



# GeoScope 100

## Parametric Sub-bottom Profiler

GeoScope Series · Split-unit Configuration

## Description

As the split-unit member of the GeoScope series manufactured by Ocean Physics, GeoScope 100 transmits at 85–115 kHz and generates wideband secondary frequencies of 5–25 kHz through non-linear interaction. The low secondary frequency penetrates the sediment while the beam stays within 5–6 degrees, which delivers high resolution and clean layer interfaces without relying on a large-aperture array.

The split-unit configuration houses the processing electronics in a deck case: an 8 kg transducer and an 11.2 kg topside unit rated IP67. **The complete system travels in two cases and mobilises quickly, making it an ideal choice for small vessels or vessels of opportunity on challenging projects.**

The system runs on 24 VDC with total power consumption below 150 W, connects to the acquisition PC over Ethernet, and provides interfaces for GPS and motion sensors. SPAS acquisition and LayerData Pro post-processing software are supplied as standard, with compatibility for third-party platforms such as SonarWiz.

## Application

- ▶ Geological and geophysical investigation
- ▶ Sedimental survey and analysis for dredging projects
- ▶ Routing survey and cable-laying
- ▶ Marine mineral investigation
- ▶ Sub-bottom searching of cables, obstacles and boulders, etc.
- ▶ Underwater archaeological survey of shipwrecks, relics and geological subsidence, etc.
- ▶ Water column monitoring

## Features

- ▶ **Two-case mobilisation**  
An 8 kg transducer and an 11.2 kg IP67 topside unit — the system deploys from a small boat or a vessel of opportunity, with no dedicated survey vessel required.
- ▶ **Deep penetration, long range**  
Up to 40 m sediment penetration, 200 m operating range and 15 pings per second — an unusual margin for equipment in this portable class.
- ▶ **Profile and bathymetry in one pass**  
Optional harmonic high-frequency bathymetry at 2.5 cm resolution — sub-bottom profile and water depth are delivered from a single pole deployment.
- ▶ **Thin layers in real sea states**  
Range resolution of 5 cm combined with heave compensation — thin shallow-water layers and small targets are not lost to vessel motion.

# Technical Specifications of GeoScope 100

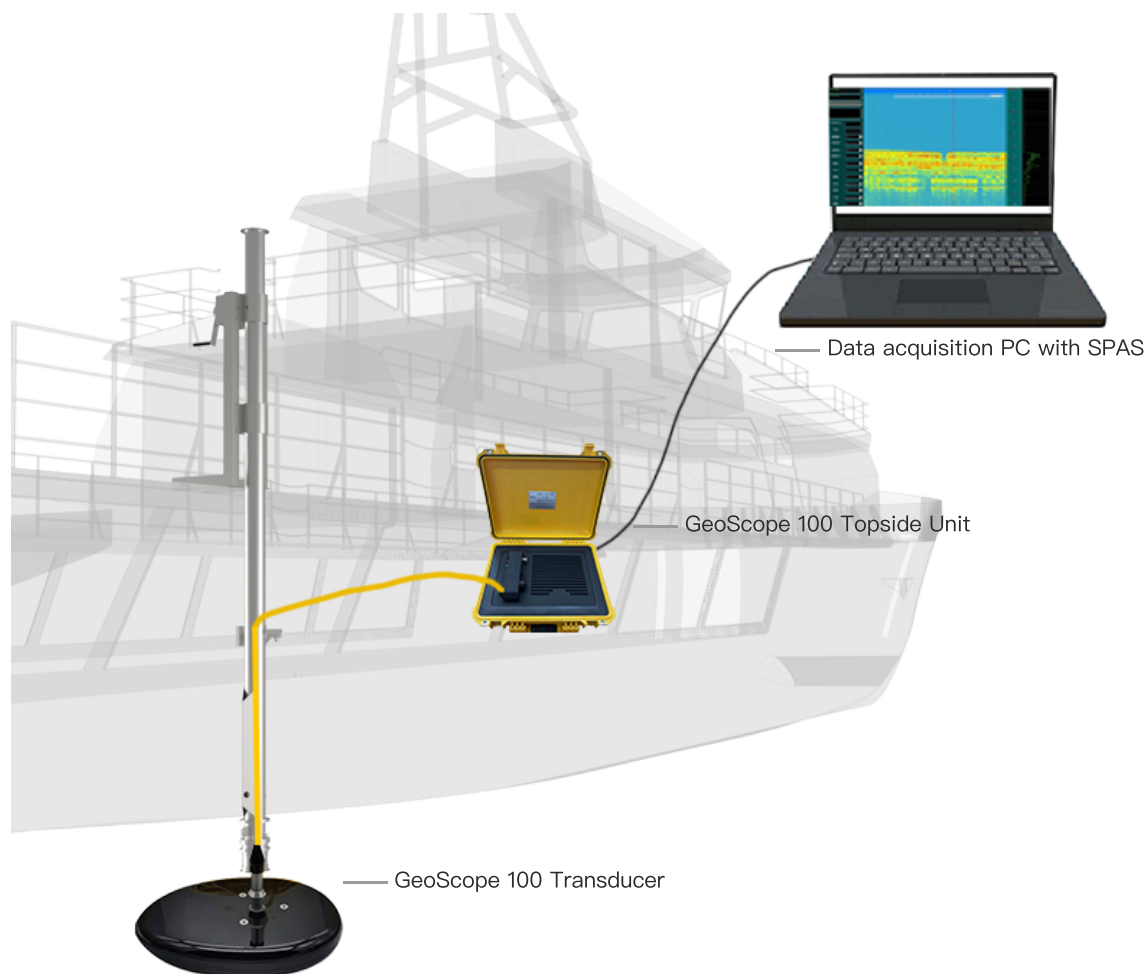
| Technical Specifications                      |                                                                                                                       |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Primary Frequency                             | 85 – 115 kHz                                                                                                          |
| Secondary Frequency                           | 5 – 25 kHz                                                                                                            |
| Pulse Length                                  | 0.05 – 1 ms                                                                                                           |
| Pulse Type                                    | CW, Chirp optional                                                                                                    |
| Ping Rate                                     | up to 15 pings/s                                                                                                      |
| Beamwidth @ Primary Frequency                 | 4.5 ± 0.5 deg                                                                                                         |
| Beamwidth @ Secondary Frequency               | 5 – 6 deg                                                                                                             |
| Source Level @ Primary Frequency              | ≥238 dB/μPa@1m 100 kHz                                                                                                |
| Source Level @ Secondary Frequency            | ≥194 dB/μPa@1m 20 kHz                                                                                                 |
| Dynamic Range                                 | ≥110 dB                                                                                                               |
| Range Resolution                              | ≤5 cm                                                                                                                 |
| Sediment Penetration                          | ≤40 m, depending on sediment type and ambient noise                                                                   |
| Operating Range                               | ≤200 m                                                                                                                |
| Heave/Roll/Pitch Compensation                 | heave, subject to external sensor data                                                                                |
| Bathymetry Resolution (optional)              | 2.5 cm                                                                                                                |
| Physical Specifications                       |                                                                                                                       |
| Power Consumption                             | less than 150 W                                                                                                       |
| Power Supply                                  | 24 VDC or 220 VAC to 24 VDC                                                                                           |
| Communication                                 | Ethernet                                                                                                              |
| External Sensors                              | GPS, IMU                                                                                                              |
| Dimension and Weight of Transducer            | 362 × 240 × 50 mm, 8 kg                                                                                               |
| Dimension and Weight of Topside Unit          | 500 × 400 × 190 mm, 11.2 kg                                                                                           |
| Protection Level of Topside Unit              | IP67                                                                                                                  |
| Data Acquisition and Post-processing Software | SPAS acquisition and LayerData Pro post-processing as standard; compatible with third-party software such as SonarWiz |

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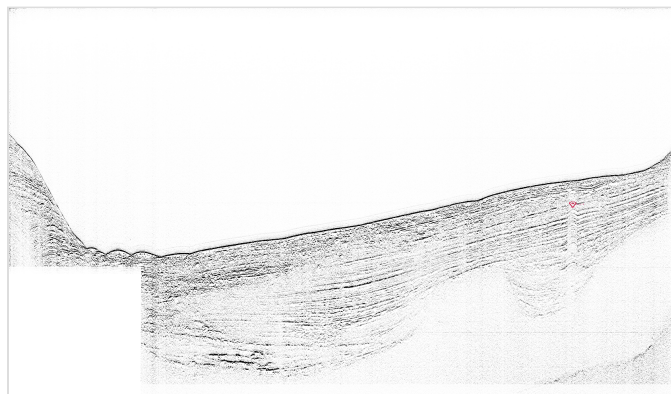
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Ver. 26.08.06

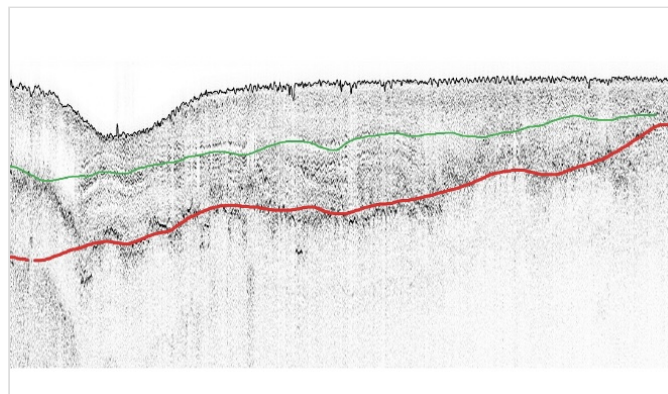
## System Scheme of GeoScope 100



## Data Examples by GeoScope 100



Pipeline Survey in Zhoushan, China



Silt Investigation in Tai Lake