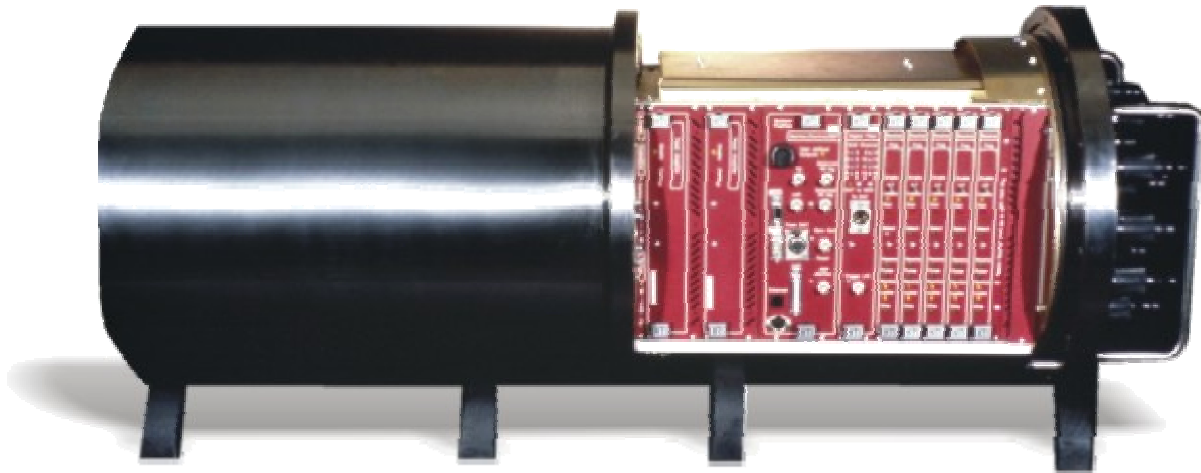


MODEL 244 DEEP TOW MULTI-FREQUENCY SYSTEM



The *Model 244 Deep Tow Multi-Frequency System* is a powerful, digital split-beam/single-beam hydroacoustic system designed to be towed up to 1000 m (3280 ft) deep. The *Model 244 Deep Tow System* combines powerful digital signal processing hardware with a MS Windows2000/NT user interface, and is ideal for deep ocean fisheries and plankton research. The menu-driven Windows2000/NT user interface permits the operator to enter calibration, operation, and data processing parameters, as well as select real-time data display and output options. Five levels of ASCII output data files (available individually or in combination) are written to disk, providing permanent data records ready to import into spreadsheets or data bases.

A Brief Overview:

- Samples up to 16 split-beam or single-beam transducers operating at up to 5 different frequencies between 38 kHz and 1 MHz.
- Either slow (timed) or fast multiplex (alternating pings) sampling among all transducers.
- Digital echo integration for estimating fish/plankton biomass in up to 1400 total depth strata.
- Simultaneous three-dimensional target tracking: tracks and counts individual targets, and calculates target strength, three-dimensional location, direction, velocity, and time of detection.

HTI - HYDROACOUSTIC TECHNOLOGY, INC.
715 NE Northlake Way, Seattle, WA 98105 USA
Tel. 206.633.3383 | 206.633.5912 Fax
support@HTIsonar.com www.HTIsonar.com

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Power Supply:	Nominal 48 VDC standard (120 VAC/240 VAC optional).
Sounder Dimensions:	<i>Digital Echo Sounder</i> 50 cm length x 52 cm width x 28 cm height (20 x 21 x 11 inches).
Weight:	<i>Digital Echo Sounder</i> 28 kg (62 lb) for 120 VAC version, without titanium drum or transducers.
Tow Housing Dimensions:	Custom titanium drum to insert in user-supplied towed body: approximately 43 cm diameter x 65 cm long (17 x 25.5 inches), approximately 113 kg (250 lb). Aluminum option for depths <30 m.
Operating Frequency:	Up to 16 transducers at up to 6 frequencies, in any combination of beam widths, split-beam (38, 60, 120, 200, 307, and 420 kHz) or single-beam (38-420 kHz, 1 MHz, and 2 MHz).
Operating Temperature:	0-50°C (32-122°F).
Power Consumption:	100 watts.
Hydroacoustic Technique:	Employs split-beam (using quadrature demodulation) and single-beam techniques.
Transmit Power:	38-60 kHz = 2000 watts, 120-200 kHz = 250 watts, 420 kHz = 500 watts (options to 2000 watts).
Dynamic Range:	Total dynamic range is 140 dB.
Chirp/FM Slide:	Increases non-reverberant signal-to-noise ratio by up to 15 dB (PW = 1.25, 2.5, 5.0 msec).
Transmit Level:	Output power is variable from -18 dBw to +33 dBw, depending on frequency.
Receiver Gain:	Overall receiver gain is variable over a 24 dB range (-12, -6, 0, +6, +12 dB).
Time Varied Gain:	Simultaneous 20 log R + 2aR and 40 log R + 2aR functions. Spreading loss and alpha are programmable to nearest 0.1 dB. Total TVG range is 80 dB. Start/end TVG 1-1000 m.
Receiver Blanking:	Start and stop range blanking is selectable to the nearest 0.1 m.
Pulse Width:	Selectable from 0.1 to 10 msec in 0.01 msec steps. Receiver bandwidth may be either manually or automatically adjusted to optimize system performance for the selected pulse width.
System Synchronization:	Internally triggered, with rate variable from 0.5-50 pings/sec.
User Interface:	PC-based MS <i>Windows2000/NT</i> user interface, virtually identical to that in HTI <i>Model 241 Portable Split-Beam System</i> , <i>Model 243 Digital Split-Beam System</i> , and <i>Model 244 Multi-Frequency System</i> .
Data Transfer:	Data transferred to surface-based PC user interface via fiber-optic ethernet or network cable.
Bottom Tracking:	Fixed, manual, and automatic bottom tracking modes.
Real Time Data Displays:	Echogram, echoscope, and several others, including System Status: Indicates operation, sample, data, file status, disk space, GPS position. Fish Densities: Relative fish/plankton density by range bins. Total Echoes: Raw and tracked echoes by range bins. Stacked Bar Chart: Fish frequency vs. range (e.g, depth), and TS color bin. Horizontal Stacked Bar: Fish frequency vs. angle off axis, and TS color bin. Scatter Plot: Echo X-Y location (angle off axis) in the beam (also X-Z and Y-Z). 3D Display: User-controlled 3D single echo position view.
Angular Resolution:	<+/- 0.1° (6° beam width, 200 kHz), using quadrature demodulation.
Echo Integration:	Simultaneous digital echo integration with time based (i.e., number of minutes) subsamples: Echo integration range strata: up to 1400 total (distributed between all sample periods). Echo integration echo level thresholds: up to 1400 total (between all sample periods).
Target Tracking:	Simultaneous three-dimensional echo target tracking with real-time screen displays: Real-time updates of important values: mean target strength of tracked targets, cumulative number of echoes received, current bottom depth. Up to 1400 total range-dependent echo level thresholds (all sample periods).
Multiplexer:	<i>Digital Multiplexer</i> samples up to 16 transducers. Switching by time (i.e., slow multiplexing), or ping-by-ping (i.e., fast multiplexing). In fast-multiplexing mode all echo sounder settings are switched at each new ping, including frequency, chirp, TVG, receiver gain, transmit power, pulse width, etc.
Digital Chart Recorder:	Internal <i>Digital Chart Recorder</i> , using a PC printer at surface to create echograms.
Data Recording:	Echo integration, individual echo, target strength, and tracked target files written to disk.
Transducers:	See separate <i>Model 540 Split-Beam Transducer</i> specification sheet for available beam widths, sizes, and maximum depths. Flange housing transducers available for use up to 1000 m (3280 ft) deep.
Remote Operation:	Modem and communication software permits full remote operation, data transfer, and quality control of the <i>Model 244 System</i> from anywhere in the world with reliable telephone communication.
Computer Requirements:	Minimum desktop 2 GHz, 128 MB RAM (256 MB recommended), <i>Windows2000/NT</i> , 50 GB HD (100 GB recommended), <i>Lantastic</i> . Contact HTI for more detailed specifications.
Note:	Specifications subject to change without notice.