

Echoes Compact

High-performance, portable sub-bottom profiler for inland & coastal environments



Designed for USVs and small vessels, Echoes Compact sub-bottom profiler delivers high-resolution images of sedimentary deposits & buried objects from very shallow water down to 400m of water depths. One-man portable, it is ideally suited for river, lake and ocean surveys regardless of the seabed topography.

FEATURES

- One-man portable Chirp system
- Widest spectrum coverage (5 – 15 kHz)
- Versatile implementation: USV kit, pole-mounted or simply roped
- Vertical resolution (7.5 cm)
- Penetration up to 40 m in clays
- Good penetration from clay to sands due to a powerful low frequency signal

BENEFITS

- 2-parts splittable system
- True flat bandwidth ultimate resolution capacity and power efficiency
- Perfect positioning and heave compensation
- Compatible with any bathymetric echosounder

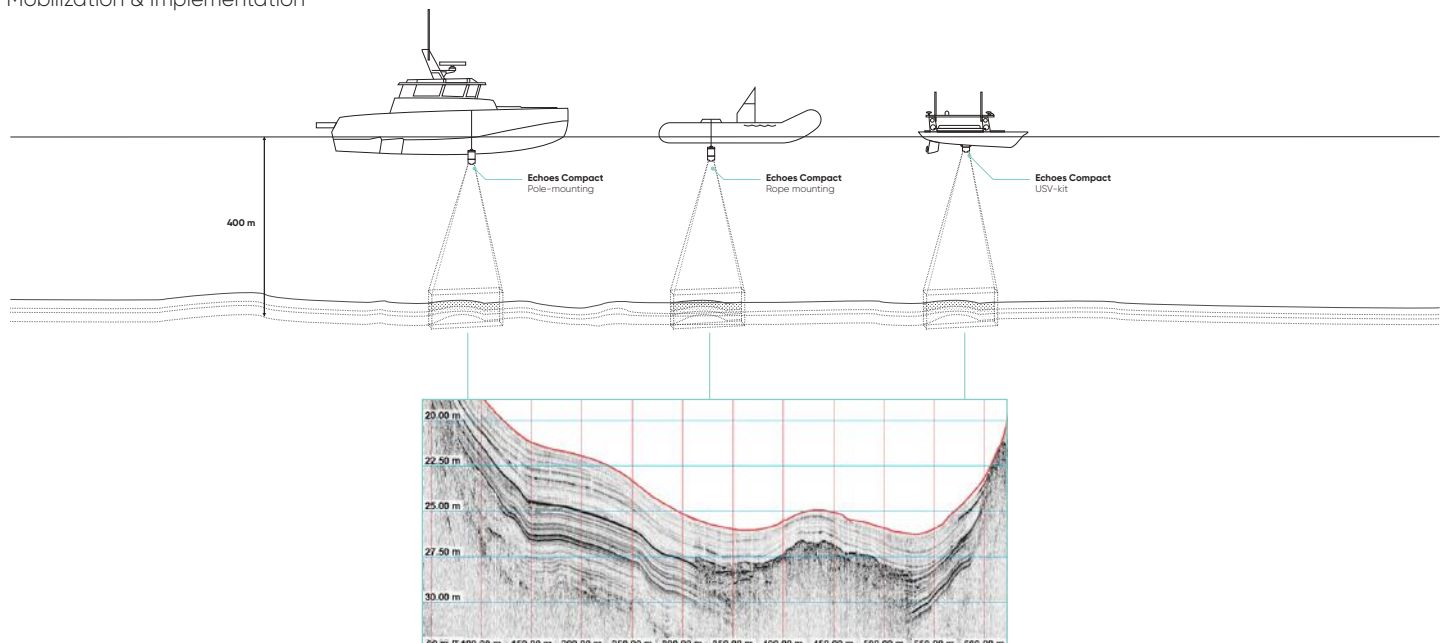
DELPH SEISMIC SOFTWARE

- All-in-one optimized geophysical processing and interpretation
- Easy access to all data collected for geologists and geophysicists
- Compatible with leading industry sensors and formats
- Best possible 2D/3D QC
- Visualization and reporting capabilities

APPLICATIONS

- Pre and post dredging
- Sedimentology / Paleoseismology
- Archeology and Geo-archeology
- Buried objects detection (boulders, pipelines)
- De-risking survey

Mobilization & Implementation



Technical specifications

Echoes Compact

Array configuration	3 tonpilz transducers mounted on a plate
Operational frequency range	5000 Hz - 15000 Hz
Mean acoustic level	194 dB (ref 1 μ Pa@1m) @ 1kVA
RVS (Receiving Voltage Sensitivity) (ref. 1 μ Pa)	-199 dB
Beam aperture @ 10 kHz	30°
Vertical resolution (c=1500m/s)	7.5 cm

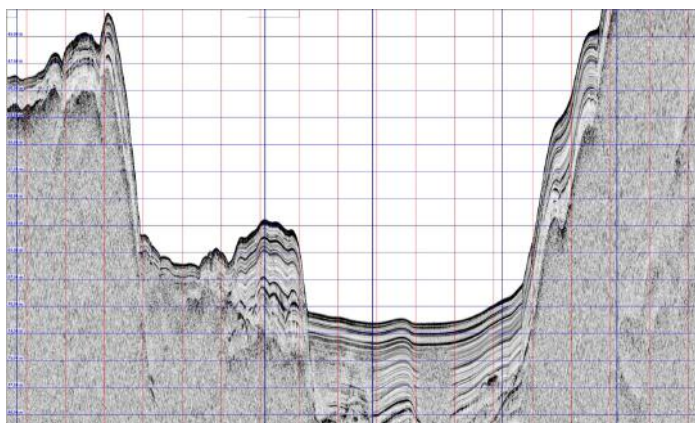
Mechanical/Mobilization specifications

Echoes Compact

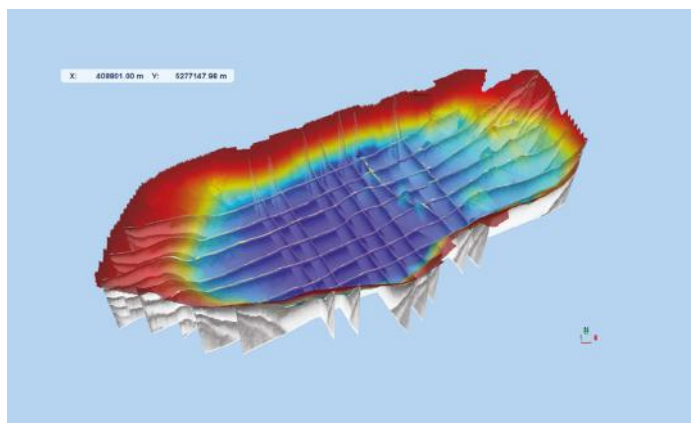
Recommendation for water depth below transducers	1 to 400 m
Height	400 mm
Diameter	290 mm
Weight in air/water	25/10 kg
Small & light junction box	48 VDC
Signal emission power/Echoes mean power	1 kVA/170W
Deck cable length	2/15 m
Transport	2 small pelicans (<20 kg each)

Results

High-resolution sub-bottom profiling data



Bathymetry & layers modeling using Delph Geo



Echoes 3500 T1-T3

High-resolution sub-bottom profiler

Echoes 3500 offers high-resolution seismic reflexion data to characterize sedimentary architecture and geological features. Echoes 3500 is available with one (T1) or three (T3) transducers, allowing a wide range of operational conditions from shallow to deep ocean environments. Echoes 3500 systems enable river, lake and ocean surveys regardless of the seabed topography.



FEATURES

- Spectrum coverage of 1.7 to 6 kHz
- T1 portable Chirp system
- Vertical resolution 20 cm
- Penetration up to 150 m in clays
- Penetration up to 20 m in sand
- T1 one-man portable system
- Pole- and hull-mounted systems
- 2-way T1/T3 modular configuration

BENEFITS

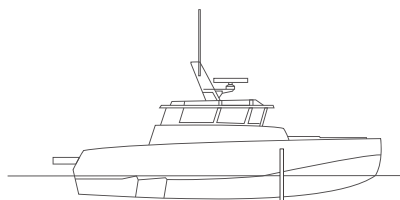
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DELPH SEISMIC SOFTWARE

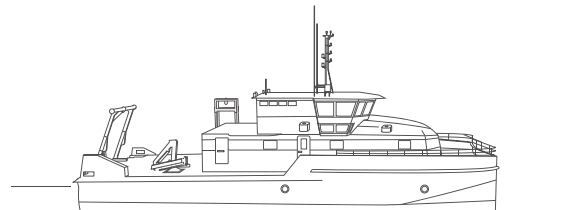
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APPLICATIONS

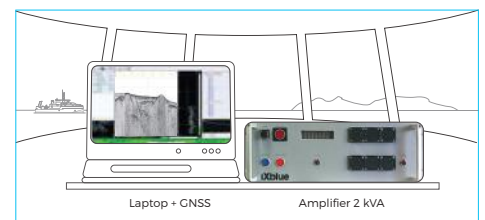
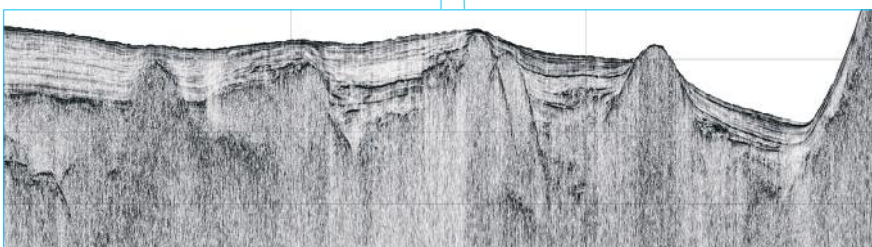
- Pre and post dredging
- Sedimentology and paleoseismology
- Archeology and Geo-archeology
- Object detection buried (boulders, pipelines)
- De-risking survey



Echoes 3500 T1
Sub-bottom profiler
(up to 200 m depth)
Pole-mounted configuration



Echoes 3500 T3
Sub-bottom profiler
(up to 1,500 m depth)
Hull-mounted configuration



Laptop + GNSS Amplifier 2 kVA

Technical specifications

Array configuration T1//T3	1 // 3 tonpilz transducers mounted on a plate
Operational frequency range	1,700 Hz - 6,000 Hz
Mean acoustic level T1//T3	195 // 203 dB (ref 1μPa@1m) @ 2 kVA
RVS (Receiving Voltage Sensitivity) (ref. 1μPa) T1//T3	-172 // -163 dB
Beam aperture @ 3.5 kHz	45°
Vertical resolution (c=1,500 m/s)	20 cm

Mechanical specifications

Echoes 3500 Array

Recommendation for water depth below transducers T1//T3	1 to 200 m // 1 to 1,500 m
Height	384 mm
Diameter T1//T3	450 // 680 mm
Weight in air / water T1//T3	57/42 kg // 160/120 kg

Echoes 3500 Topside unit

Signal emission power / Echoes mean power	2 kVA / 350 W
Length / width / height	482 mm / 482.6 (19") mm / 177 (4U) mm
Weight	15 kg
Mounting	Rack-mounted
Deck cable length T1//T3	20 m // 50 m

Case Study in sandy environments

Geophysical characterization and reports using Delph Acquisition and Interpretation Softwares

	Echofacies description	Geological interpretation
U1	Homogeneous weak amplitude facies	Sediment deposits: soft sand and silt
R1	Irregular high amplitude reflector	Top of the bedrock
U2	Chaotic high amplitude facies	Bedrock

