

# ACOUSTIC ANTENNA ACQUISITION SYSTEM

## Compact-Multichannel-Broadband



### Description

MULTHY consists of RESEA ( equipped with SDA416 board) recorder connected to a vertical hydrophone antenna.

MULTHY is a compact embedded recorder able to, acquire high resolution arrays of passives hydrophones.

Acquisitions are configurable from 1 to 16 simultaneous channels and up to 120 K-samples per second. Analog gain up to 30dB can be specified when ordering.

A 20 bits A/D converter at each channel ensures an efficient signal to noise ratio with a dynamic range greater than 100 dB. The embedded processor allows high speed acquisition, filtering and storage.

MULTHY is composed of up sixteen broadband omnidirectional hydrophones. Frequency range is between 1Hz to 100KHz with sensitivity -202.5 re 1V/ $\mu$ Pa @20°C.

The spacing between hydrophones and overall cable length is determined by the user. Complex geometries like planar and volumetric array can also be set up.

### Applications

- **Noise impact studies**
- **Environmental monitoring**
- **Marine mammals studies**
- **Acquisition in a low signal and noise environment**
- **Detection and location**
- **Acoustic research**
- **Towed array sonar**
- **Hydrophone calibrations**

### Characteristics Powered by SDA

- **Multichannel:** up to 16 hydrophones inputs
- **Broadband:** from 1 Hz to over 60 kHz acquisition
- **Wide dynamic:** 20 bits recording
- **Light weight acquisition system**
- **Easy to use:** intuitive embedded web interface

- **Recorder size:** 550 mm height 120cm diameter
- **Antenna size:** 17 m height, 31mm diameter
- **Weight:** 9 kg
- **Power:** Rechargeable battery pack
- **Storage:** 128 or 256 GB SDCard, 1 TB SSD, 2 TB HDD

- **16 synchronized recording channels**

MULTHY is designed with the new SDA416 card. An FPGA is coupled with an ARM Dual-Core Cortex A9 running on Linux for real-time data processing. The 16 channels are electronically synchronized and calibrated at +/-0.1dB..

The MULTHY can record frequencies from 1HZ to 60KHz with a fully configurable sampling frequency up to 120KHz. Each channel has two gain inputs. Gain values and high pass filter can be selected by the user before ordering.

Sound data are collected in 8,16,24 or 32 bits guaranteeing great dynamic (>100dB). DATA are stored in .wav standard format in embedded SD card (up to 256GB).

The SDA416 board is optimized for low power consumption. Different actions and standby mode can be configured.

- **Acquisition in a low signal and noise environment**

The hydrophone antenna and the processing of the beams allow a large gain and different listening directions. Thus, the gain (up to 12 DB) can improve acoustic acquisition in a noisy environment and increase the listening area.

- **Antenna**

The hydrophones are passive sensors, which capture a frequency band from 1Hz to 100kHz. The size of the sensors reduces the external diameter of the antenna to 31mm. The size of the sensors reduces the external diameter of the antenna to 31mm.

The internal stainless steel cable and the Dyneema braided textile outer cable provides a very good combination of high strength and acoustic noise protection. They withstand a maximum load of 230Kg.

The antenna is designed to be light enough, with a length less than 20 meters to be handled easily by one person.

- **Scientific researches in acoustics**

Performance and flexibility make the MULTHY recorder a perfect platform for the research and development of innovative techniques with complex underwater acoustic sensors. Planar and volumetric antenna geometries can be developed specifically to meet market needs.

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## RTsys Activities

- Underwater acoustics
- Embedded electronics
- Underwater drones
- Sonar solutions
- Systems integration
- Customized R&D