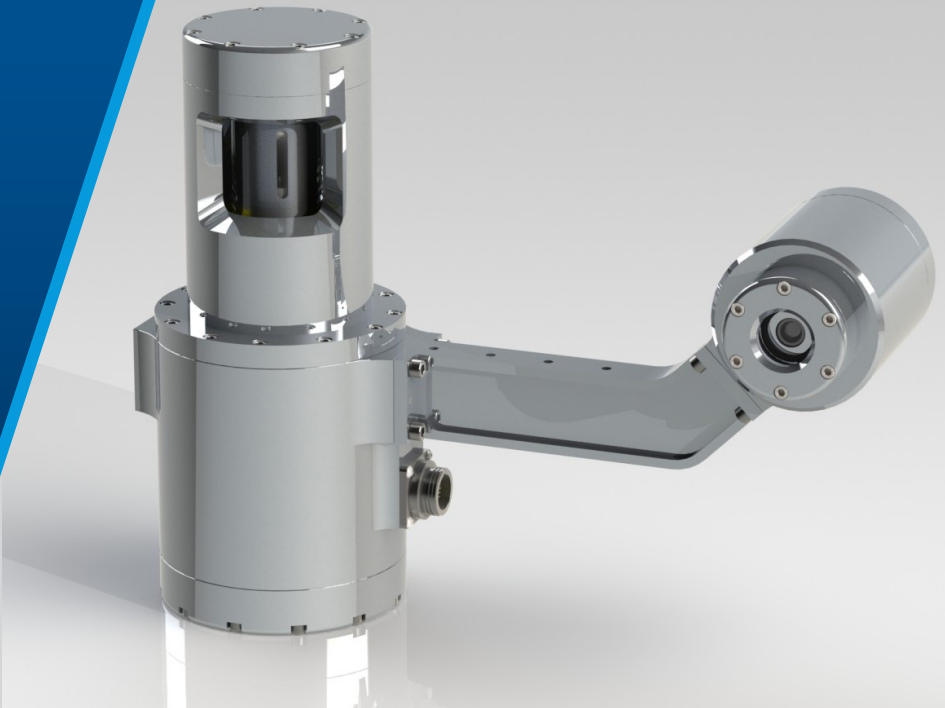


NEWTON

Sub-Sea Laser Scanner

M4000UW - 4000m rated

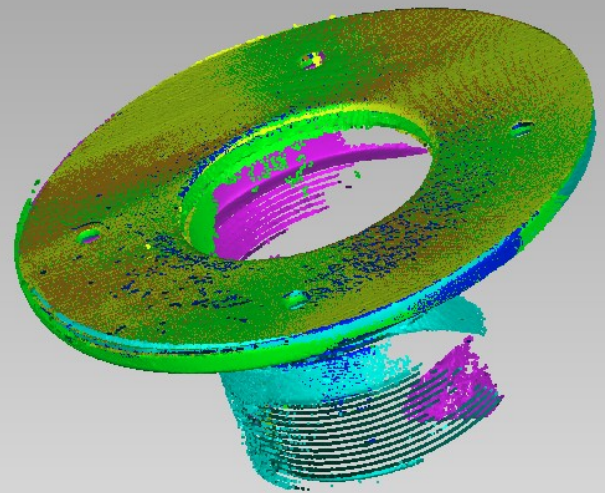
Operates as standalone system or fully integrated with IMU data correction for dynamic scanning



Underwater Laser Scanners that capture sub-millimeter measurement for sub-sea metrology and IRM analysis.

Product Details

- Depth rated up to 4000m
- Captures data up to 5 meters from target
- Live camera view allows operator to achieve maximum productivity
- Produces standard point clouds easily converted to CAD in any post processing software
- Combine multiple scans into comprehensive CAD model
- Designed for ROV/AUV Deployment
- Extremely low current draw to allow ROV/AUV operation: see back for requirements



Depth of Field (Distance to Object)	Field of View		Approximate CAD Model Accuracy
	Depth	Width	
0.5 m	0.35m x 0.43m		0.02 mm
1 m	0.67m x 0.84m		0.06 mm
2 m	1.32m x 1.66m		0.23 mm
3 m	1.97m x 2.48m		0.51 mm
4 m	2.63m x 3.30m		0.90 mm
5 m	3.28m x 4.12m		1.41 mm

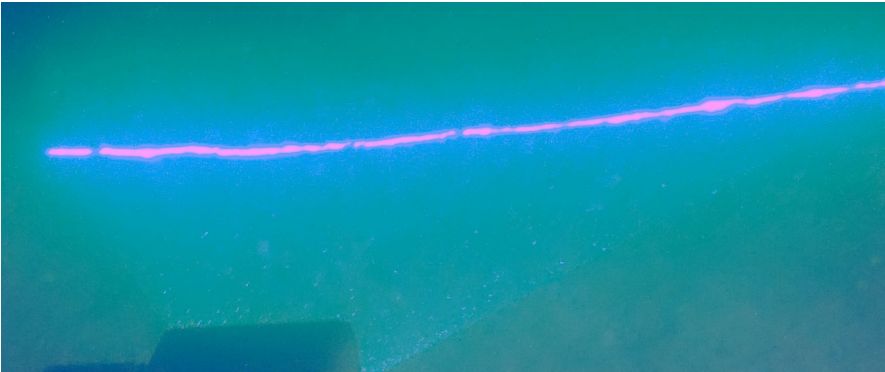
Above — Combine multiple scans for composite 3D analysis.

Accuracy statements on left are based on post processing of scanner's raw point cloud data. Scanning conditions can effect the raw data acquisition, but post process can filter out obvious noise in the data.

For dynamic scanning, IMU accuracy and speed of travel impacts final scan results

Sub-Sea Laser Scanning - M4000UW

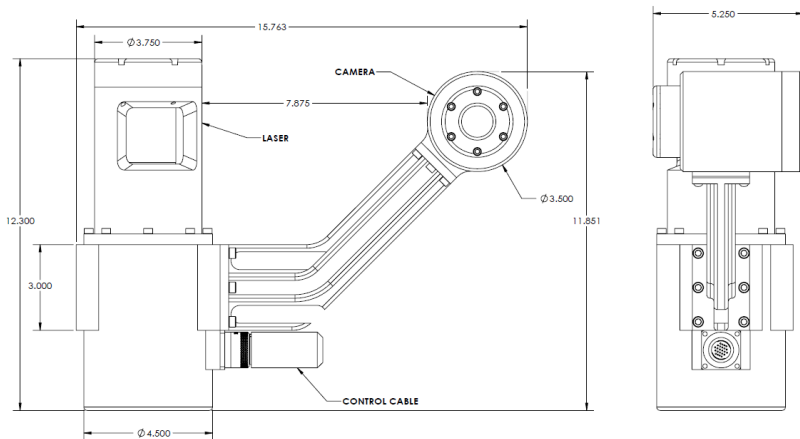
Subsea metrology methods are often coarse and unreliable. And Underwater Laser Scanning exceeds traditional underwater measurements by capturing as built point cloud data with sub-millimeter accuracy. The data captured by the Newton sub-sea scanners leaves asset managers with absolute confidence in their IRM analysis.



Newton Scanner Operation

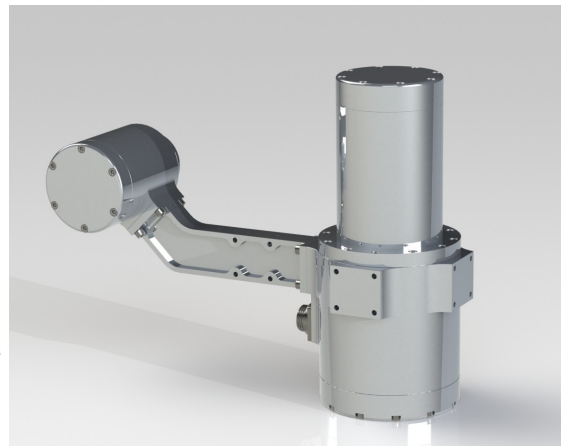
- **Dual Usage** The M4000UW can operate with a fixed laser line and IMU data as well as the standard internal high resolution scanning.
- **The Newton scanners operate by triangulation** - The laser sweeps the target and the high resolution camera records any deformation of the beam as a point cloud.
- **The scanners scan a target** as distant as 5m and as close as .5m, for a scan coverage area of 3.28m x 4.12m . The system measures underwater targets up to an accuracy of +/- .02mm.
- **Scanner software can capture much larger target areas** by combining several point clouds together in post processing to form larger composites.
- **Operators may select from several levels of scan quality.** The shortest, coarse scan takes 15 seconds; the longest and most detailed takes about 90 seconds.
- **For visual observation mode,** the live camera view provides coverage of the area to be scanned. The camera transmits a live image to the control console screen.
- **Deployment of the scanner head** is designed for ROV/AUV deployment and has simple mounting holes on the back panel and the connecting arms (right)

Product Dimensions



Technical Specifications:

Measurement Range	Up to 5m
ROV/AUV Power Requirements	Requires 24v at less than 1 amp and Gig Ethernet MUX Compatible
Cable	With flying leads or connector as specified.
Weight	45lbs in air, 35 lbs in water
Scanner Dimensions	See drawing below
Control Unit	Newton control unit or laptop
Control Unit Weight	56 lbs (25 kg)
Display	19" (48 cm) Color
Depth Rating	4000 meters



About Newton Labs

Newton Labs is a Seattle area-based privately held developer and manufacturer of machine vision and robotic systems. Newton's powerful, easy to use, and industrially rugged systems provide solutions for wide ranging applications in many sectors, including aerospace, automotive, bottling, electronics, medical, packaging, and nuclear, among others. In 20 years Newton has deployed more than 20,000 machine vision and automaton systems worldwide, many that are first-of-a-kind.