

# Leica HDS6000

## A new generation of ultra-high speed laser scanner



- when it has to be **right**

**Leica**  
Geosystems

# Leica HDS6000

## Compact, next-generation, ultra-high speed laser scanner

The Leica HDS6000 unlocks the full potential of ultra-high speed, "phase-based" laser scanning technology for fast, productive as-built surveys. "Next-generation" advances in portability, phase-based range, data quality, and tilt sensor

integration all combine to deliver significantly lower project costs. The Leica HDS6000 lets users profit from the inherent speed advantage of phase-based scanners for a wider range of as-built and site surveys.

### Leica HDS6000: The "next-generation" phase-based scanner

#### Longer Useful Range, Better Quality Data



The useful range of phase-based scanning has been stretched and data quality improved. This provides productivity benefits, while also expanding the types of projects where phase-based scanning can be used, such as capturing multi-story building facades.

Several new features and enhancements in the Leica HDS6000 contribute to its increased useful range:

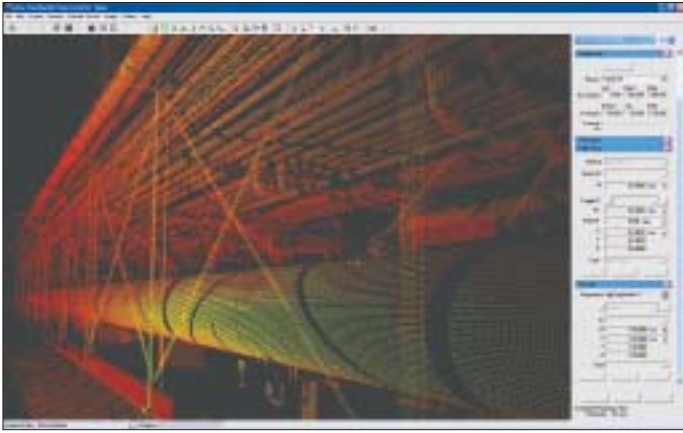
- **Longer ambiguity interval** – laser returns up to 79 m away can be uniquely analyzed and calculated
- **Higher scan density** – maximum scan density has been doubled, increasing the range at which smaller objects and targets can be accurately modeled
- **Higher sensitivity** – the Leica HDS6000 can better detect laser returns from dark surfaces, oblique surfaces, and surfaces further from the instrument
- **Higher accuracy** – improvements in both distance and angle accuracy have extended the range at which scan data meet project accuracy requirements
- **Less noise** – major reductions in scan data noise allow more objects to be accurately modeled to meet a project's precision requirements

#### Fully Integrated for Faster Set-ups

A major breakthrough in the Leica HDS6000 is its full integration: scanner, controller, data storage and battery in a single instrument. Setting up and moving the scanner is fast and easy. Users can operate the scanner from a simple, side touch panel that avoids computer "boot-up" time. An optional PDA or laptop with Leica Cyclone SCAN software provide added scanner control and valuable field QA.







## Versatile Leica Cyclone Software

Cyclone SCAN is the only software that controls both ultra-high speed, phase-based laser scanners and versatile, pulsed laser scanners (Leica ScanStation, Leica HDS3000, etc). Leica Cyclone REGISTER lets Leica HDS6000 users benefit from rigorous, target-based registration and efficient, target-less "cloud-to-cloud" registration, especially effective in plant applications.



## Fewer Setups and Targets

The Leica HDS6000's full, 360° x 310° field-of-view (FOV) and extended range can translate directly into fewer instrument setups and scan targets that need to be placed, scanned, and surveyed. A built-in, dual-axis (tilt) sensor offers similar potential. If indicated tilt (or level) changes are nil or insignificant, then users can apply Leica Cyclone SCAN software's resection, backsighting, and traverse workflows to further reduce the number of targets needed.



- **Integrated battery and data storage**  
 Unmatched portability
- **Ultra-high speed scanning**  
 Reduces time needed
- **Built-in control panel**  
 Easy, standalone use without laptop or PDA
- **Integrated dual-axis (tilt) sensor**  
 Better QA plus efficient traverse workflows that require fewer scan targets

| Key Leica HDS6000 Performance Specifications |   |
|--|---|
| <b>Instrument type</b>                       | Compact, phase-based, dual-axis sensing, ultra-high speed laser scanner, with survey-grade accuracy and full field-of-view  |
| <b>User interface</b>                        | Onboard touch panel, or external notebook or Tablet PC, or PDA  |
| <b>Data storage</b>                          | Integrated hard drive   |
| <b>Accuracy of single measurement</b>        | Position 6 mm, 1 m to 25 m range; 10 mm to 50 m range<br>Distance ≤4mm at 90% albedo up to 25m; ≤5mm at 18% albedo up to 25m<br>≤5mm at 90% albedo up to 50m; ≤6mm at 18% albedo up to 50m<br>Angle (Horizontal/vertical) 125 μrads/125 μrads (7.9 mgon/7.9 mgon) one sigma   |
| <b>Spot size</b>                             | 3 mm at exit (based on Gaussian definition) + 0.22 mrad divergence;<br>8 mm @25m; 14 mm @50m;   |
| <b>Modeled surface precision**/noise</b>     | 2 mm at 25m; 4 mm at 50m, for 90% albedo; one sigma<br>3 mm at 25m; 7 mm at 50m, for 18% albedo; one sigma  |
| <b>Target acquisition***</b>                 | 2 mm std. deviation   |
| <b>Dual-axis sensor</b>                      | Selectable on/off; Resolution 3.6"  |
| <b>Laser scanning system</b>                 | Range 79 m ambiguity interval<br>79 m @90%; 50 m @18% albedo<br>Scan Rate Up to 500,000 points/sec, maximum instantaneous rate<br>Scan density @10 m @50 m<br>"Preview" 50.6 x 50.6 mm 250 x 250 mm<br>Middle (4x) 12.6 x 12.6 mm 62 x 62 mm<br>High (8x) 6.3 x 6.3 mm 31.4 x 31.4 mm<br>Super High (16x) 3.1 x 3.1 mm 15.8 x 15.8 mm<br>Ultra High (32x) 1.6 x 1.6 mm 7.9 x 7.9 mm |
| <b>Laser Class</b>                           | 3R (IEC 60825-1)  |
| <b>Lighting</b>                              | Fully operational between bright sunlight and complete darkness   |
| <b>Power supply</b>                          | 24V DC; integrated Li-ion battery (1.5 hrs) and/or optional external DC power supply (4 hrs) or AC supply   |
| <b>Power consumption</b>                     | 50 W  |
| <b>Temperature</b>                           | Operation: 0° C to +40° C; Storage: -20° C to +50° C  |

All specifications are subject to change without notice

All +/- accuracy specifications are one sigma unless otherwise noted

\*\* One sigma; subject to modeling methodology for modeled surface

\*\*\* Algorithmic fit to planar HDS gray & white targets

Whether you're designing a modification to a complex refinery piping system, surveying a site or documenting a historic building, you need reliable measurements. High-Definition Surveying™ scanning systems and software by Leica Geosystems provide you with exact data of what's there.

When your as-built information has to be right, rely on Leica Geosystems, the company that professionals trust for their scanning solutions. Leica Geosystems is best known for pioneering scanning technology with trustworthy, total solutions: versatile, accurate laser scanners, industry standard point cloud software, and a full complement of accessories, training and support.

Precision, quality and service from Leica Geosystems.

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Laser class 3R in accordance with IEC 60825-1 resp. EN 60825-1



**Leica HDS6000**  
Product information  
and specifications



**Leica ScanStation**  
Product information  
and specifications



**Leica Cyclone 5.6  
SCAN**  
Product information



**Leica Cyclone 5.6  
MODEL, SURVEY**  
Product information



**Leica Cyclone 5.6  
REGISTER**  
Product information

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