

Introduction

The GeoPulse boomer system is widely accepted by the marine geophysical community as the best option for high resolution, deep penetration profiling in both deep ocean and shallow coastal environments. Industry proven, with thousands of kilometres surveyed, GeoPulse offers a flexible high resolution solution. The system provides up to three times the acoustic energy of conventional profiling systems while operating in very shallow water and in high noise environments. The surface towed acoustic source is easy to deploy and the on-board units are compact and easily installed. For surveys where even greater penetration is required, the GeoPulse Multi-Electrode Sparker Array may be used in place of the Boomer plate, but at the expense of some trade-off in resolution.

Basic System

- GeoPulse 5420S Solid State Power Supply**
 The GeoPulse 5420S employs a solid state high voltage switching device which offers significant advances over the older technology, including higher efficiency, very high reliability and excellent repeatability. The GeoPulse 5420S is controlled entirely from the front panel, making it very easy to operate, and incorporates the high level of safety features you would expect from a GeoAcoustics product.
- A specially designed Power Cable is used to connect 5420S to the source.
- An acoustic source which can be either a **Boomer plate (Model 5813B)** mounted on a **Catamaran (Model 5812A)** or a **Multi-Electrode Sparker Array**.
 The GeoPulse sound source produces a high energy pulse by the action of a unique vacuum controlled electromechanical "plate". The vacuum controls the degree of damping and ensures a repeatable, high energy signature. The characteristic output of the sound source gives much improved resolution over conventional systems and up to ten times the seabed penetration of standard "pinger" profiler systems.
- GeoPulse Receiver (Model 5210A)**, usually with a **Swell Filter Option** fitted.
 The Receiver unit receives the acoustic return from the hydrophone. It combines in one compact and easily operated unit, the essential processing and control functions for analogue data enhancement and simple interface to any industry standard graphic recorder.
- GeoPulse Hydrophone (Model 5110A)**
 The GeoPulse hydrophone array receives the returned signals. The hydrophone contains twenty elements and is designed for maximum durability in offshore conditions.

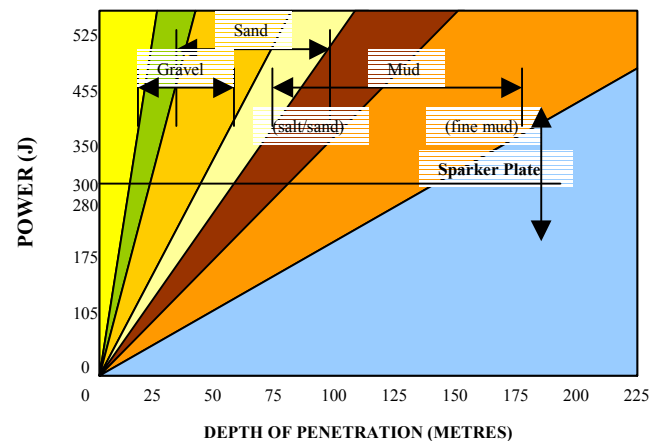


Data from the GeoPulse Receiver can be displayed directly onto a wide variety of industry standard graphic recorders. Alternatively the GeoPulse Receiver may be omitted, and the output from the GeoPulse Hydrophone may be fed directly into a GeoPro Sonar Processor for recording and processing.

Features

- Deep penetration in wide variety of sub-bottom structures.
- Easy to operate and install.
- Good shallow water performance.
- Deployed by one-two people.
- Proven offshore track record.
- Higher source levels enable operation in water depths to 500m.
- Rugged and reliable.
- Good performance in high noise environments.
- Cost effective solution.

Expected Penetration from GeoPulse™



Specifications

Receiver Model 5210A

Amplifier:	Differential common mode rejection: 100dB at 60Hz. Sensitivity 30 μ V RMS in, produces 1V RMS out at 90dB total gain with TVG.
Signal to noise:	20dB at 100dB gain 1kHz centre frequency and 1kHz 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, 0.02kHz to 15kHz adjustable in 1/2 octave increments. Knobs interlock to prevent overlap.
TVG:	Dynamic range: 30dB 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 and decay adjustable from 330 μ s to 330ms. Range: 20dB
Power:	115/230VAC \pm 10% (internal switch selectable), 47 to 63Hz, 45W.
Environmental:	Operational: -5 to 50°C, Storage: -15 to 85°C
Dimensions:	45.7cm (L), x 43cm (W), x 17.8cm (H), 12kg.

Solid State Power Supply Model 5420S

Dimensions:	60 cm (W) x 41cm (D) x 39 cm (H)
Weight:	83kg
Power:	Input Voltage: 115 Vac/230Vac 50/60 Hz. Output Voltage: 3750 Vdc nominal. Output Energy: Switch selectable 105J, 175J, 280J, 350J & 455J.
Energy Storage:	Capacitance: C1 C2 C3 15 μ F 25 μ F 25 μ F
Charging Power:	910W Max.
Environmental:	Operational: 0 to 50°C Storage: -15°C to 65°C
Connections	
Power In:	25A 3 pin panel mounted.
Power Out:	HV panel mounted connector with safety interlock.
Key Input:	CMOS/TTL & optical fibre on front panel.

Sound Source Model 5813B

Source Level:	227dB re 1 μ Pa @ 1m at 280 joules
Pulse Length:	<0.2msec
Max input Energy:	280 joules
Max input voltage:	4kV
Weight:	12.5kg
Dimensions:	38.3cm (W) x 41.5cm (D) x 4.3cm (H)

Multi Tip Sparker

Energy Level:	150 to 500 watt-secs (60 Tips) 150 to 1000 watt-secs (144 Tips)
Repetition Rate:	2 pulses per second (60 Tips) 1 pulse per second (144 Tips)
Dimensions:	60 Tips - 30 (H) x 5 (W) x 100 cms (L) 144 Tips - 30 (H) x 5 (W) x 226 cms (L)
Weight:	6kg (60 Tips) 8kg (144 Tips)
Max Towing Speed:	5 knots

Hydrophone Model 5110A

Elements:	20
Sensitivity:	-202dB re 1V/ μ Pa
Response:	+0.5dB from 5Hz to 3kHz, +2dB - 10kHz.
Preamplifier:	Gain: +24dB Power: 9-12VDC @ 4mA Response: 5Hz to 20kHz + 1dB
Dimensions:	2.5cm (Diameter) x 7.62m (L)
Weight:	12kg
Hydrophone array	Breaking strength: 454kg
Cable:	Length (5110A-164): 60m

Catamaran Model 5812A

Surface tow with 2 towing/steering lines PVC floats with stainless steel frame.	
Speed:	To 5 knots
Size:	132cm (W) x 87cm (D) x 28cm (H).
Weight:	26kg

Receiver Model 5210A Options

The Preamp Power Supply is a plug-in option to the 5210A. The unit also contains an output current sensing circuit so that, if an overload occurs, it can drive external LEDs to show supply status.	
Output:	voltage 0 (off), 6, 8, 12 or 24 VDC \pm 0.5 VDC, switch selectable; current 30mA maximum overload protected.

The Model 5212A swell filter is a field installable option for the model 5210A. It can be used either in situ or with tape recorded records for post processing of data to remove the effects of vessel or hydrophone vertical motion on sub-bottom data.	
Maximum frequency:	7.5 or 15kHz (switch selectable)
Bottom averaging time:	2-40 seconds
Operation modes:	1) manual signal gate 2) automatic tracking Signal gate – return to manual with bottom signal loss.
Maximum Heave:	Approx \pm 5.5m
Maximum Memory	960ms at 7.5kHz,
Period/trace:	480ms at 15kHz
Depth Resolution:	Approx 8cm
Maximum Depth:	(without key delay) approx 720m at 7.5kHz, approx 360m at 15kHz.

Specification sheet subject to change without notice.
(9-Boomer-6900/A 01/2000)



GeoAcoustics Asia Pacific Pte Ltd
30 Loyang Way, #07-12,
Singapore 508769
Tel: +65 546 3687
Fax: +65 546 3690
e-mail: sales@geoacoustics.com.sg



GeoAcoustics Limited
Shuttleworth Close, Gapton Hall Ind. Est.,
Gt. Yarmouth, Norfolk, UK, NR31 0NQ
Tel: +44 (0) 1493 600666
Fax: +44 (0) 1493 651100
e-mail: sales@geoacoustics.co.uk
www.geoacoustics.co.uk



GeoPulse Systems Inc
25 Delano Avenue, Suite 200, Revere,
MA 02151, USA
Tel/Fax: +1 781 286 2944
e-mail: sales@geopulse.com
www.geopulse.com