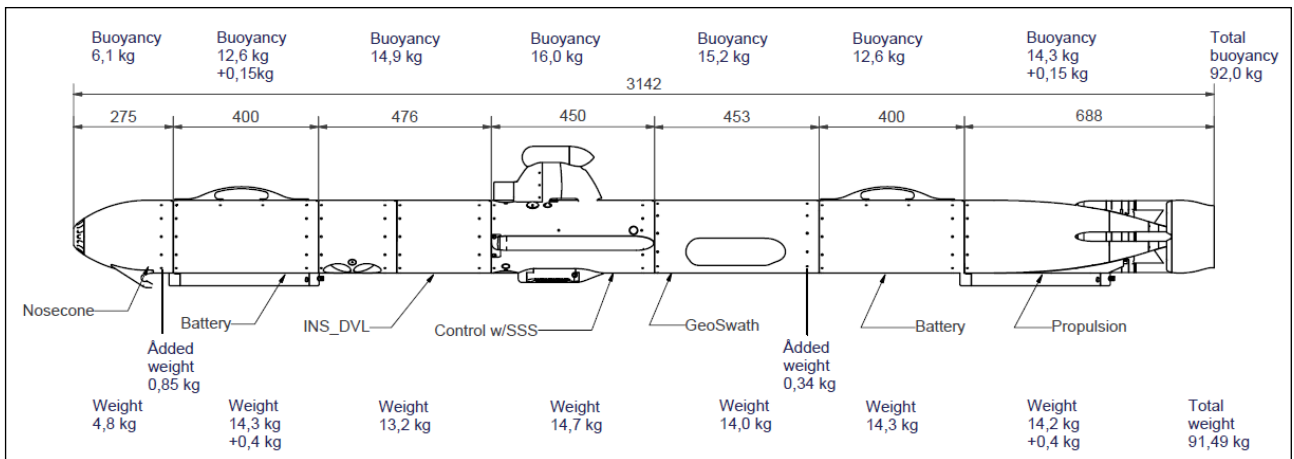


GAVIA

AUTONOMOUS UNDERWATER VEHICLE

TECHINICAL DESCRIPTION



LIGHTHOUSE S.p.A.
 Sede Operativa: Via Prati, 1/1 - Ponte Ronca 40069 Zola Predosa, Bologna - Italy
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 Sede Legale: Via Calzavecchio, 23 - 40033 Casalecchio Di Reno, Bologna - Italy
 numero d'iscrizione al registro imprese di Bologna 03582530378
 r.e.a. Bologna 301090; Capitale Sociale 400.000,00 euro i.v. lighthousespa@pcert.it
 soggetta a coordinamento e controllo di QUAY S.r.l. - VAT 03540491200



| Dimensions and Operating Parameters | |
|--|---|
| 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 |
| Navigation System | |
| 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 |
| Teledyne Benthos ATM-900 Based Communication System | |
| Frequency | 22-27 kHz (Band C) |
| Range | 1 km |
| Baud Rate | 140-15,360 bps |
| Beam Width | 180° |
| Bathymetric and Sonar Systems | |
| MBES | Kongsberg GeoSwath Plus |
| Frequency | 500 kHz |
| Coverage | Up to 12x flying altitude |
| Accuracy | +/- 0.10 m/s |
| Format | RS-232 SCII |
| Sub Bottom Profiler Module (OPTIONAL) | |
| SBP | 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 |
| Communications | |

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GAS and **AGEOTEC** together in **LIGHTHOUSE**



| | |
|-------------------------------------|---|
| Wireless LAN | 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. |
| Data Transfer / Accumulation | Data can be transferred using WLAN Teledyne Benthos Communications System |
| Visual (Surface Navigation) | High intensity omnidirectional LEDs mounted in antenna tower |
| Operating Status LED | Located in antenna tower for visual indication of operating status |

| Emergency and safety system | |
|------------------------------------|--|
| 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. |

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