For over 40 years, Klein has "set the bar" for commercial side scan sonar performance. The newly developed UUV-3500 product line leverages a powerful, wholly FPGA-implemented, multi-channel processing engine. The sonar engine simultaneously optimizes two different and concurrent output data streams for:

- Photo-quality side scan imagery
- High-accuracy, co-registered swath bathymetry

The UUV-3500 operates exclusively with Klein's proprietary wideband technology providing unmatched side scan range and resolution performance in a low-power, compact and lightweight payload. The swath bathymetry option allows for wide swath performance which is typically 10 to 12 times the overall altitude of the UUV and thereby significantly greater coverage than can be achieved by a multi-beam echo-sounder.

The system electronics will easily integrate into all small UUV platforms currently on the market and is also available in a watertight pressure case configuration. Klein's newly designed, ruggedized transducers are built to last and perform in the most demanding environmental conditions.

Post-survey analysis of the data can be accomplished using Klein's SonarPro® software. Alternately, we offer a Software Development Kit (SDK) which allows UUV manufacturers and third party software developers the ability to control the sonar directly, as well as display data using our proprietary image display engine.

The Difference Is In The Image
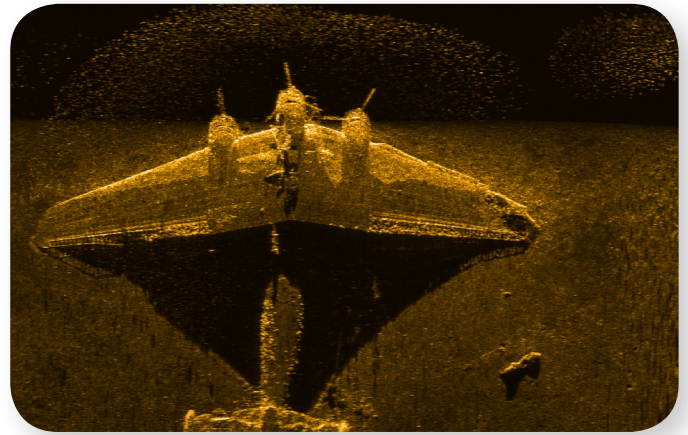
Applications:

- Hydrographic / geophysical survey
- Cable / pipline survey
- Environmental survey
- Small object detection
- Mine Countermeasures (MCM) / Intelligence, Surveillance, and Reconnaissance (ISR) surveys

Key Features:

- Superior low-frequency resolution
- Unsurpassed high-frequency range performance
- True dual-frequency operation to maximize along track resolution
- Onboard processing allows for direct integration with CAD/CAC systems
- Low-power, compact and lightweight
- Easily integrates into all manportable UUV's
- Side Scan and Bathymetry for Autonomous Underwater Vehicles (AUV's), Remotely Operated Vehicles (ROV's) and UUV's
- Excellent cost-to-performance value

UUV-3500

HIGH-RESOLUTION SIDE SCAN SONAR FOR UUV's

Specifications:

UUV-3500 General Specifications	
Total Electronics Volume	3"L x 4"H x 15"D (Note 1) (76.2 x 101.6 x 381 mm) 1.8 lb / 1.0 lb (0.82 kg / 0.45 kg) dry/wet
Transducers	22"L x 1.75"H x 1"D (Note 1) (559 x 44.45 x 25.4 mm)
Transducer Weight	1.8 lb / 1.0 lb (0.82 kg / 0.45 kg) dry/wet
Transducers With Bathy	22.75"L x 3.89"H x 1.14"D (Note 1) (577.85 x 98.8 x 28.95 mm)
Transducer Weight (Bathy)	7.5 lb/ 4.0 lb (3.40 kg / 1.81 kg) dry/wet
Power	24 VDC (nominal), 18-30 W RMS, including optional bathymetry
Depth Rating	600 m (deeper depth rating options available)

Side Scan Specifications	
Frequencies	455 kHz, 900 kHz
Pulse Technology	Wideband FM Chirp (1, 2, 4, 8 msec)
Across Track Resolution	2.4 cm
Beam Width	Horizontal: 0.34°, Vertical: 45°
Range (typical)	150 m @ 455 kHz 75 m @ 900 kHz
Side Scan Data Output	SDF

Swath Bathymetry Specifications	
Frequency	455 kHz
Along Track Resolution	0.48°
Across Track Sampling	4.8 cm
Pulse Technology	FM Chirp
Range	125 m nominal / side (typically 10 to 12 times altitude)
Bathymetric Data Outputs	SDF, GSF, & XYZ

Note 1: System electronics and transducers can be modified to support specific requirements of the UUV

Note 2: Transducers available in either a pigtail or penetrator cable configuration

Design Verification Testing 900KHz @ 75M Range (150 Swath)
Rock Outcropping
Sand Waves
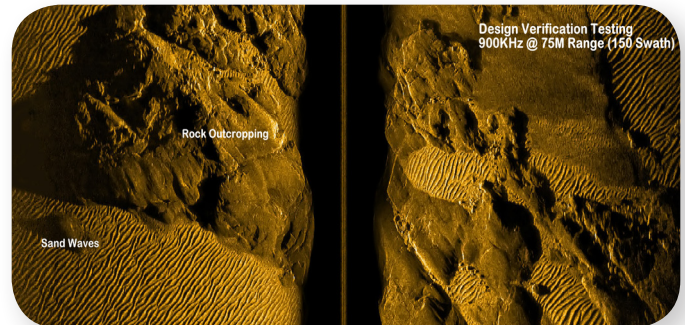
Flexible System Architecture:

- System supports local data storage to solid-state hard disk or remote data logging to the UUV host over ethernet using network file system (NFS) protocol
- System supports UUV host via ethernet LAN or over a dedicated RS232 link
- Flexible configurations can support both wet and dry vehicle types
- System supports external triggering of its active acoustic devices which mitigates the impact of acoustic interference by allowing the UUV to coordinate acoustic emissions
- 1 PPS timing support

Standard System:

- Sonar Electronics
  » Control data interface
  » Receiver
  » Transceiver
  » PC-104 CPU
  » Power filter
  » Receiver transition
- Port / Starboard transducer (Note 2)
- SonarPro® software and documentation

System Options:

- Pressure housing with end cap
- Bathymetry
- Solid-state hard drive
- Mounting bracket
- Transducer pressure test & certification