

## MODEL 2216 DEEP SEA PINGER

**T**he Bottom Finding Deep Sea Pinger is a sophisticated acoustic transmitter which continuously shows height above bottom for oceanographic devices such as corers, dredges, water sampling bottles and plankton nets that are lowered to any depth. The pinger can also be used as an acoustic beacon for site relocation.

The pinger features a proprietary, fully pressure-compensated, acoustic projector enclosed in stainless steel. It is virtually immune to handling or impact damage -- a feature of particular importance for sea-going equipment.

The output frequency of the pinger is precisely 12 kHz to match transducers and recorders found on most oceanographic ships. Both the 12 kHz ping frequency and the one-second repetition rate are crystal controlled. The pulse has switch selectable lengths of 0.5, 2, and 10 milliseconds to enable variation of the bottom echo resolution.

The pinger incorporates an event-signalling feature which doubles the pulse repetition rate from one to two pulses per second when the pinger is tilted more than 70 degrees from vertical. The circuitry is mounted on two plug-in printed circuit boards and powered by a battery module containing manganese-alkaline "C" cell batteries.

The pinger is enclosed in a full ocean depth, stainless steel housing held closed by the Benthos single-bolt closure system. The housing is equipped with convenient handles and pad eyes. The external on/off switch can be operated with a coin or screwdriver.

### Features

- Full ocean depth capability
- Crystal controlled 12 kHz frequency and repetition rate
- Rugged stainless steel transducer and housing
- Adjustable ping length
- Event signalling via ping doubling mercury switch or external signal
- Over 400-hour battery life with standard C-cells
- Convenient handles and mounting lugs
- Many options and accessories available, including "missed ping" feature to resolve crossovers and false bottoms, a connector end cap, rechargeable batteries and battery charger, and spare parts kits.



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### ► S P E C I F I C A T I O N S

<b>Pulse Length:</b>	0.5, 2, or 10 milliseconds (+/-10%), selectable by internal switch.
<b>Pulse Repetition Rate:</b>	1 per second +/-50 microseconds.
<b>Output Frequency:</b>	12,000 Hz +/- 1 Hz.
<b>Output Level:</b>	+93 dB minimum forward level, +85 dB minimum back level (levels referenced to one microbar at one yard).
<b>Forward Beam Pattern:</b>	55 degrees total included angle to half power point.
<b>Dimensions:</b>	12.7 cm (5 inches) diameter (max.) by 67.3 cm (26.5 inches) overall length.
<b>Housing Depth Rating:</b>	12,000 meters (pressure tested to 12,000 meters prior to shipment).
<b>Temperature Range:</b>	-10°C to 45°C, operating. -20°C to 60°C storage.
<b>Weight in Air:</b>	25 kg (55 pounds).
<b>Weight in Water:</b>	18 kg (40 pounds).
<b>Housing Material:</b>	17-4PH stainless steel.
<b>Transducer Construction:</b>	Stainless steel housed, pressure compensated, integral to housing end cap.
<b>Closure:</b>	Single bolt closure system, o-ring sealed.
<b>Handles:</b>	Two convenient carrying handles.
<b>Mounting:</b>	Two pad eyes with 14 mm (9/16 inch) diameter hole.
<b>Battery Pack:</b>	Twenty manganese-alkaline "C" cells, Eveready E-93 or equivalent.
<b>Battery Operating Life:</b>	400 hours (min.) at 2 ms pulse length.
<b>Optional Connector End Cap:</b>	End cap with 4 single-pin bulkhead connectors and guard. Includes mating connectors and caps. Changes overall length to 70.5 cm (27.5 inches).
<b>Acoustic Signal:</b>	The fundamental output of the pinger is a gated 12 kHz acoustic sine wave pulse. Because of its length and stability, the signal is more readily detectable than similar devices with higher amplitudes but shorter durations and less frequency control. This means that a narrow bandwidth receiver can be used, enabling detection of the signal to the exclusion of a significant amount of background noise.



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