Sys100D Specifications

Sys100D Swath Bathymetry Side-Scan Sonar System

The high-resolution imaging/mapping system with superior seafloor coverage and extended depth range

The Sys100D from Fugro Seafloor Surveys, Inc. is the extended operational depth version of our proven high-resolution vector side-scan sonar system for coastal to 2,000 meter water depth marine surveys. The data are acquired in 2,048 pixels across the swath, with each pixel containing a water depth and an echo intensity measurement.

All measurements are corrected for actual towfish attitude using an internally mounted, six-component, motion sensing unit.

The Sys100D towfish is equipped with a chirp subbottom profiler, providing meaningful acoustic penetration in difficult geologic environments as well as superior resolution profiles of sediment structure in the uppermost meters of the seafloor. Mounted in the towfish with the side-scan array, the transducer precisely correlates subbottom data with bathymetry and side scan intensity images. The subbottom profiler transmits at the same time as the side-scan and both sets of signals are digitized, telemetered, and logged on an optical disk for safe, reliable storage.

Operated with an armored coaxial tow cable, the Sys100D provides high-resolution swath mapping data to a depth of 2,000 meters. When provided with high-pressure components and a fiber optic tow cable, the Sys100D can map water as deep as 6,400 meters.

Sys100D Swath Bathymetry Side-Scan Sonar System

Side-Scan

Operating frequency: 95 (port) and 106 (stbd) kHz

Beamwidth:	2.0° (along track)
Output power:	220 dB re 1 µPa at 1 meter
Ping rate:	1 to 10 per second
Tow depth:	Coaxial cable: 10 to 2,000 meters
Fiber optic cable:	10 to 6,000 meters
Tow altitude:	2 to 350 meters
Water Depth:	Coaxial cable: 12 to 2,350 meters
Fiber optic cable:	12 to 6,350 meters

Intensity Imaging System

Data source:	Side-scan acoustics
Image format:	Slant-range and speed-corrected
Swath width:	50, 100, 200, 500, or 1,000 meters (nominal)
Pixel size:	2.5 to 50 cm (2,048 pixels total)

Min. identifiable object: 1.0 meter (dependent on object shape)

Bathymetric System

Data source:	Side-scan acoustics
Display format:	Color-encoded and speed corrected (Depths plot from approximately 250 discrete depth measurements per ping)
Swath width:	same as intensity image
Within nadir ± 45°:	
Accuracy:	1% of altitude
Resolution:	0.3% of altitude

Subbottom System

Display format:	Towfish or surface referenced (Integral amount of water ¬column removed)
Operating frequency:	4 to 6 kHz, chirp or ping
Power output:	+195 dB re 1 µPa at 1 meter
CHIRP length:	10 ms
Depth resolution:	80 µs (One sample interval)
Max. penetration:	41 msec (512 samples at 80 µsec per sample)

Support Requirements

Min. ship size:	50 - 70 meters l.o.a.
Exterior deck area:	50 square meters
Deck power:	100Kva of 480VAC/60Hz electrical power
Stern crane:	3 ton articulating w/ boom able to reach stern
A-Frame:	10 tons
Survey crew:	13 people
Shipping:	Standard 20-foot sea containers

Data Acquisition Options

Swath widths and ping rates are operator-selectable to provide optimum resolution for various water depths and survey objectives. Intensity image width is constant for any width setting.

Intensity Image Width	Typical Altitude Range	Typical Ping Rep. Rate	Pixel Size
50 m	2m - 25m	10/ sec	2.5 cm
100 m	5m - 50 m	10 / sec	5 cm
200 m	10m - 100 m	5 / sec	10 cm
500 m	25m - 250 m	2 / sec	25 cm
1,000 m	50m - 400 m	1 / sec	50 cm