

### Reliable Industry Standard Pinger Sub-Bottom Profiler

#### Description

GeoPulse is the survey industry's industry standard Sub-Bottom Profiler system. Its proven success is due to its reliability, ruggedness, ease of operation and flexibility.

Sub-Seabed structures are delineated using reflexions from a selectable single frequency multi-cycle high power signal, which is transmitted from an over-the-side, towed or hull mounted platform. The signal is processed in the compact deck unit.

#### System Components

The system comprises the deck unit (Transmitter Model 5430A and Receiver Model 5210A) and a four transducer array (Models T135) in a tow-fish (Model 136), over the side-mount assembly (Model 132) or a bespoke hull mount arrangement, which can be configured to hold up to 16 transducers.

##### Transmitter

The compact unit controls the transmitted signal. The output power is continuously adjustable up to 10 kW with a selectable frequency from 2 to 12 kHz. The pulse length is selected by number of cycles to improve penetration and reduce ringing effects. The transmit repetition rate can be controlled externally or internally.

##### Receiver

The Receiver allows the operator to apply gain up to 100 dB to the received signal. This can be done manually as well as using automatic algorithms including bottom tracking TVG (time variant gain) and AGC (automatic gain control). The processed signal can be output on a wide range of storage and printing media.



#### Features

- selectable transmit frequency 2 to 12 kHz
- over-the-side, towed or hull mounted deployment
- reliable, proven, easy to use
- good penetration and resolution

#### Transducer deployment options

##### Over-The-Side-Mount (Model 132)

The assembly was designed for small boat operation at lower speeds. The transducers are mounted on a plate at the end of a vertical, gimbaled staff. The staff, in turn, is supported by a mounting pad, which can be fastened to either the deck of the boat, or to an athwart-ships timber.

##### Towed Transducer Vehicle (Model 136A)

The Model 136A fish is the industry standard of the GeoAcoustics profiling systems. It has logged more survey kilometres and more pipeline crossings than any other profiling vehicle in the world. Its design allows for stable, noise-free towing in high

seas and at speeds up to 12 knots. The rugged galvanised body and fibreglass cowling, provides protection and will stand up to the punishment encountered in harsh marine environments.

##### Hull mounting

The transducers are mounted in a bespoke sea-chest arrangements. Up to 16 transducers are supported for deep water operations producing a narrower beam.

#### Options

- Combined with side scan sonar
- Third party acquisition system integration
- Range of tow cables and winches

### Transmitter Model 5430A

- Output: 10kW with 0.75% duty cycle, continuously adjustable. 2 to 12kHz, continuously adjustable.  
Short circuit proof.  
Impedance matched.
- Pulse Cycles: 1, 2, 4, 8, 16 or 32 cycles of the frequency selected. The transmitted output pulse will be phase coherent within 22.5°.
- Key:  
External: 2 to 12 V pulse, either + or – leading edge triggered. Max width 50 ms to eliminate double triggering. Transformer isolated.  
Internal: Set by internal potentiometer, 1 to 10 pps, uncalibrated.
- Output to Receiver Transformer isolated. or Third Party Acquisition System: Frequency response flat Processor: between approximately 1 kHz and 20 kHz.  
Two modes of operation:  
A: Flat gain –0 dB gain  
B: Short range TVG -20 dB (10:1) of attenuation during transmit pulse and a –20 dB to 0 dB ramp within 15ms after end of transmit signal.
- Power: 115/230 VAC  $\pm$  10%, 47 to 63 Hz, 220 W maximum.
- Auxiliary Power: IEC connector, unfused, 6 A maximum.
- Environmental: Operational: -5 to 50°C, Storage: -15 to 85°C
- Dimensions: 45.7 cm (L) x 43 cm (W) x 13 cm (H)
- Weight: 18 kg

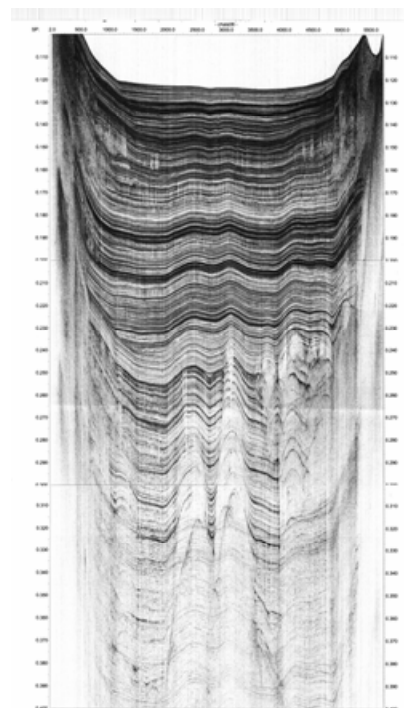
### Receiver Model 5210A

- Amplifier: Differential common mode rejection:

- 100 dB at 60 Hz. Sensitivity 30  $\mu$ V RMS in, produces 1V RMS out at 90 dB total gain with TVG.
- Signal to noise: 20 dB at 100 dB gain 1 kHz centre frequency and 1 kHz bandwidth.
- Coarse gain: 40 dB maximum
- Fine gain: 0 – 30 dB in 3 dB increments
- Filter: Low pass and high pass, active type, maximally flat, 24 dB/octave minimum roll-off, 0 gain, 0.02 kHz to 15 kHz adjustable in ½ octave increments.  
Knobs interlock to prevent overlap.
- TVG: Dynamic range: 30 dB  
Rate: approximately flat to 30 dB in 14 ms.  
Manual delay: vernier adjust from 1 to 14 ms with multiplier of x 1, x 10, x 100 and internal select of x 1000
- AGC: Attack adjustable from 330  $\mu$ s to 330 ms.  
Decay: adjustable from 330  $\mu$ s to 330 ms.  
Range: 20 dB
- Power: 115/230 VAC  $\pm$  10% (internal switch selectable), 47 to 63 Hz, 45 W maximum
- Environmental:  
Operational: -5 to 50° C,  
Storage: -15 to 85°C
- Dimensions: 45.7 cm (L), x 43 cm (W), x 17.8 cm (H)
- Weight: 12kg

### Over-the-side mount assembly (Model 132B)

- Beam width: 55° at 3.5kHz.  
40° at 5.0kHz.  
30° at 7.0kHz  
(4 Transducers)
- Source level: 214dB re 1 $\mu$ Pa/1M
- Dimensions: 70 cm (L) x 52 cm (W) x 46 cm (H)



*Image courtesy of Renard Centre  
of Marine Geology,  
Universiteit Gent, Belgium*

Mounting Staff:

One section 183 cm, two sections  
360 cm

- Weight: 120 kg

### Tow-fish (Model 136A)

- Beam width: 55° at 3.5kHz.  
40° at 5.0kHz.  
30° at 7.0kHz  
(4 Transducers)
- Source level: 214dB re 1 $\mu$ Pa/1M
- Dimensions: 156 cm (L) x 46 cm (W) x 46 cm (H)
- Weight: 125 kg

### Hull mount

- 2 x 2 (4), 3 x 3 (9) and 4 x 4 (16) transducer arrays available
- Bespoke sea chest deployment

MG050109

GeoAcoustics Ltd is engaged in continuous development of its products, and reserves the right to alter the specifications without further notice

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