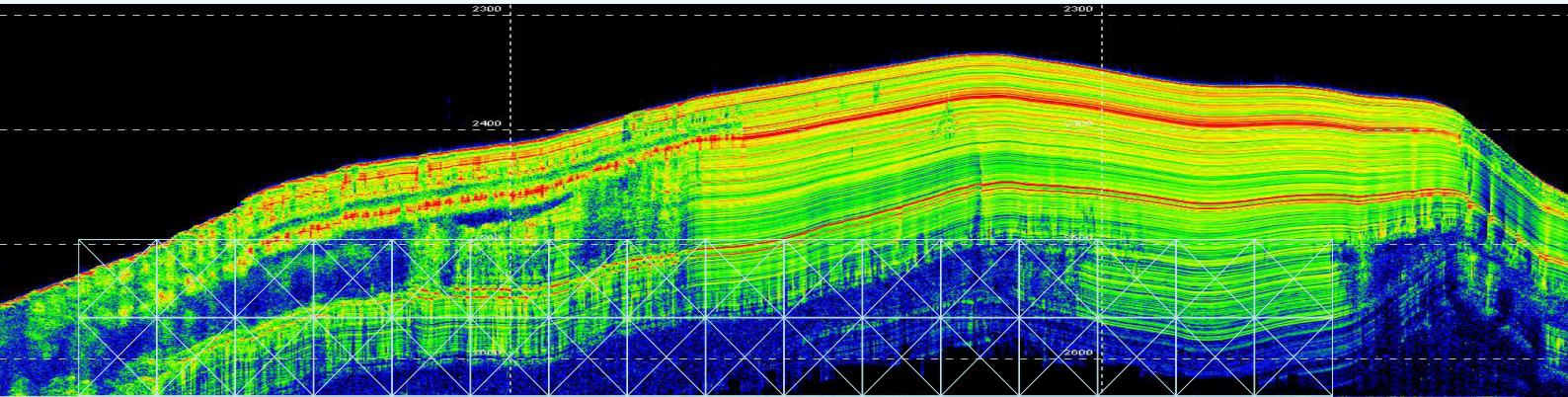


SBP 27



KONGSBERG



SUB-BOTTOM PROFILER

The SBP 27 is the next generation narrow beam, multibeam sub-bottom profiler, and is the successor of the SBP 120 and SBP 300. The system has new and improved technology, wider bandwidth 2 – 9 kHz and accordingly improved range resolution.

The SBP 27 has significantly reduced beam widths compared to conventional sub-bottom profilers. This is obtained by one linear transmitter array mounted along the vessel keel, and one linear hydrophone array (shared with the EM 122/302) mounted orthogonal to the keel. The footprint of the transmitter array is wide across-track and narrow along-track, whereas the opposite is the case for the receiver array. The combined beam pattern of the two arrays is a narrow beam.

The benefits of using large arrays are:

- Increase source level: The larger the transmitter array, the more power can be injected (without risking cavitation).
- The directivity of the transmitter also increases with the size of the transmitter, which implies a further increase of the source level.
- The reverberation volume is greatly reduced with reduced beam widths. (The reverberation volume roughly increases with the square of the beam width.)
- The increased directivity of the SBP 27 receiver array compared to smaller receivers improves the suppression of acoustic noise

The array geometry of the SBP 27 is the same as that used by the EM multibeam echo sounders. For reception, it uses the wideband receive antenna of the EM system. With much narrower beam widths than conventional sub-bottom profilers, the SBP 27 provides superior specular return to backscatter ratio and thereby

improved penetration and less cluttered imaging.

SBP 27 comes as 3, 6 or 12 degrees transmitting array system. For the three-degree transmitter, the frequency dependent source level is above 224 dB re 1 μ Pa @ 1m between 3.5 kHz and 6.5 kHz.

Because the transmit beam is wide across-track and all hydrophones are sampled individually, the SBP 27 can make a fan of narrow beams across-track per ping. This multibeam capability of the SBP 27 is useful for:

- Finding the specular return(s) in rough terrain despite the narrow beams.
- Resolving lateral specular returns in rough terrain
- Detecting buried objects
- Obtaining information about the sloping angle of sediments (which sometimes changes with range and may be completely different from that of the sea floor).

The SBP 27 beams are electronically stabilized for roll and pitch, and the data are heave compensated.

The composite echogram

The system has several advantages when encountering sloping sediments compared to other systems; utilizing its multibeam capability the SBP 27 may be set up to scan the volume by cyclically tilting the TX beam to create the best combination of data in one single echogram.

FEATURES

- Operated in parallel with the EM 122 or EM 302 multibeam echo sounder*
- High source level
- Narrow beams giving improved penetration, cleaner data and excellent angular resolution
- Wider beams can be made when desired. A swath of beams can be generated per ping, offering across-track slope robustness. This is also useful for detection of buried objects and studies of backscatter
- Transmit modes offering TX tilting and TX beam width variation available when narrow beams are unfavourable
- Composite echogram
- Burst and multi-pulse modes to maintain a high ping rate in deep waters
- The normal transmit waveform is a linear chirp. The outer limits for the start and stop frequencies of the chirp are 2 to 9 kHz, providing a maximum vertical resolution of approximately 0.2 milliseconds.
- For the SBP 27 the bandpass filter of the preamplifier is attenuating frequencies above 7 kHz



TECHNICAL SPECIFICATIONS

Operating frequency	2 to 9 kHz**
Transmit beam width @4kHz	3°, 6° or 12° depending on SBP 27 system
Receive beam width EM 122	3°, 6° or 12° depending on EM 122 system
Receive beam width EM 302	7° or 14° depending on EM 302 system
Pulse length (FM and CW)	2ms to 100ms
Max ping rate	20 Hz (burst mode 5 Hz)
Range resolution	0.2ms
Pulse types	CW, Linear FM, Hyperbolic FM, Ricker
Operational depths	<10m - 11.000m
Source level	3°: 219-228 dB 6°: 213-222 dB 12°: 207-216 dB
Roll, pitch and yaw stabilization	Yes
Volume scanning along	±15 degrees

External inputs

Position
 Heading
 Motion sensor (roll, pitch, heave)
 External clock
 Depth, bottom slope angles and sound velocity information (from any EM multibeam echo sounder)

PHYSICAL SPECIFICATIONS

	Length (mm)	Width (mm)	Height (mm)	Weight (kg)
3 deg transducer frame	7450	800	350	1150
6 deg transducer frame	3834	800	350	575
12 deg transducer frame	1970	800	261	288
Transceiver cabinet	758	545	867	~100
TX/RX Junction box	303	500	440	15.3
Operator station	379	338	100 mm	7

*When the transceiver cabinet of the SBP 27 is used with the RX of the new generation EM 124 or EM 304 multibeam echo sounder, the model number is SBP 29.

**For the SBP 27 the bandpass filter of the preamplifier is attenuating frequencies above 7 kHz.

Specifications subject to change without any further notice.

KONGSBERG MARITIME

Switchboard: +47 815 73 700
 Global support 24/7: +47 33 03 24 07
 E-mail sales: km.sales@km.kongsberg.com
 E-mail support: km.support@kongsberg.com

km.kongsberg.com



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