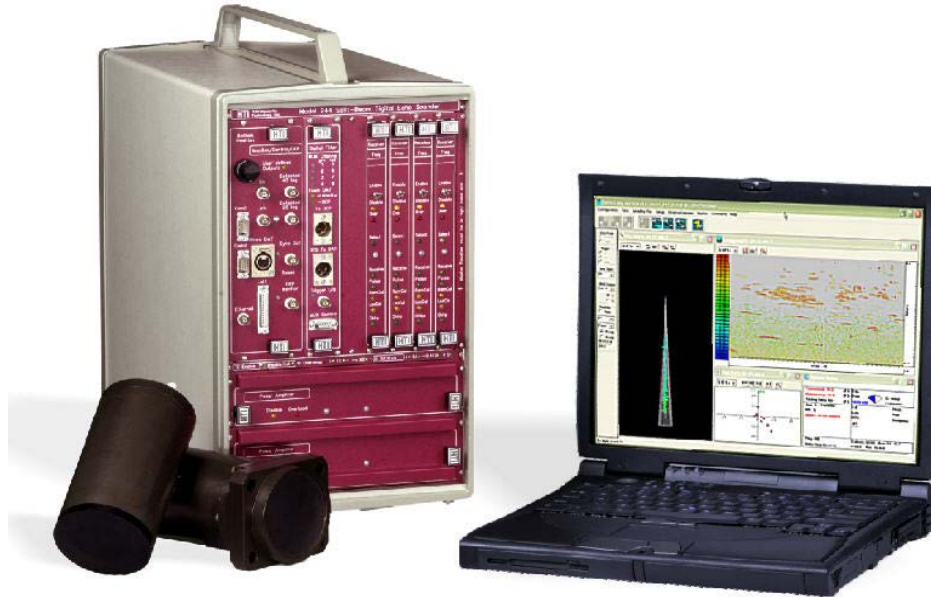


# MODEL 244 MULTI-FREQUENCY SYSTEM



The HTI *Model 244 Multi-Frequency System* is a powerful digital split-beam/single-beam hydroacoustic system designed specifically for fisheries and plankton evaluations. Combining powerful digital signal processing hardware with a MS *Windows2000/XP*-based user interface, the *Model 244 System* produces results in real time, with multiple data display and storage options. The following components are housed in a single compact enclosure:

*Digital Echo Sounder*  
*Digital Data Tape Interface*

*Digital Chart Recorder*  
*Digital Multiplexer*

The menu-driven *Windows2000/XP* 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 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:

- Sub-meter, three-dimensional resolution over time (e.g., once every second).
- Very high resolution: up to 1400 range strata as small as 10 cm, summary data available as frequently as every 6 sec, ping rate up to 50 pings/sec.
- Samples up to 16 transducers at up to 5 different frequencies from 38 kHz to 1 MHz.
- Either slow (timed) or fast multiplexing (alternating pings) sampling among transducers.
- Records the complete, raw, unthresholded digital split-beam samples.
- A compact, 12VDC-powered M241 Portable Digital Ech Sounder is also available.

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## MODEL 244 MULTI-FREQUENCY SYSTEM

<b>Power Supply:</b>	Nominal 120 VAC standard (240 VAC optional).
<b>Dimensions:</b>	500 mm length x 282 mm width x 522 mm height (19.7 x 11.1 x 20.6 inches).
<b>Weight:</b>	28 kg (62 lb) for 120 VAC version.
<b>Operating Frequency:</b>	Up to 16 transducers at 5 frequencies, in any combination of beam widths, split-beam (38, 60, 120, 200, 307, and 420 kHz) or single-beam (38-420 kHz, and 1 MHz).
<b>Operating Temperature:</b>	0-50°C (32-122°F).
<b>Power Consumption:</b>	200 watts without echogram PC printer; approximately 300 watts with printer.
<b>Transmit Power:</b>	38-200 kHz = 1000 watts, 300-420 kHz = 500 watts.
<b>Dynamic Range:</b>	Total dynamic range is 140 dB.
<b>Chirp/FM Slide Option:</b>	Increases non-reverberant signal-to-noise ratio by up to 15 dB ( $PW = 1.25, 2.5, 5.0$ msec).
<b>Transmit Level:</b>	Output power is variable over a 9 dB range in 3 dB steps (+18 dB to +33 dB dep. on frequency).
<b>Receiver Gain:</b>	Overall receiver gain is adjustable in five 6 dB steps over a 24 dB range (-12, -6, 0, +6, +12 dB).
<b>Time Varied Gain:</b>	Simultaneous $20 \log R + 2 \square R$ and $40 \log R + 2 \square R$ functions. Spread
<b>Receiver Blanking:</b>	programmable to nearest 0.1 dB. Total TVG range is 120 dB. Start/end TVG 0.5-1000 m.
<b>Pulse Width:</b>	Start and stop range blanking is selectable to the nearest 0.1 m.
<b>System Synchronization:</b>	Selectable from 0.1 to 10 msec. Receiver bandwidth automatically adjusted to optimize system performance for the selected pulse width.
<b>Bottom Tracking:</b>	Externally or internally triggered. Internal rate varies from 0.5-50 pings/sec.
<b>Signal Outputs:</b>	Fixed, manual, and automatic bottom tracking modes.
	Detected outputs maximum calibrated output of 10 volts, suitable for display on oscilloscopes or chart recording. Undetected outputs maximum calibrated sine wave output of 20 volts peak-to-peak main beam, 10 volts peak-to-peak formed beams (at center frequency of 12 kHz). Suitable for use with data recorders. Four signal outputs can be user-designated from any of the following:
	20 log R detected out (composite beam)
	40 log R detected out (composite beam)
	Undetected composite beam, as well as undetected up, down, left, or right beam. One output displays processed strata/bottom/echo monitor w/selected echo indicators for o'scope.
<b>Real Time Data Displays:</b>	Echogram, echoscope, and several others, including
	System Status: Indicates operation, sample, data, file status, disk space, and 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 rotation.
<b>Angular Resolution:</b>	<+/- 0.1° (6° beam width, 200 kHz), using quadrature demodulation.
<b>Echo Integration:</b>	Simultaneous digital echo integration in up to 1400 total range-dependent echo level thresholds:
	Number of echo integration layers: 1400 total surface locked (100 bottom locked optional).
	Ping based (i.e., specific number of pings), or time based (i.e., number of minutes).
<b>Target Tracking:</b>	Simultaneous three-dimensional echo target tracking with real-time screen displays:
	Real-time updates of important values (at selectable intervals): mean target strength of tracked targets, cumulative number of echoes received, current bottom depth.
	Up to 1400 total range-dependent echo level thresholds.
<b>Multiplexer:</b>	<i>Digital Multiplexer</i> samples up to 16 transducers optionally. Switching by time (i.e., slow multiplexing), or ping-by-ping (i.e., fast multiplexing).
<b>Digital Chart Recorder:</b>	Internal <i>Digital Chart Recorder</i> , using a PC printer to create echograms.
<b>Data Recording:</b>	Complete recording of the digital split-beam samples directly to disk (optional) or Digital Audio Tape (DAT) recorder via <i>Digital Tape Interface</i> .
<b>Transducers:</b>	See <i>Model 540 Split-Beam Transducer</i> specification sheet for beam widths, maximum depths, and available cable lengths. All HTI transducers are preamplified to maximize signal-to-noise ratio.
<b>Positioning:</b>	GPS position recorded to data file or to DAT (GPS unit not included).
<b>Remote Operation:</b>	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.
<b>Computer Requirements:</b>	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.
<b>Note:</b>	Specifications subject to change without notice.