The **Polaris Terrestrial Laser Scanner (TLS)** delivers accurate, precise data faster than ever before, bridging the gap between small, light-weight, short-range sensors and large, long-range, pulsed time-of-flight scanners. Built with surveyors in mind, the Polaris has a user-friendly on-board operator interface with menu-driven operations for quickly collecting and referencing data.

With an integrated high-resolution camera, inclinometers, a compass, a L1 GNSS receiver, and weather-proof housing, the Polaris can be deployed in many environments and orientations. The Polaris leads the market in price versus performance, starting at a price that rivals short-range scanners while outperforming most long-range scanners. With accelerated performance and all the built-in features surveyors need, a single Polaris executes more applications than ever before. Whether on a tripod, vehicle, or moving platform, the outstanding performance of the Polaris makes it the most versatile terrestrial laser scanner on the market.

www.teledyneoptech.com
The Polaris Family...
Versatile Capability for Diverse Data Capture Applications

**Polaris HD** Single, fast data collection rate
Ideal for short-range (up to 250 m) applications where documentation and verification are required.

<table>
<thead>
<tr>
<th>System Performance</th>
<th>Polaris HD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser repetition rate (peak and effective, kHz)</td>
<td>500</td>
</tr>
<tr>
<td>Max range capability @90% reflectivity (m)</td>
<td>250</td>
</tr>
<tr>
<td>Max range capability @20% reflectivity (m)</td>
<td>125</td>
</tr>
</tbody>
</table>

**Polaris ER** 2 data collection rates for more applications
Two programmable data collection rates and a range capability increased to 750 m plus options such as external cameras and GNSS.

<table>
<thead>
<tr>
<th>System Performance</th>
<th>Polaris ER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser repetition rate (peak and effective, kHz)</td>
<td>200 500</td>
</tr>
<tr>
<td>Max range capability @90% reflectivity (m)</td>
<td>750 250</td>
</tr>
<tr>
<td>Max range capability @20% reflectivity (m)</td>
<td>400 125</td>
</tr>
</tbody>
</table>

(2) More than 2000 m

**Polaris LR** 3 collection rates for longer range capability
The perfect scanner for all applications, with programmable data collection rates that enable ranges over 2000 m.

<table>
<thead>
<tr>
<th>System Performance</th>
<th>Polaris LR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser repetition rate (peak and effective, kHz)</td>
<td>50 200 500</td>
</tr>
<tr>
<td>Max range capability @90% reflectivity (m)</td>
<td>≥ 2000 750 250</td>
</tr>
<tr>
<td>Max range capability @20% reflectivity (m)</td>
<td>976 400 125</td>
</tr>
</tbody>
</table>

Range vs Reflectivity

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*Legend: STD CLR (23 km)  Clear (15 km)  LT Haze (8 km)*
**Polaris... Simplified, Touch Screen, Menu-Driven Operation**

The Polaris is a stand-alone terrestrial laser scanner that is typically operated via an on-board, sunlight-visible touchscreen. Scans are performed via easy-to-use menu-driven prompts, with data stored locally on the Polaris. After the scan, data is transferred to a Windows-based computer for further processing.

Alternatively, you can operate the Polaris via computer, giving you in-depth control and more visibility into scan parameters. The scan data is then stored on the computer for immediate processing, using project-based software features.

**GRAPHICAL USER INTERFACE:**

- Sunlight-visible
- Resistive single touch
- 640 x 480 pixels
- Color TFT LCD

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**Polaris ATLAScan Data Processing and Workflow**

The Polaris software suite, ATLAScan, is a field-proven, PC-based workflow platform that enables easy operation.

**ATLAScan:**

- Manages all data associated with a scan project, including point clouds, imagery, GNSS, referencing control files, and co-ordinate conversions, as well as deliverables such as meshes, models, and line work.
- Incorporates high-end functionalities like automatic detections of tie points, fitting of primitives, feature line extraction, automatic target-free registration and more...
- Minimizes processing steps and optimizes functionality to help you shorten your processing times and improve your productivity. ATLAScan also provides tools to view and inspect data, ensuring that your scan coverage is complete and accurate.

**ATLAScan’s MODULES:**

<table>
<thead>
<tr>
<th>Module</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Works</td>
<td>Controls the Polaris scanner, processes and generates geo-referenced point clouds</td>
</tr>
<tr>
<td>WorksPro</td>
<td>Provides higher-level deliverables such as feature extraction, meshing, and modeling</td>
</tr>
<tr>
<td>Photo</td>
<td>External camera control and integration of imagery onto point clouds</td>
</tr>
<tr>
<td>Mobile</td>
<td>Integration with INS system</td>
</tr>
</tbody>
</table>
Specifications

Laser
Range measurement principle: Pulsed
Wavelength [nm]: 1550
Laser safety classification: 1
Range resolution [mm]: 2
Intensity recording [bits]: 12
Minimum range [m]: 1.5

Scanning Resolution
Angular measurement resolution [µrad]: 12
Max. sample density [point to point spacing]: 3 mm @ 100 m

Accuracy and Repeatability
Range accuracy 1 sigma: 5 mm @ 100 m
Precision single shot: 4 mm @ 100 m

Scanning Characteristics
Max. vertical / horizontal field of view [deg]: 120 (-45 to +75) / 360
Min. angular step size horizontal [µrad / deg]: 30 / 0.0017
Min. angular step size vertical [µrad / deg]: 12 / 0.0007

Operation Characteristics
Operating temperature: min. [°C]*: -20
Operating temperature: max. [°C]: +50
Humidity range [%]: 95
Control panel built in: Yes
Protection Class: IP64 (Dust and splash proof)

Power
Battery type: Internal or external
Battery power [hr]: 2.5
Power supply input voltage: 9-32 VDC
Power consumption: 60 W

Peripherals
Internal camera: Yes
Export format of internal camera image: JPEG
External camera: Yes [Optional]
Export format of external camera image: JPEG, NEF
User interface: Integrated touchscreen, tablet, PC
Additional sensors: Inclination sensor, L1 GNSS, compass
Registration/orientation methods: L1 GNSS, backsighting, target extraction, resection

Physical Characteristics
Height [mm]: 323
Width (diameter) [mm]: 217
Total weight [kg]: 11.2

1 Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007.
2 Max range tested on flat targets, larger than the laser beam diameter, perpendicular angle of incidence and STD Clear visibility (23 km).
* Normal operation to -10°C, extended cold temperature operation to -20°C with Optech Cold Weather package.

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