

MiniUAC-7512D

Dual-Frequency Forward-looking Sonar



Overview

The MiniUAC-7512D is an incredibly compact, dual-frequency forward-looking multibeam sonar that fits in the palm of your hand and weighs under 1kg in the air. Because it operates at both 750kHz and 1.2MHz, it gives you and your autonomous algorithms the flexibility to handle two distinct jobs with a single sensor: wide-area situational awareness at long ranges, and sub-centimeter target identification up close.

We also made sure it drops right into your existing setup. It connects to your host computer via standard 100M Ethernet. To keep communications clean and reliable, we split the software traffic: commands run over a robust TCP link, while the heavy, uncompressed acoustic imagery streams back over UDP.

Whether you need a dependable obstacle-avoidance sensor for an unmanned platform or a high-resolution imaging tool for close-up structural inspections, the MiniUAC-7512D delivers real-time acoustic feedback with an impressive image refresh rate of 40Hz or higher.

Key Features

- **High-Resolution Imaging**
512-beam (interpolated) forward-looking sonar with 0.6° angular and 2.5 mm range resolution (7.5 mm in CW mode) for crisp target detailing.
- **150°Wide Field of View**
Provides a broad 150° horizontal×20° vertical acoustic coverage ahead of the vehicle to maximize situational awareness.
- **Dual-Frequency Range**
Seamlessly switch between 750kHz for long-range detection up to 120 m, and 1.2MHz for high-precision imaging up to 40 m.
- **Pocket-Sized Integration**
Measures just 105×150×Φ72 mm, weighs ≤1kg (in air), and draws ≤ 35W average power—built for tight micro-ROV/AUV payloads.
- **Smart Synchronized Modes**
Supports automated obstacle avoidance outputs, integrated tracking (attitude/pressure/temperature), and RS485 trigger synchronization for multi-device operations.
- **Depth-Rated Housings**
Rugged design options tailored for deep-sea environments: Aluminum Alloy with sacrificial anodes (600 m) or Titanium Alloy (2000 m).

Tehnical Specifications

Specification	Parameter
Operating Center Frequency	750 kHz / 1.2 MHz
Max Detection Range	120 m / 40 m
Range Resolution	4 mm / 2.5 mm; ≤ 2.5 cm (as low as 7.5 mm for CW signal)
Horizontal Beamwidth	1° / 0.6° (Center Beam / Angular Resolution)
Horizontal Field of View	150°
Vertical Field of View	20°
Number of Beams	512 (Interpolated to 512 via upper computer)
Max Operating Depth	600 m (Aluminum Alloy), 2000 m (Titanium Alloy)
Power Consumption	Static Power ≤ 25 W, Average Power ≤ 35 W, Max Power ≤ 55 W
Power Supply	18 VDC - 36 VDC (Typical 24 VDC)
Max Refresh Rate	≥ 40 Hz
Synchronous Interface	RS485 (Rising Edge Trigger)
Weight	≤ 1 kg
Dimensions (W×L×H)	105 mm × 150 mm × $\phi 72$ mm

Applications

- **Collision Avoidance & Navigation:** Real-time forward acoustic imaging for safe navigation and obstacle avoidance in turbid or low-visibility waters.
- **ROV / UUV Operations:** Enhances situational awareness during autonomous and remotely operated underwater missions.
- **Underwater Inspection:** Supports close-range inspection of subsea structures, docks, piles, and confined spaces.
- **Search & Target Detection:** Effective for detecting submerged objects, debris, and potential hazards ahead of the platform.
- **Harbor & Confined Water Operations:** Ideal for operations in ports, harbors, and narrow waterways where visual sensors are limited.

Structural Dimensions

