

ADVANTAGES OF MODEL 241/244 SPLIT-BEAM SYSTEMS



Hydroacoustic Technology, Inc. specializes in the manufacture and use of hydroacoustic system for fisheries and plankton research. HTI personnel and clients have used hydroacoustics to evaluate fish and plankton abundance and behavior at sea, in lakes, in rivers, and at hydropower dams for over 20 years. Senior-level HTI personnel have conducted hundreds of major hydroacoustic assessments worldwide, in locations as diverse as New York City, Brunei, Finland, and New Zealand. Studies have been conducted at sea and in small lakes, and in rivers from 200 cfs to 200 kcfs.

HTI's senior-level personnel include hydroacoustic and electrical engineers, fisheries biologists, and oceanographers who have pioneered hydroacoustic equipment design, data collection and analysis techniques, and equipment applications. These individuals have authored hundreds of publications and technical reports on hydroacoustic subjects. Vitae of senior-level personnel are available on request.

HTI's *Model 240-series Digital Split-Beam Systems* are the most advanced hydroacoustic systems available for fisheries research. Advantages are as follows:

- 1) *Model 240-series Systems* have available *FM Slide/Chirp* transmit signals, providing up to a 17 dB gain in signal-to-noise ratio, extending sampling ranges (e.g., depths) by 2.6 times that of conventional systems, and reducing variability in fish target strength and biomass estimates. No other manufacturer of scientific echo sounders in the world offers this feature.
- 2) HTI *Model 240-series Systems* have the highest sample resolution available, providing up to 1400 range strata in bins as short as 10 cm, with echo integration intervals as short as 5 seconds, and ping rates at up to 50 pings/second.
- 3) Digital samples are available for *Model 240-series Systems*. The user can record the raw, split-beam signal (all four quadrants' channels, sync, and sum-beam signal), not a thresholded signal.
- 4) The *Model 240-series Split-Beam Systems* are more advanced technically than other split-beam systems. *Model 240-series Systems* use split-beam quadrature demodulation (not zero crossover sampling, quadrature sampling, or orthogonal triplets like other systems) to locate the position of a target in the beam. This provides more accurate and less variable estimates of target strength than those derived from other methods.
- 5) HTI *Model 240-series Systems* have a fast 48 kHz digital sampling rate. This fast sample rate results in more accurate and less variable target strength estimation which translates into more accurate and less variable biomass estimates.
- 6) *Model 240-series Systems* can conduct simultaneous echo integration, target strength, three-dimensional target tracking (with TS calculation per tracked fish), and echo counting in real time.
- 7) HTI has an excellent record of supporting our systems. HTI has a full time consulting division. HTI will be able to assist you should questions arise, because HTI uses the same *Model 240-series Split-Beam Systems* for our clients' research projects. HTI consultants have conducted hundreds of major hydroacoustic assessments worldwide, at sea and in small lakes, and in rivers large and small.
- 8) *Model 240-series Systems* provide analog detected outputs suitable for interfacing with analog oscilloscopes, chart recorders, and video displays.
- 9) *Model 240-series Systems* can supply a sync signal, and can accept an external trigger.
- 10) *Model 240-series Systems* have preamplified transducers for an increased signal-to-noise ratio.
- 11) *Model 240-series Systems* can be operated remotely from virtually anywhere in the world. This has proven invaluable for remotely operating a client's system from HTI's Seattle offices for upgrading systems, downloading data, and addressing quality control issues.

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