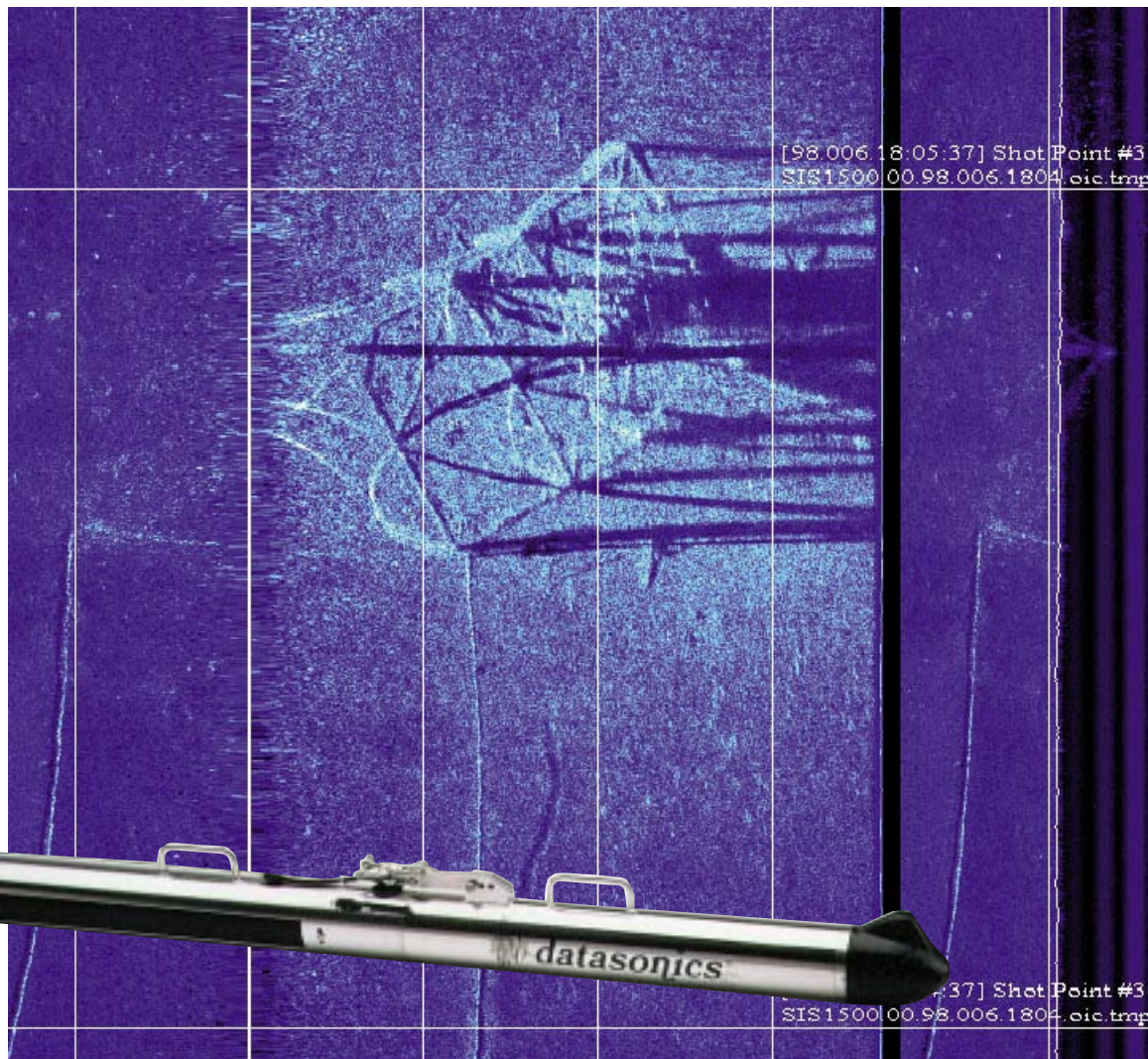


Setting the Standard

The SIS-1500 brings the undeniable benefits of Chirp technology to the forefront of the side-scan industry.



▶ ACOUSTICS

▶ FLOTATION

▶ **G E O P H Y S I C A L**

▶ HYDROPHONES

▶ IMAGING

▶ MODEMS

▶ ROBOTICS



DATASONICS SIS-1500 CHIRP SIDE-SCAN SONAR SYSTEM

Throughout the last decade, Datasonics has been a pioneer in the development of chirp based seismic and side scan-sonar systems. Now Benthos combines this product innovation with their proven high quality manufacturing to produce the SIS-1500, the industry's ultimate in side-scan sonar technology.

The SIS-1500 Advantage

Chirp Technology

The SIS-1500 digitally synthesizes and transmits a linearly swept, frequency- modulated (Chirp) pulse with resolution proportional to transmitted bandwidth—not pulse length. The transmission of longer duration, wide bandwidth pulses result in higher resolution sonar images and, because more energy is projected into the water, greater SNR resulting in extended range. This extended range and resolution provides for optimum system efficiency, resulting in lower survey costs.

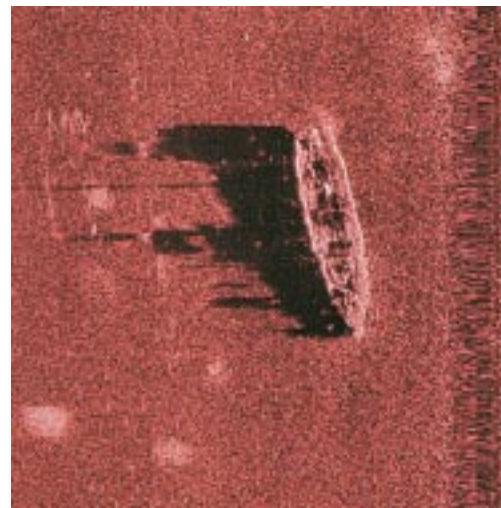
Full Digital Image Processing

The SIS-1500 ChirpScan sonar image processing software acquires full-bandwidth sonar data in real-time and utilizes a Windows NT graphical user interface to display, process, and archive all sonar data, as well as tow vehicle parameter and sensor data. Upgrades allow for processing of mosaics and target mensuration, and the addition of auxiliary subsea sensors.

Multidiscipline Survey System

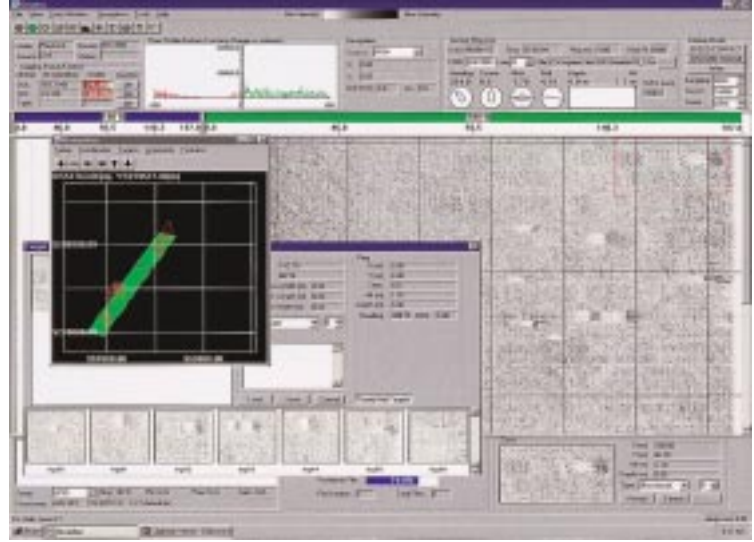
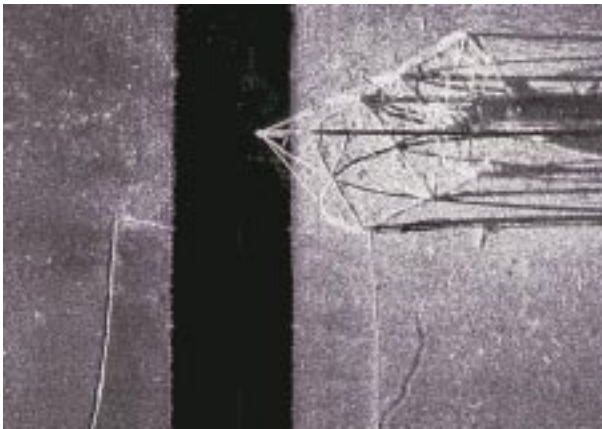
Running a survey to collect only sonar data has become cost prohibitive. With this in mind, Datasonics has developed a digital platform that supports the addition of valuable sensors, which provide supplemental data to the sonar imagery.

Available subsea sensors include pitch, roll and heading (standard), as well as optional magnetometer, water temperature, positioning responder, and pressure. This multidiscipline platform can also be easily configured for AUV applications.



SYSTEM FEATURES

- Chirp digital side-scan sonar operating in the 200kHz band, capable of achieving a 1000 meter plus swath while still providing high resolution data comparable to conventional "500kHz" systems. This extended range capability can significantly reduce costly survey time.
- Flexible system design allows for towed or AUV/ROV configurations.
- Powerful digital signal processing (DSP) engine performs real-time matched-filter correlation processing on backscatter data, resulting in superior, high-resolution side-scan sonar imagery.
- ChipScan sonar processing and control software, operating on a high-performance Windows NT workstation, features a familiar user interface for control, acquisition, processing, and display of all sonar and sensor data. This fully integrated workstation serves as a comprehensive stand-alone platform, which eliminates the need for costly add-on processing systems.
- Fully-integrated ChirpLink digital multiplexer provides a high-speed, reliable, full-duplex communication link to the tow vehicle over industry standard tow cables. Its flexible design allows for future upgrades to additional analog or digital subsea sensor packages.
- Narrow-beam side-scan sonar transducers (0.5 degree horizontal) provide for sharp, high-resolution along-track sonar imagery. User-adjustable down-look angle.



▲ Image of mine field illustrates the SIS-1500 system's ability to detect targets less than 1 meter in size at over 185 meter range, while generating real-time ship track and coverage plots displaying target positions. Target view provides multiple target presentations for classification and mensuration.

SOFTWARE FEATURES

- Familiar Windows NT graphical user interface.
- Integrated sonar data acquisition, display, processing and tow vehicle control.
- Fully geocoded user-configurable sonar waterfall, attitude, and navigation displays.
- Real-time tow vehicle sensor data display and logging.
- Real data zoom and event marking. Waterfall data can be slant range and speed corrected.
- Records raw data to any SCSI storage device.
- User configurable Time Varying Gain (TVG), Angle Varying Gain (AVG), and look up tables.
- Easily interfaced to customer selected software packages, such as Triton ISIS, Oceanic Imaging Consultants (OIC), GeoDas, Hunter SeaSone, and more.

SYSTEM SPECIFICATIONS

SIP-150 Ship Board Sonar Image Processor

Sonar Processor Workstation

Processor:	Intel-based CPU. Dual C40 Digital Signal Processing Engine. High speed, high resolution graphics processor.
Operating System:	Microsoft Windows® NT.
Sonar Display:	Integrated sonar control, display and processing software on a high resolution 1280x1024 video monitor.
Data Recording:	SCSI interface for customer selected recording device.
Hardcopy:	Thermal graphic recorders. (optional)

ChirpLink Telemetry System

Sonar Data Uplink:	High speed serial (1.544 Mbits/sec), dual-channel side scan sonar data.
Telemetry Uplink:	FSK tow vehicle data telemetry at 9600 baud for subsea sensor data. Vehicle status for heading, pitch, roll. Receiver gain setting; error checking.
Telemetry Downlink:	FSK command telemetry downlink at 9600 baud supports user supplied sonar and sensor commands.

Power/Packaging

Power:	100-125 VAC or 220-240 VAC (auto-sensing).
Dimensions:	12 in. H x 20 in. W x 18 in. D (30.5 cm x 51 cm x 45.7 cm) All components are 19-inch rack-mountable.
Weight:	55 lbs. (25Kg.)

Software

Chirpscan SIP150 Sonar Processing Software.
Includes selectable graphic user interface for data acquisition, playback, and storage.

TTV-195 Tow Vehicle

Sonar Transducers

Frequency:	190-210kHz Chirp.
Source Level:	226dB re 1 uPa @ 1 meter.
Beam width:	0.5 degree x 55 degrees.

Subsea Electronics

Range:	25 to 500 meters across-track.
Across Track	
Resolution:	< 4.0 cm.
A/D Resolution:	16-bit, Sigma-Delta A/D converter.
Sampling Rate:	48 kHz per channel.
Power:	48-150 VDC (300 Watts).

Subsea Sensors

Attitude:	Pitch, roll, and heading sensor package standard.
Water Temperature:	External water temperature operates from 0 to 35 Celsius. (optional)
Depth:	Tow vehicle depth sensor, temperature, compensated and accurate to 0.25% full-scale. (optional)
Magnetics:	Magnetometer. (optional)
Responder:	27 kHz Benthos UAP-344. (optional)

Tow Vehicle

Material:	316 Stainless Steel.
Weight:	80 lbs. (36 Kg)
Dimensions:	4.5 inch (11.4cm) dia., 70 inches (178cm) long.
Safety Features:	Break-away fins and tow vehicle safety cable. 500 lb. shearpin. Tow vehicle safety cable with 2500 lb. breaking strength.

Operational Parameters

Tow Cable:	Supports wide range of industry standard coaxial and multi-conductor cable.
Tow Speed:	1 to 14 knots.
Operating Depth:	2000 meters.

FEATURES

- Chirp technology allows for high resolution data at 1000 M plus swath
- Full digital image processing
- Multi-discipline survey system
- Easily configured for AUV applications

OPTIONS

- Magnetometer
- Target/Mosaic Post Processing Software
- Depth Pressure Sensor
- Temperature Compensation
- Responder
- Ethernet Interface

