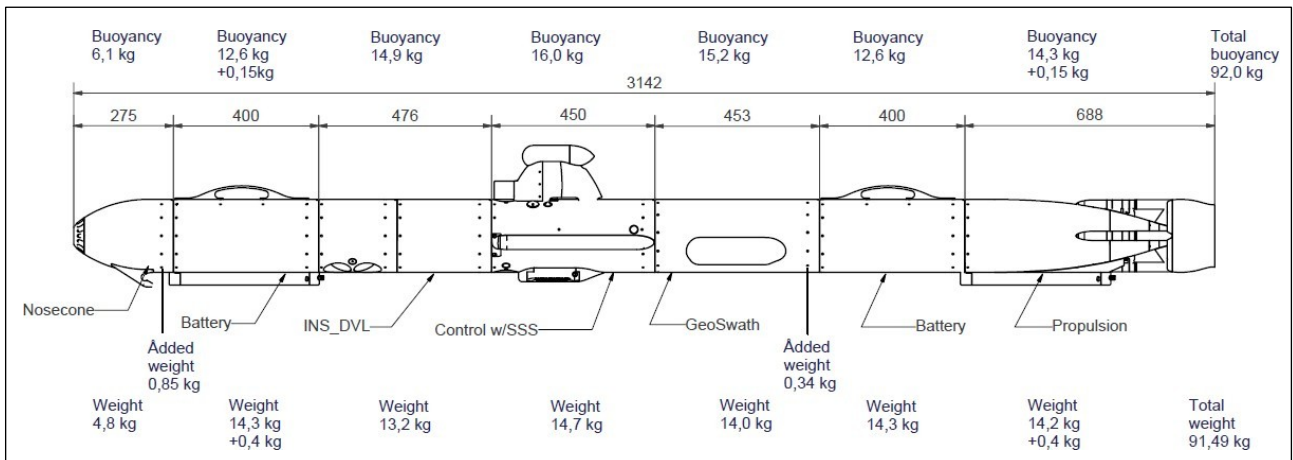


# GAVIA

## AUTONOMOUS UNDERWATER VEHICLE TECHNICAL DESCRIPTION



<b>Dimensions and Operating Parameters</b>	
Total Length	3.14m with INS/DVL, GeoSwath + and two battery modules
Diameter	0.20m
Total Weight (In Air)	92.0kg with INS/DVL, GeoSwath+ and two battery modules
Total Buoyancy	92.0kg
Operation Speed	3 - 5knots
Maximum Operating Depth	1,000m
Endurance	Typ. 6hrs with dual batteries and MBES
Weather Limits	Sea: 1m offshore launch and recovery
<b>Navigation System</b>	
GNSS Receiver	WAAS / EGNOS GNSS Receiver with update by WiFi
INS	Kearfott T-24 DVL aided
Position Accuracy	0.12% distance travelled RMS
Heading Accuracy	<0.028° sec Lat RMS
DVL Module	Teledyne RDI
Frequency	1200 kHz
Beam angle	30°
Bottom tracking altitude	0.5m minimum, 20 – 30m maximum
Accuracy	Horizontal bottom velocity accuracy 1.3cm/s Horizontal water velocity accuracy 2 - 4.5cm/s
Heading accuracy	+/-1 to +/-5 degrees
OAS (Obstacle Avoidance Sonar)	Forward looking sonar in nose cone
<b>Teledyne Benthos ATM-900 Based Communication System</b>	
Frequency	22-27 kHz (Band C)
Range	1 km
Baud Rate	140-15,360 bps
Beam Width	180°
<b>Bathymetric and Sonar Systems</b>	
MBES	Kongsberg GeoSwath Plus
Frequency	500 kHz
Coverage	Up to 12x flying altitude
Accuracy	+/- 0.10 m/s
Format	RS-232 SCII
<b>Sub Bottom Profiler Module (OPTIONAL)</b>	
<b>SBP</b>	Teledyne Benthos T24
Data Storage	SEG-Y format
Ping Rate	15 pings per second (maximum)
Pulse Length	1 ms to 15 ms – user selectable
Transducer	CHIRP bands 14kHz to 21 kHz
<b>Communications</b>	

<b>Wireless LAN</b>	IEEE 802.11g compliant, up to 54Mbit/s data rate depending on range and conditions. Max range 300m but best performance at 150m or less.
<b>Data Transfer / Accumulation</b>	Data can be transferred using WLAN
	Teledyne Benthos Communications System
<b>Visual (Surface Navigation)</b>	High intensity omnidirectional LEDs mounted in antenna tower
<b>Operating Status LED</b>	Located in antenna tower for visual indication of operating status

<b>Emergency and safety system</b>	
Acoustic	The Acoustic modem backs up as an emergency locator with a range greater than 1500 m (depending on local conditions). Powered by a back-up battery in case of main system failure or main systems power loss.  The Gavia being proposed can be fitted with an external acoustic pinger / relocater or a pinger relocater as a part of a portable USBL system. This is being proposed in addition to the acoustic modem in case of flooding, which would render the modem inoperable
Collision avoidance sonar	Forward looking conical shaped sonar beam giving the distance to the nearest object in front of Gavia, located in the Nosecone module.
Visual	High-intensity omni directional LEDs mounted in antenna tower for visual location in the dark. Can be activated/deactivated through any of the communication channels.
Operating status LED	Located in antenna tower for visual indication of operating status.
Leak detector	Intelligent leak detector in every Gavia module.
Safety overpressure valve	The safety overpressure valve opens if the pressure build-up inside Gavia exceeds a set limit.
Software	Gavia will automatically abort a mission while she is in the water should abnormal conditions arise, for example, out-of-range readings or set points from key systems within the vehicle. This may result in immediate surfacing of the vehicle or other appropriate actions depending on the severity of the fault.
Acoustic Relocator	If installed the emergency relocating device will send an acoustic signal that can be used to determine the position of the vehicle while submerged. This device is on a timer and remains active approx 30 days.