



3D at Depth

SL3 Subsea LiDAR Laser

One Tool, Multiple Applications, One Cohesive Data Format

Our Subsea LiDAR (SL) SL3 laser system is powered by proprietary point cloud processing software with in-house patented technology and customized optical design. Each SL laser pulses at 40,000 times a second and can receive over 10 multi returns per pulse which are filtered through software. The result delivers precise, accurate, millimetric 3D point clouds with reflectivity. (Reflectivity and longer-range measurement repeatability are unique features attributed to 3D LiDAR datasets and are essential for more precise 3D modeling, analysis and visualization.) The steerable, long-range beam — up to 45 meters, places photons where you want them when you want them. Each base image is made up of 2.1 million measurements per sector to provide highly accurate 3D LiDAR point cloud data which can be measured, analyzed, and exported into any existing GIS, CAD, visualization and analysis software.

The SL3 has an embedded MEMS inclinometer to calibrate pitch and roll and create real-world reference frames. This overcomes the inability to “level” a subsea sensor. The system also comes with an onboard computing subsystem and 1TB internal solid state drive for fast performance and flexibility.

For real-time data QC and data preprocessing, the system includes a computer with 3D at Depth software for collection (3D Collect), viewing (QuickView) and the creation of LAS and E57 files (3D Cloud). RIAAT is a proprietary compression format which allows operators to move data across low bandwidth networks — from vessels to onshore processing teams. An integrated rotational stage provides a 90 degree x 360 degree field of view while mounted on an ROV or tripod. A graphical operator interface provides real-time quick views of the results and exports to industry standard point cloud formats instantly.

With the SL3 you can significantly reduce the time for standard tasks such as spool piece metrology, other subsea construction survey tasks, inspection, and engineering measurements while dramatically improving data quality. Fast, high accuracy 3D data collection for field surveys, as-builts, metrologies, movement, and engineering measurements are all possible with the same tool. Each SL system can be easily integrated and deployed on a wide range of systems including tripods, ROVs, AUVs, surface vessels, and diver systems. The rugged design supports a variety of subsea workflows and environments at depths up to 3000m, with capabilities of depths up to 4000m upon request.

Long Range, Controllable Beam

Ranges from 1 meter to 45 meters

Touchless, Non Contact

Little to no tooling required (task dependent)

Subsea Real Time Processing

Proprietary RIAAT Format (Range/Intensity/Angle/Angle/Time)

Improved Range Precision (1σ)

2mm over full range of sensor (1m to 45m)

Depth Rating

3000m Standard or 4000m Optional

Pan and Tilt Scanner Field of View

90 degrees x 360 degrees



SL3 Specifications		
Performance		
Measuring Method	Time of Flight (ToF) Pulsed	Pulse Repetition Rate 40kHz
Range	Min 1m, Max 45m	Turbidity Dependent
Field of View	360° Pan 90° Tilt	30° x 30° Sectors
Improved Range Precision	<2.5mm single-point @2m-40, 1σ	<0.5mm multi-point @2m-40, 1σ
Distance Measurement Point-to-Point	3mm RMS proven subsea from a deep water project using a work class ROV	
Angle Precision	<100 urad, horizontal and vertical (0.005°)	
Beam Divergence, 1/e ² , Full Width	0.025°	Typical. Varies with water conditions.
Beam Footprint, 1/e ² , Full Width	@10m = 4.5mm, @20m = 8.6mm	Typical. Varies with water conditions.
Max Number of Points per Scan	1450 x 1450	2.1 million points per scan
Pan and Tilt Resolution	0.088°	Calibrated Pan and Tilt
Pitch and Roll Accuracy	±0.025°	Dual axis logging
Operating Temperature	-5°C to 35°C	
Laser Class	Class 1 (Air) to Class 3B (Subsea)	
Ambient Lighting	Fully operational in bright sunlight and complete darkness.	
Point Cloud Format	RIAAT (Proprietary data format) + Industry Standard (LAS, E57, XYZ)	
Power and Communications		
Power Supply	22V to 29V DC	110V/220V AC PCI bottle included
Power Consumption	150W without using the Pan	225W with the Pan and Tilt
Data Transfer	Ethernet GBit LAN	Internal 1TB SSD
Physical Properties	Optical Canister (SL3-O)	Electronics Canister (SL3-E)
Pan and Tilt	Pan - 350° bi-directional	Tilt ± 30° bi-directional
Length	16.34in (415mm)	14.00in (355mm)
Outside Diameter	6.94in (176mm)	8.27in (210mm)
Weight	Air: 59.3lb (26.89kg) Water: 36.4lb (16.51kg) with interface plate	Air: 46lb (20.9kg) Water: 18lb (8.2kg)
Depth	3000m Standard (4000m Optional)	

Ignite the Green

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