ELAC Nautik

SeaBeam 1050/1055

Medium Water Multibeam Systems

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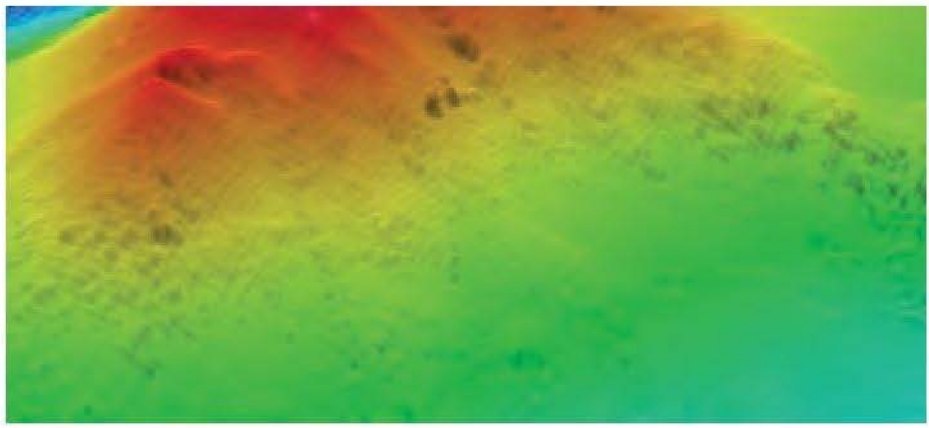


SeaBeam 1050/1055

Medium Water Multibeam Systems

SeaBeam 1050/1055 multibeam echo sounders are well recognized and proven tools for collecting bathymetric, sidescan and backscatter data in waters up to 3,000 m and in extremely sedimented areas. The systems are completely roll-stabilized and guarantee high-precision survey results.

General

The SeaBeam 1050/1055 multibeam echo sounders collect bathymetric and sidescan data with beams as narrow as 1.5 x 1.5 degrees and a swath width in excess of 150 degrees. The systems are ideally suited for surveys demanding performance from shallow water up to 3,000 m and in areas of extreme sedimentations like for river and port authorities, research institutes and onshore survey operations.

SeaBeam 1050 offers a seafloor coverage in excess of 4,100 meters and a maximum depth performance of 3,000 m, SeaBeam 1055 a 2,500 m coverage and 1,500 m depth performance.

During transmission and reception SeaBeam 1050/1055 offer a complete roll-stabilized beamforming with a very high directivity in along-track and across-track direction. Side lobe suppression of 36 dB with very low error rates is achieved.

Technical description

Two narrow beam width transducer arrays are transmitting quasi-simultaneously into directed sectors with a high acoustic transmission level. The receiving beamformer generates narrow beams within each sector with a beam width of 1.5° (phase calculator) and a spacing of 1.25°. A complete fan contains 126 beams in total. The high operating frequency of 50 kHz offers two advantages: high coverage and narrow beam width.

The application of preformed beams guarantees an extremely good side lobe suppression and a very low error rate. This has a positive influence on measuring accuracy and gives the system a big advantage over one way procedures, i.e. non-directed transmission and reception.

Acquisition of data and system control is performed on a Windows based high performance personal computer. The SeaBeam 1050/1055 systems take the influence of the sound velocity profile on the sound beam propagation in water into account by using ray tracing algorithms based on the measured actual sound velocity profile. Correct depth and position data are calculated.

Key Features

Very low error rate due to:

- Superior Signal-to-Noise-Ratio by RDT technology
- Side lobe suppression 36 dB transmission and reception

Mobile or hull installation

SB 1055 is easily upgradeable to SB 1050 without additional hardware

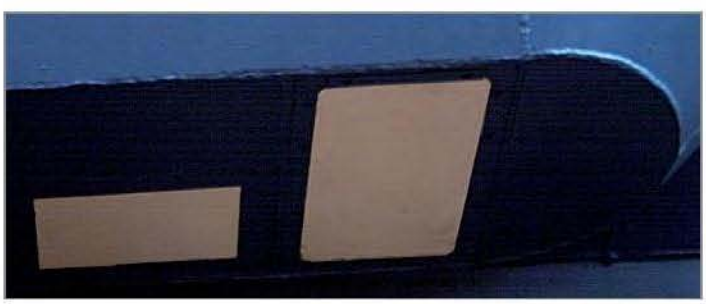
System Overview

Perfect for Mobile Installation

All hardware and software elements of SeaBeam 1050/1055 have been proven fully reliable in hydrographic survey systems and reflect L-3 ELAC Nautik's decades of experience in this field.

Transducer arrays

SeaBeam 1050/1055 employs two transducer arrays, port and starboard, both capable of transmitting and receiving. Their acoustic planes are tilted 38° to the vertical. The arrays are normally installed fixed to the ship's hull, but mobile brackets are also available.



Fix under hull installation of the transducer arrays (dual frequency, 50/180 kHz)

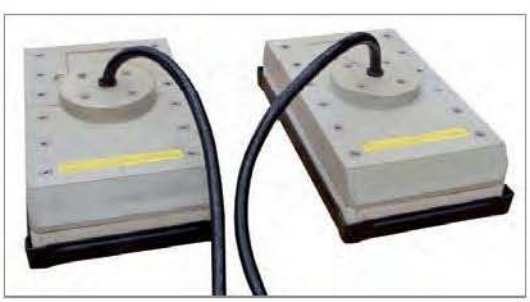
Mobile installation of transducer array

Beamformer

In the transmit cycle the staves are driven by individual power stages to perform stabilized transmit beamforming. All staves of each transducer array are used for transmit beamforming. In the receive cycle port and starboard array signals are forwarded to the receiver to perform stabilized receive beamforming. The number of beams and fan width is selectable.

Mobile installation

Due to the easy installation of transducers and external sensors with only plug connections, SeaBeam 1050/1055 are ideal multibeam systems for mobile installation. The transducers are mounted on a simple mobile structure.



Like all our transducers, LSE 237 is made and tested in Germany at our facility in Kiel

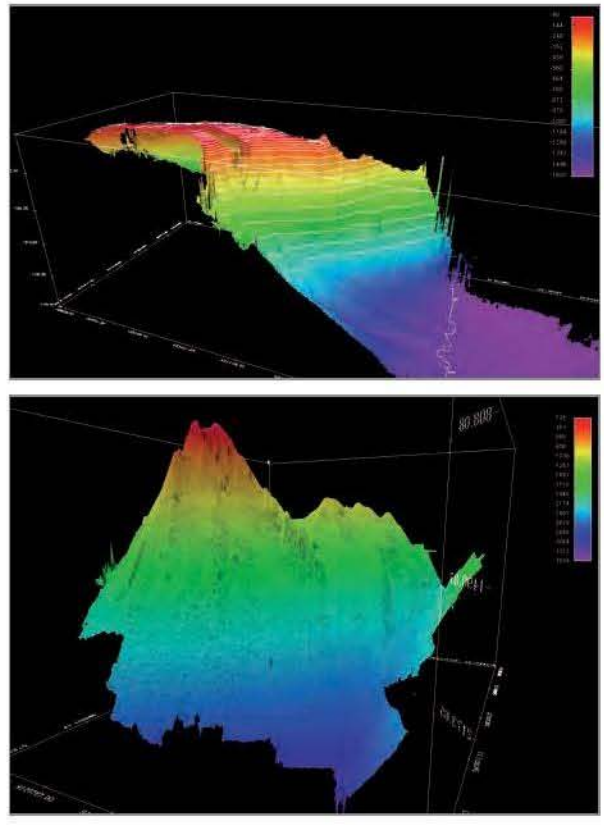
Specifications and Technical Data

Seabeam 1050/1055 at a Glance

Technical Data	
Operating frequency	50 kHz
max. depth SeaBeam 1050 SeaBeam 1055	 3,000 m 1,500 m
Along-ship beam width	1.5°
Across-ship beam width	1.5°
Pulse length	0,15 ms - 10 ms
Side lobe suppression	36 dB (transmission and reception)
max. swath coverage sector	> 153°
max. number of beams	126
Beam spacing	Equiangular

Interfaces	
Power	115 V / 60 Hz or 230 V / 50 Hz single phase
Motion	RS232
Heading	RS232
Position	RS232
Sound velocity profile	RS232

Stabilization
Completely roll-stabilized beamforming



High-resolution data examples

Physical Specifications	Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
Transducer LSE 237	292	530	122	45
Transducer bracket WB 8 (for hull installation)	420	630	492	220
Transmit and receive unit for 19" rack mount	266	483 (19" rack)	369	34
In flight case	460	540	535	52
Operator station	177	483 (19" rack)	505	14

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