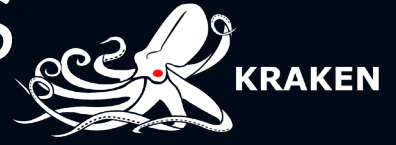
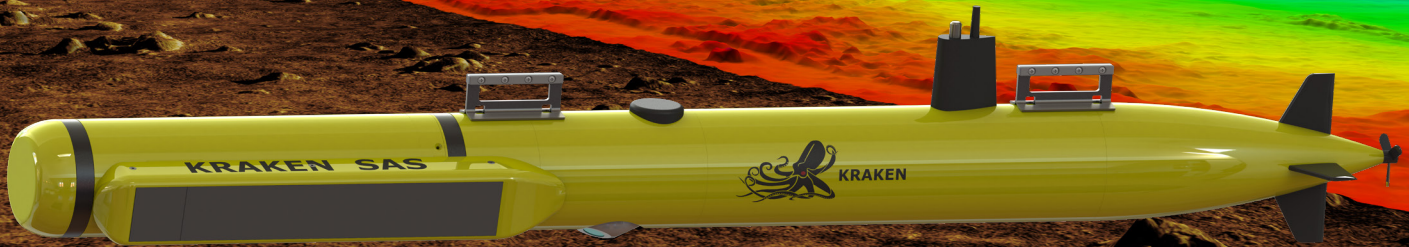


Man-Portable SAS



Seamless Integration



Kraken's MP-SAS payload is a bolt-on capability upgrade for new and existing MP-UUV assets delivering increased range performance, higher resolution, and greater area coverage rates than conventional sidescan.

MP-SAS boasts rapid and efficient onboard SAS processing resulting in reduced post-mission analysis time and resources. Real-time SAS processing also enables advanced features such as embedded Automatic Target Recognition, laying the foundation for contact ExFil and other autonomous behaviors such as mid-mission re-tasking.

Equipped with Kraken's lightweight MINSAS 60 arrays, MP-SAS consistently supplies high-resolution seabed imagery in complex environments, from very shallow waters to depths of 300 meters, all in a compact, man-portable package.

With best-in-class image resolution, MP-SAS makes seabed target detection, classification, and identification faster by reducing the number of false positives. Whether in standard or UHD (Ultra High Definition) mode, MP-SAS offers exceptional clarity across ranges of 100 meters per side, simultaneously providing real-time co-registered bathymetry data with an impressive 25-centimeter resolution. Constant resolution across the entire swath greatly increases the useable sonar range, resulting in Area Coverage Rate results that are not possible with traditional side scan sonar.

Kraken's latest KR-SAS electronics and robust and efficient Gen III Real-Time SAS (RTSAS) processor conserve energy while supplying the processing power needed to handle the advanced beam-forming algorithms required to process SAS in highly dynamic environments.

Kraken's MP-SAS is the ideal solution for upgrading existing 7.5-to-9-inch diameter UUVs. It offers very high-resolution imaging, efficient low-power processing, and advanced sonar capabilities to a class of platforms which previously were unable to benefit from SAS technology. MP-SAS revolutionizes underwater MCM (Mine Countermeasures) mission capabilities.

Man-Portable SAS



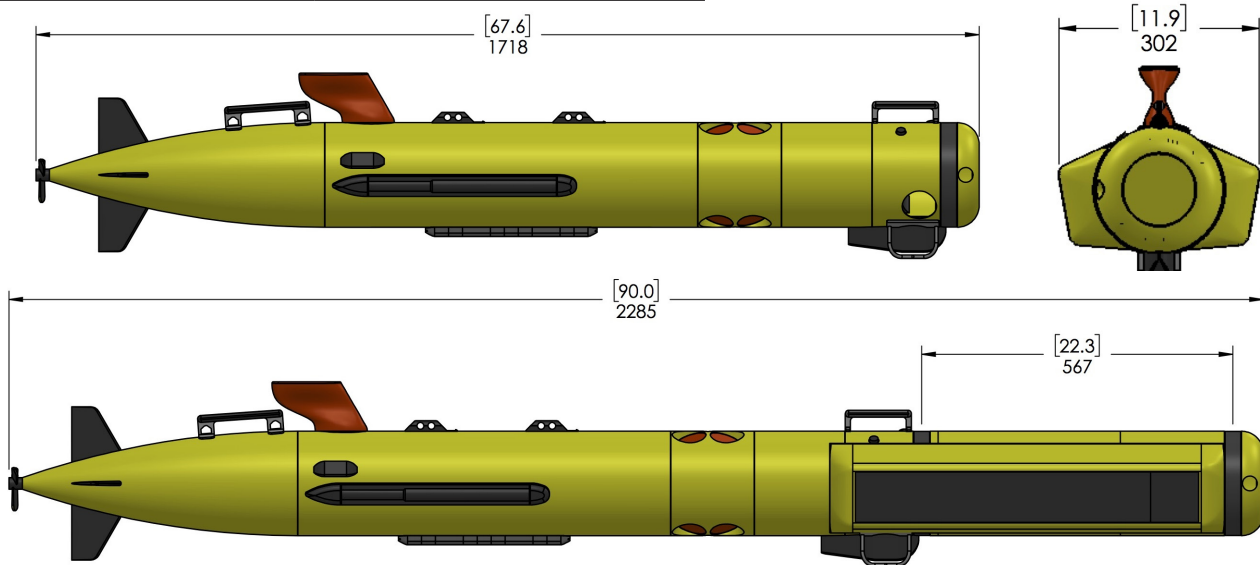
Man-Portable SAS Payload	
Platform Speed	2-5 kn
Payload Dimensions - L/W/H	741 mm/305 mm/270 mm
Housing Diameter	190 mm
Payload Length Installed	566 mm
Payload Weight - Air/Water	24 kg/neutral
Depth Rating	300 m
Power Supply	24 VDC - 60 VDC Nominal
Real-Time SAS Image Resolution	3.3 cm Along x 3.1 cm Across
UHD SAS Image Resolution (Post)	1.9 cm x 2.1 cm
Real-Time SAS Bathy Resolution	25 cm x 25 cm
SAS Bathy Vert. Accuracy @ 100 m	<15 cm at 95% Confidence
Source Level	210 dB re 1μPa @ 1 m
PRF	8 Hz
Center Frequency	337 kHz
Pulse Length	1 - 16 ms Configurable
Pulse Bandwidth	40 kHz
Pulse Type	Linear FM
SAS Robustness Against Yaw	±4° over 20 m track length
SAS Robustness Against Sway	±10 m
Max Crab Angle	20°
Solid State Storage	4 TB
System Power (Ping and Process)	95 W Nominal
System power (Standby)	35 W Nominal
System power (Active)	70 W Nominal

MINSAS 60 - Area Coverage*				
knots	m/s	Range m (per side)	ACR w/o Gap Filler km ² / hr	ACR w/ Gap Filler km ² / hr
3.00	1.54	118	0.90	1.31
3.50	1.80	100	0.89	1.30
4.00	2.06	87	0.89	1.29
4.50	2.32	77	0.89	1.29
5.00	2.57	69	0.88	1.28
6.00	3.09	57	0.87	1.27

Performance specifications represent maximum sensor values and may vary due to environmental conditions, vehicle stability, and operational specifics.



Above: Man-Portable SAS payload section designed for retrofit of small class vehicles.



Representative lengths of a Man-Portable UUV with and without MP-SAS payload section. Measurements above are in inches (top value) and millimeters (bottom value)