

OSEAN

UNDERWATER TECHNOLOGY



HALIOS : VERSATILE OCEAN BOTTOM SEISMOMETER

Long Term Deployment APPLICATIONS

- Oceanographic Research
- Broadband Seismology
- Environmental Monitoring

FEATURES

- Up to 20 months Autonomy
- Up to 6000m depth
- Optimal seismometer coupling
- 120s Seismometer
- ULF Hydrophone
- Absolute pressure Sensor
- Recovery Station with acoustic mechanical release
- Station localization by GPS location transmission via proprietary VHF link and Strobe light
- Non corrosive material housing
- Anti-trolled Chassis frame

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TECHNICAL SPECIFICATIONS

Dimension (LxWxH): 1.1 m x 1.1 m x 0.75 m
 Weight in Air: 380 kg (838 lb), with 2 x 33kg Low-Cost anchor steel bars
 Maximum Operating depth: 6000m (19,685 ft)
 Material: PE, syntactic foam, Titanium and Glass

Autonomy according the Clock configuration*:

| Configuration | Acquisition | Prior to recovery |
|-----------------------------------|-----------------|-------------------|
| 2.10 ⁻⁸ Accurate Clock | Up to 20 months | Up to 36 months |
| 1.10 ⁻⁹ Atomic Clock | Up to 12 months | Up to 18 months |

* Nominal configuration including: Trillium compact OBS @125Sps, Hydrophone@125Sps, Accelerometer, Temperature and absolute pressure sensors.

Station recovery: By acoustic mechanical release and dynamic leaf springs.

Station localization: By GNSS location transmission via proprietary VHF link and Strobe light.

State-of-health parameters: By acoustic communication
 Data Management: 2 Years of continuous recording on μ-SD card
 Data Storage: Dual redundant 512 GB μ-SD card
 Data Download: Use a USB 2.0 link after recovery
 Data format: RAW-WAV/MiniSEED/SAC
 System Configuration: By Web Server, Ethernet via cable or Wi-Fi
 Time Management: Accurate Clock, Drift 2.10⁻⁸ / Year
 Option: CSAC Atomic Clock, Drift 1.10⁻⁹ / Year

Time Drift measurement: Automatic VS GNSS when surfacing

SEISMOMETER: 3-axis TRILLIUM Compact OBS
 Sensibility: 750V.s/m
 Bandwidth: 120s to 100Hz
 Resolution/ Sample rate: 32bits / 125, 250, 500, 1000 Sps
 Self Noise: < NLNM @ F < 1Hz
 Internal sensor: Accelerometer 2 axis and Magnetometer
 Sensor release: By acoustic Burn Wire release
 Sensor coupling: The seismometer is uncoupled from the main structure and directly in contact with the ground, enclosed in a well in the center of the station which protects it from the convection current.

ACCELEROMETER: 3-axis, ADXL 355 MEMS
 Measurement range: ± 2g
 Repeatability: ± 2 mg
 Bandwidth: 1000Hz
 Resolution/ Sample rate: 20bits / 125, 250, 500, 1000 Sps

ACOUSTICS: 1 Broadband hydrophone HTI-04-ULF
 Sensitivity: -194dB ref.1V/μPa
 Bandwidth: 0,01Hz to 400Hz
 Resolution/ Sample rate: 32bits / 125, 250, 500, 1000 Sps
 Maximum level: 172dB ref.1μPa
 Self Noise: -20dB IDC_2010_LH @F < 10Hz

ABSOLUTE PRESSURE SENSOR: Paroscientific DigiQuartz® 4000 series
 Measurement range: 0 - 10,000 psia (68.9 MPa)
 Repeatability & Hysteresis: ≤ ± 0.01 % Full scale
 Integration period: 1s, 10s or 100s
 Resolution @6000m depth: 50mm, 5mm, 0.5mm

TEMPERATURE SENSOR:
 Measurement range: +2 to 35°C
 Accuracy/ Resolution: ± 0.05 °C / 0.001 °C
 Resolution/ Sample rate: 24bits / 1Hz

OPTIONS: Station GPS location transmission via Iridium SBD in case of unexpected release or surfacing.
 Acoustic Modem interface for detected events data transmission.
 Cable Network interface.