



## GeoPulse Pipeliner System

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### Introduction

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The GeoPulse Pipeliner offers a solution to the problem of detecting buried pipelines. Based upon the successful GeoPulse Profiler it includes added flexibility to allow users to select from a wider choice of frequencies. The towfish transducer layout is configured to give the perfect acoustic "footprint" for pipe detection.

The Transmitter (Model 5430P) allows control of the output power, frequency and the number of full cycles included in the outgoing pulse. At the flick of a switch a 14 kHz transducer can be activated in the towfish, allowing higher resolution data to be collected and pipeline burial to be accurately determined. Seabed returns can be conditioned by analogue means using the GeoPulse Receiver (Model 5210A) or digitally using a wide range of third party sonar processing systems.

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### Features

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#### Transmitter Model 5430P

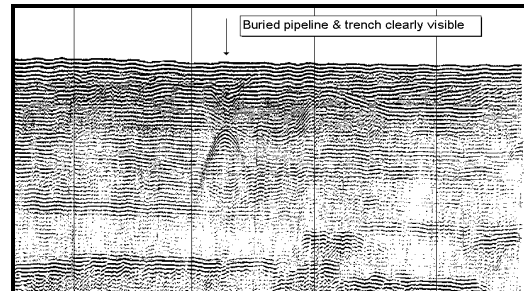
- Output power continuously adjustable to 5kW.
- 2-12 and 14 kHz frequency range, operator selectable with front panel dial/switch.
- Pulse length selected by number of cycles to improve efficiency of transducers and reduce "ringing".
- Transmit repetition rate controlled externally or internally, operator selectable.
- Internal switch for 115/230 VAC operation. Unit is protected against damage caused by improper line voltage.
- Impedance matching switch allows operation with single or multiple transducer arrays.
- Separate/combined switch to transmit on portion of transducer array and receive on remaining portion or to modify beam pattern of transducer array.
- Indicators to easily monitor all system parameters.

#### Receiver Model 5210A

- Combined TVG and operator controllable gain provide up to 100dB of active gain for low amplitude signal processing.
- Automatic bottom tracking provides constant TVG adjustment regardless of bottom variation or degree of slope. (Manual TVG is standard)



- AGC provides operator with the ability to manipulate receiver sensitivity for a given reflector intensity.
- Key program: Multiply and divide-by functions for source triggering flexibility in deep water or extremely shallow water.
- The tape interface allows for recording of either raw or processed data. Eliminates costly interface devices and provides calibration signal for proper recorder adjustment.
- Optic isolation between receiver and source power supply prevents ground loop interference on acoustic record.
- TVG record annotation: Upon switch closure by operator or by Nav interface, places a mark on record at every 6dB point throughout TVG ramp.
- Compensates for spreading and attenuation losses through the water column in deep water.
- All gain controls, manual or TVG, are in fixed increments enabling relative reflectivity of different areas to be compared.
- Signal output to tape recorder is displayed by LED's signifying maximum possible dynamic range or presence of "clipping".
- Data can be displayed directly onto a wide range of industry standard graphic recorders.



### Towed Transducer Vehicle Model 136P

The Model 136P fish is the workhorse of the GeoAcoustics profiling systems. This design 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 for 3 profiling transducers and will stand up to the punishment encountered at sea. The two low frequency and one 14 kHz transducers are configured to give a wide beam pattern in the fore/aft direction to aid pipeline detection.

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### Basic System

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The basic system includes the following:

- GeoPulse Transmitter (Model 5430P)
- GeoPulse Receiver (Model 5210A)
- Towfish (Model 136P) containing
- Profiling Transducers (2 x Model T135, 1 x T14)

The Model 136P Towfish houses the 3 transducers and provides a stable sub-tow survey platform, which may be towed down to 600 metres using a standard 2000 metre armoured tow cable. An alternative deployment option for the profiling transducers is our Over-the-side Transducer Mount (Model 132P), which makes it possible to use the system in very small boats for river, harbour or shallow lake surveys.

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### Specifications

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#### Transmitter Model 5430P

Output: 5kW with 0.75% duty cycle, continuously adjustable. 2 to 12kHz, and switchable to 14kHz, 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°.

Output to Receiver or digital sonar processing system: Transformer isolated. Frequency response flat between approximately 1 kHz and 20 kHz. Two modes of operation:  
A: Flat gain -0dB gain  
B: Short range TVG -20dB (10:1) of attenuation during transmit pulse and a -20dB to 0dB ramp within 15ms after end of transmit signal.

Key: External: 2 to 12V pulse, either + or - leading edge triggered, maximum width 50ms to eliminate double triggering. Transformer isolated.

Internal: Set by internal potentiometer, 1 to 10pps, uncalibrated.

Power: 115/230 VAC  $\pm$  10%, 47 to 63Hz, 220W maximum.

Auxiliary Power: IEC connector, unfused, 6A maximum.

Environmental: Operational: -5 to 50°C  
Storage: -15 to 85°C

Dimensions: 45.7cm (L) x 43cm (W) x 13cm (H), 18kg

#### Receiver Model 5210A

Amplifier: Differential common mode rejection: 100dB at 60Hz. Sensitivity 30 $\mu$ V RMS input produces 1V RMS output at 90dB total gain with TVG.

Signal to noise: 20dB at 100dB gain 1 kHz centre frequency and 1 kHz bandwidth.

Coarse gain: 40dB maximum.

Fine gain: 0 - 30dB in 3dB increments.

Filter: Low pass and high pass, active type, maximally flat, 24dB/octave minimum roll-off, 0 gain, 0.02 kHz to 15 kHz adjustable in 1/2 octave increments. Knobs interlock to prevent overlap. Dynamic range: 30dB

TVG: Rate: approximately flat to 30dB in 14ms. Manual delay: vernier adjust from 1 to 14ms with multiplier of x 1, x 10, x 100 and internal select of x 1000.

AGC: Attack adjustable from 330 $\mu$ s to 330ms. Decay: adjustable from 330 $\mu$ s to 330ms. Range: 20dB

Power: 115/230VAC  $\pm$  10% (internal switch selectable), 47 to 63Hz, 45W maximum.

Environmental: Operational: -5 to 50°C  
Storage: -15 to 85°C

Dimensions: 45.7cm (L) x 43cm (W) x 17.8cm (H), 12kg.

#### Models 132P & 136P (fitted with Model T135 and T14 transducers for buried pipeline detection)

Beam pattern designed to maximise pipeline parabolic signature.

Frequency	Along Track	Across Track
3.5 kHz	120°	55°
5.0 kHz	100°	55°
7.0 kHz	80°	35°
14.0 kHz	80°	15°

Dimensions of Deployment Options:

132P: 70cm (L) x 52cm (W) x 46cm (H), 120kg  
Mounting Staff:  
One section 183cm, two sections 360cm

136P: 156cm (L) x 46cm (W) x 46cm (H), 125kg

Specification sheet subject to change without notice  
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