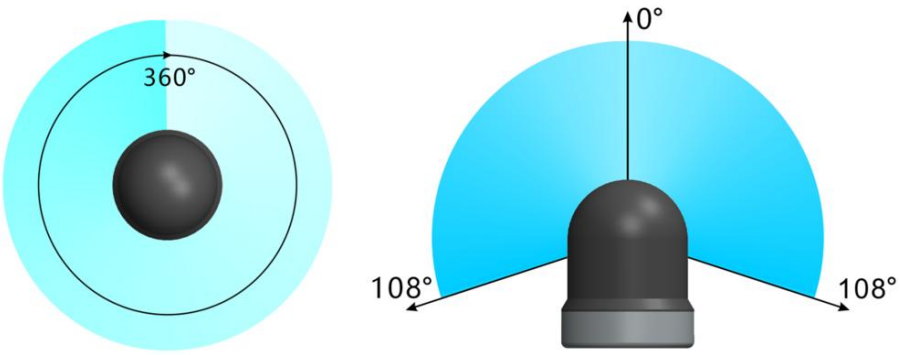
Overview

The **MiniUAC-4001** 3D scanning sonar is a full-scene 3D imaging sonar primarily designed for scanning the three-dimensional contours of fixed objects in water. It features **low cost, compact size, light weight, and low power consumption**.
Thanks to its **sealed oil-filled design with no external rotating parts**, the sonar effectively avoids bearing blockage caused by sediment and eliminates the risk of entanglement by seaweed or fishing lines.

The **MiniUAC-4001** operates using a **single-beam dual-axis scanning** mechanism. Echoes acquired at each scanning position are used to construct both **intensity images** and **point-cloud data** of the scene.
The **θ-axis** provides **360° omnidirectional scanning**, while the **ϕ-axis** covers a range of **0° to 108°**, enabling coverage of the entire water column.
Scanning range, speed, and resolution are all software-configurable. The software simultaneously displays **2D grayscale images** and **3D point-cloud views**, and also supports **layered visualization**.

The **MiniUAC-4001** sonar is available in **750 kHz, 1 MHz, and 1.2 MHz** frequency options. Other frequencies can be customized upon request.
The standard model supports a **maximum operating depth of 300 m**. For deeper applications, please contact us.

Scan Range Diagram



Website: https: //china-sonar.com/
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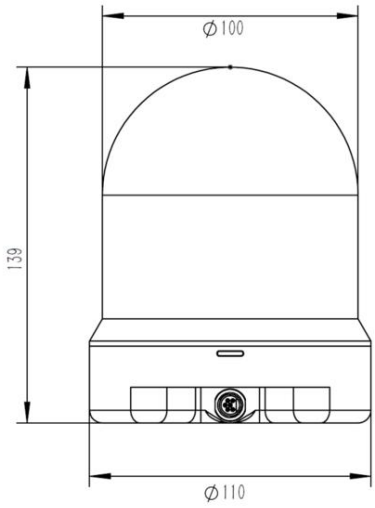
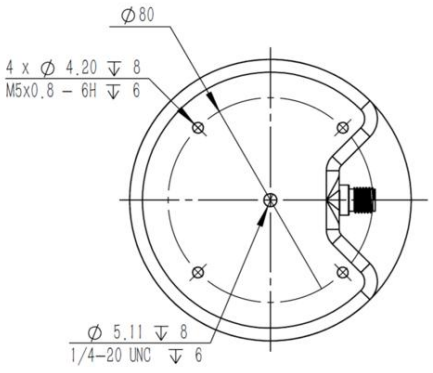
Technical Specifications

Specification	A0710	A1200★
Frequency	750 kHz / 1 MHz	1.2 MHz
Center Beamwidth	1.5° / 1°	0.85°
Horizontal FOV	360°	360°
Vertical FOV	216°	216°
Max Detection Range	50 m / 30 m	40 m
Range Resolution	2.5 mm	
Refresh Rate (range-dependent)	Range-dependent, minimum 1 mm	
Number of Beams	512	
Scanning speed	Range-dependent, up to 100 lines per second	
Angular resolution	Up to 0.1°	
Transmit signal	CW or CHIRP, automatic or manual selection	
Max operating depth	300 m, deeper versions customizable	
Scanning modes	Panoramic scan or sector scan	
Blind zone	< 0.2 m	
Power consumption	12 ~ 40 VDC;Average approx. 5 W, peak < 10 W	
Communication interface	1 × 100 Mbps Ethernet	
Dimensions	φ110 (±1) × 139 (±1) mm (excluding connectors and cable)	
Weight (air / water)	Approx. 1.8 kg / 0.9 kg (excluding cable)	
Housing material	Engineering plastic, aluminum alloy, or 316 stainless steel	
Surface treatment	Anodized finish (aluminum alloy), natural metal finish (stainless steel)	

★ Preferred model, usually available from stock.

Outline drawings and mounting holes





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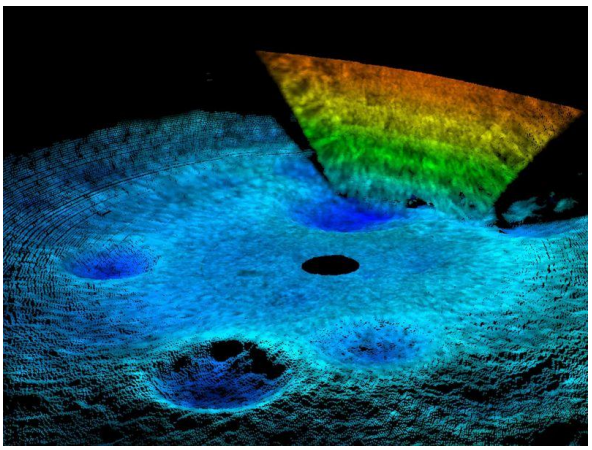
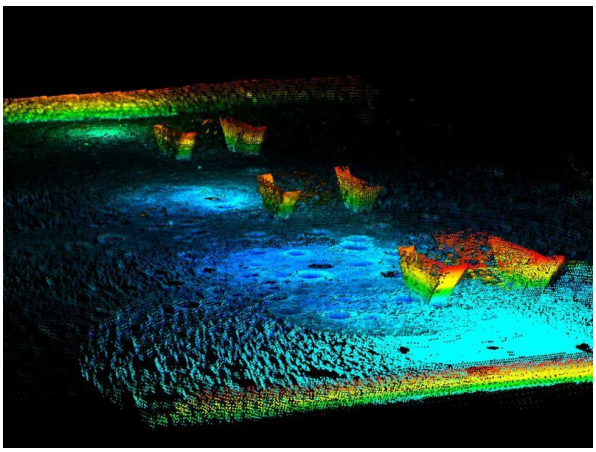
Imaging Examples

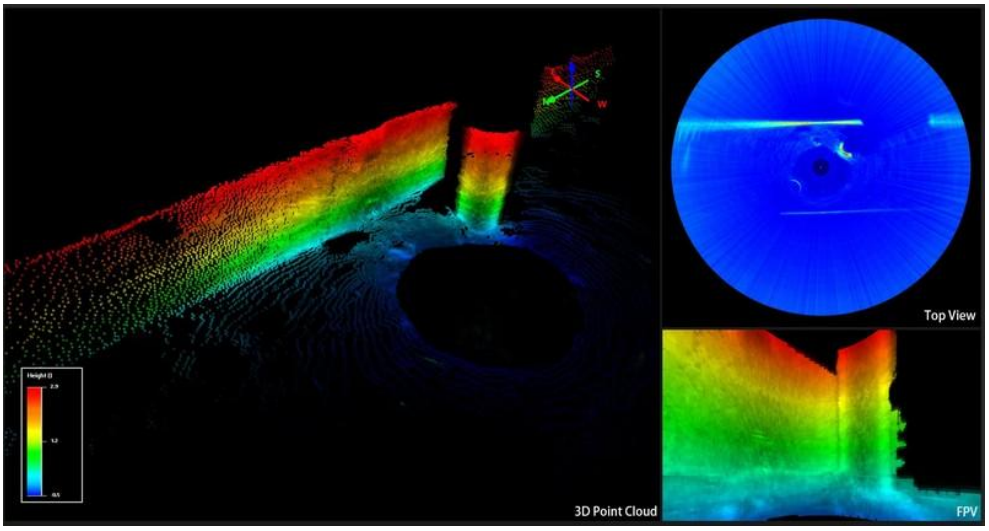


Bridge Pier (Single Scan Result)



Pond Scenario (Point Cloud Mosaic After 4 Scans)

Pond Scenario (Optical Image Fusion)



Multi-Dimensional Display Simultaneous Presentation of Point Cloud, 2D Top View and First-Person View