



TOPAS PS 18

Parametric sub-bottom profiler System specifications

The **Kongsberg TOPAS PS 18** parametric sub-bottom profiler comprises of the following units:

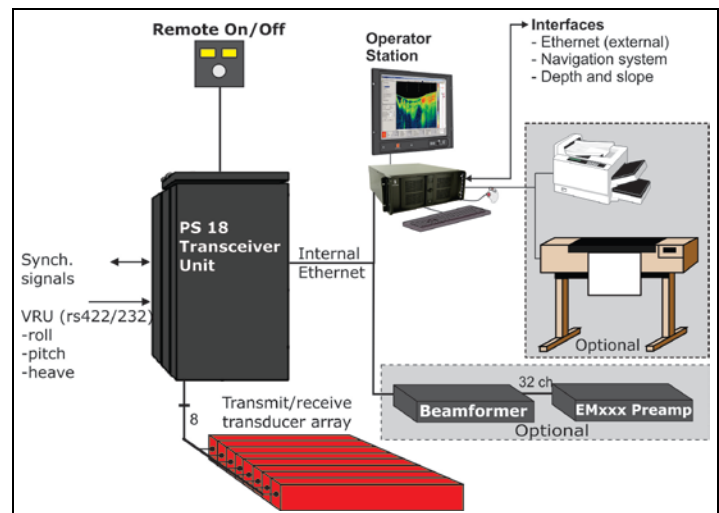
- **Transducer**
 - 8 x 16 channels
- **Transceiver Unit**
 - Linear, switched mode power amplifier
 - Built-in T/R-switch
 - Low noise receiver with 24 bit ADC
 - High dynamic range; >110 dB
- **Operator Console**
 - MMI
 - Real-time processing
 - PC-based platform (Windows)
- **Optional**
 - Multi channel receiver (MCR) & beamformer

The system is designed for sub-bottom profiling with very high spatial resolution in water depths from less than 20 meter to full ocean depth. The +80% relative bandwidth, low frequency signal is generated in the water column by non-linear interaction between two high frequency signals (centred symmetrically around 18 kHz). Similarly, a sum frequency signal is also generated. However, only the low frequency signal is used for sub-bottom profiling.

The parametric sources have the advantage of generating a low frequency signal beam with no distinct sidelobe structure. The beam tapers off smoothly with spurious signals due to sidelobes.

The transducer is hull mounted. The advantages are no deployment or recovery of tow-fishes during the survey, which results in more efficient survey time and higher positioning accuracy for the profile. Manoeuvrability of the vessel is also improved.

In a "low noise" vessel, excellent profiling results are achieved even at survey speeds of +14 knots.

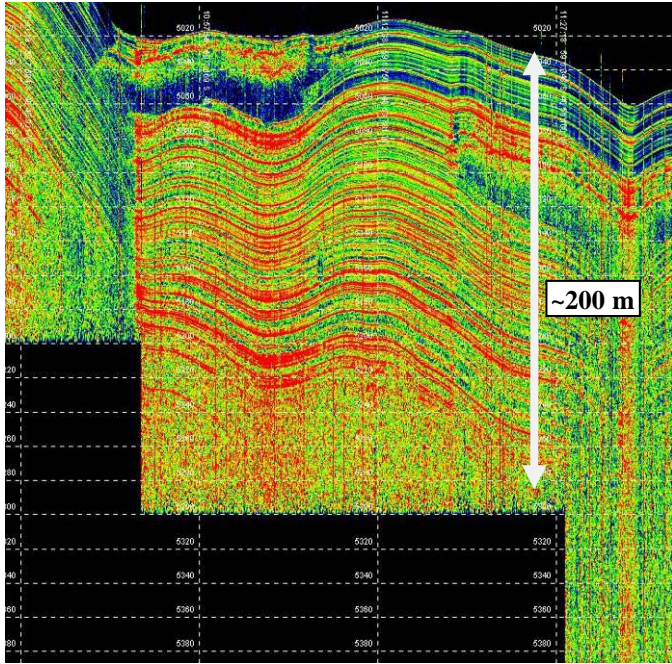


The system can operate with various signal waveforms for optimum performance: Typically Ricker pulses are used for very high resolution work, Chirp pulses are used for deep water, high penetration work and CW pulses are used for narrow band, frequency sensitive work.

The transmitted beam is electronically stabilised in both roll, pitch and heave (requires input from a vertical reference unit) ensuring that theinsonified area on the sea floor is accurately positioned.

The transmitter can be used in a sequentially beam steering mode covering a larger sector. This is of importance in object detection / location applications.

Penetration performance depends on sediment characteristics, water depth, transmitted signature, noise level etc. Penetration of more than 200 meters has been achieved in water depths of more than 3,800 meters with a sediment layer resolution of typically 15 cm or better.



Real-time processing:

- Digital band pass filter
- Spiking deconvolution/Matched filter
- Time Varying Filter (TVF)
- Bad trace removal
- Dereverberation
- Time Variable Gain (TVG)
- Automatic Volume Control (AVC)
- Stacking (Trace mixing)
- Swell filter
- Manual/automatic gain
- Attribute processing
- Statistics
- Power Spectral Density (PSD) display

Additional off-line processing:

- Synthetic Aperture Sonar processing (SAS)
- Interpretation/Digitization of interfaces
- TOPAS tracks displayed/selected in SIS
- tf-processing (optional)
- De-noising/Wavelet filtering (optional)
- Sediment classification (optional)

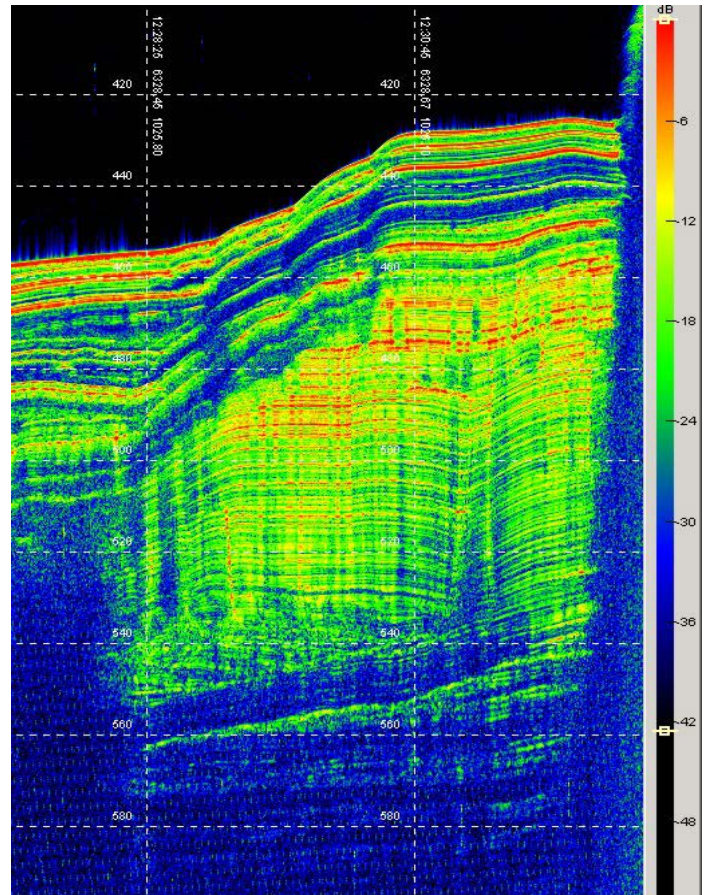
System benefits:

- Narrow acoustic beam
- High bandwidth
- Chirp and short pulse modes
- No sidelobes
- Electronic beam steering
- Single ping, multi ping and burst ping modes
- Real-time processing
- Heave, roll and pitch stabilised beam

- Hull mounted transducer
- High spatial resolution

System interfaces:

- Navigation input – NMEA 0183 (rs232/UDP)
- Depth/slope input – NMEA 0183 (rs232/UDP)
- Ethernet
- Printer / recorder – analogue/digital
- VRU (rs422/rs232)
- Synchronizing unit (K-Sync) – TTL



Typical specification:

Primary frequency..... 15-21 kHz
 Secondary frequency..... 0.5 – 6.0 kHz
 Output power ≥32 kW
 Beamwidth -Primary..... ~3.5 deg
 Beamwidth -Secondary..... ~4.5 deg
 Source level (4 kHz) ≥204 dB//μPa @ 1m
 Dynamic range:..... >110 dB
 Range resolution <0.15 m
 Penetration capability..... >200 m
 Depth range..... <20 - >11,000 m
 Beam steering sectors – across/along 80/20 deg

Specifications may change without further notice!

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