

# Leica HDS6100

## Latest generation of ultra-high speed laser scanner

See also  
HDS6100  
brochure!



### Compact design and high-performance scanning optimize field productivity

#### Latest standard for phase-based scanners

The “next-generation” Leica HDS6100 significantly reduces field costs and increases phase-based data quality for many types of as-built and site surveys where users want to take advantage of ultra-high speed, phase-based laser scanning.

#### Up to 508,000 points per second

The Leica HDS6100 features the fastest scan rates available for high-accuracy, as-built surveys, making it the ideal instrument when very short time windows are available for capturing High-Definition Survey™ data.

#### Highly portable and field-efficient

With scanner, data storage, scanner control, and batteries integrated into a single unit, the Leica HDS6100 is easy

to setup and carry for fast project execution. In addition, its range (up to 79m for 90% surface reflectivity), improved high- and dual-axis (tilt) sensing capability can reduce the number of instrument and target setups, further cutting field time. These same features plus its extended temperature capability also increase the versatility of phase-based scanning.

#### Flexible scan control & registration options

Users can choose from three scanner control options. A side touch panel allows simple control. An optional wireless PDA allows “touch-free” control, plus visual inspection of jpeg scan images. For full 3D viewing, scan measurement, and rigorous quality assurance (QA), users can opt for powerful laptop control with Leica Cyclone SCAN, the industry’s most popular and versatile scanner control software. For accurately registering (or stitching) multiple scans together, Leica Cyclone REGISTER software lets Leica HDS6100 users take advantage of either scan targets or “cloud-to-cloud” registration methods that don’t require targets.

- when it has to be **right**

**Leica**  
Geosystems

# Leica HDS6100

## Product Specifications

General	
<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>Scanner drive</b>	Servo motor
<b>Data storage</b>	Integrated hard drive
<b>Camera</b>	No integrated camera; Cyclone SCAN supports use of external camera

System Performance	
<b>Accuracy of single measurement</b>	
Position*	5 mm, 1 m to 25 m range; 9 mm to 50 m range
Distance*	≤2 mm at 90% albedo up to 25 m; ≤3 mm at 18% albedo up to 25 m; ≤3 mm at 90% albedo up to 50 m; ≤5 mm at 18% albedo up to 50 m
Angle (horizontal/vertical)	125 µrad/125 µrad, one sigma
<b>Modeled surface precision**/noise</b>	1 mm at 25 m; 2 mm at 50 m for 90% albedo, one sigma; 2 mm at 25m; 4 mm at 50m, for 18% albedo, one sigma
<b>Target acquisition***</b>	2mm std. deviation
<b>Dual-axis sensor</b>	Selectable on/off; 3.6" resolution
<b>Data integrity monitoring</b>	Self-check at start-up; optional checks using Cyclone-SCAN

Laser Scanning System			
<b>Type</b>	Phase-shift		
<b>Laser Class</b>	3R (IEC 60825-1)		
<b>Range</b>	79 m ambiguity interval 79 m @ 90%; 50 m @ 18% albedo		
<b>Scan rate</b>	Up to 508,000 points/sec, maximum instantaneous rate		
<b>Scan resolution</b>	3 mm at exit (based on Gaussian definition) + 0.22 mrad divergence; 8 mm @25 m; 14 mm @50 m		
<b>Spot size</b>			
<b>Selectability</b>	5 pre-set spacings per table		
	Pts/360° (vert., horiz.)	Scan time (full dome)	Point spacing at range @10 m
"Preview"	1250	25 sec	50.6x50.6 mm
Middle (4x)	5000	1 min 40 sec	12.6x12.6 mm
High (8x)	10000	3 min 22 sec	6.3x6.3 mm
Super High (16x)	20000	6 min 44 sec	3.1x3.1 mm
Ultra High (32x)	40000	26 min 40 sec	1.6x1.6 mm
<b>Field-of-view</b>			
Horizontal	360° (maximum)		
Vertical	310° (maximum)		
<b>Aiming/Sighting</b>	Optical horizontal sighting using QuickScan™ feature		
<b>Scanning Optics</b>	Vertically rotating mirror on horizontally rotating base; Environmentally protected by shield		
<b>Scan motors</b>	Direct drive, brushless; proprietary		
<b>Data transfer</b>	Ethernet or USB 2.0 device (two ports)		
<b>Data storage capacity (onboard)</b>	60 GB, min		
<b>Communications</b>	Ethernet or integrated Wireless LAN (WLAN)		
<b>Status indicators</b>	4-line alphanumeric display for laser status, system power & status 1 LED for laser status		
<b>Level indicator</b>	External bubble; digital readout on touch panel or via laptop		

Electrical	
<b>Power supply</b>	24 V DC; 90 – 260 V AC
<b>Power Consumption</b>	65 W max.
<b>Battery Type</b>	Integrated: Li-ion, External: sealed lead acid
<b>Duration</b>	Internal: 2.5 hrs, typical, External: 4 hrs, typical
<b>Power status</b>	LEDs indicate charging status and capacity levels

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Environmental	
<b>Operating temp.</b>	-10° C to +45° C
<b>Storage temp.</b>	-20° C to +50° C
<b>Lighting</b>	Fully operational between bright sunlight and complete darkness
<b>Humidity</b>	Non-condensing
<b>Reflectivity</b>	no retro-reflectors

System Performance	
<b>Scanner</b>	
Dimensions	7.8" Dx11.6" Wx16.5" H, 199 mm Dx294 mm Wx360 mm H
Weight	14 kg, nominal (includes integrated battery)
<b>Battery (external)</b>	
Dimensions	9.5" Dx10" Wx12" H, 240 mm Dx260 mm Wx300 mm H
Weight	16 kg, nominal
<b>AC Power Supply</b>	
Dimensions	9.5" Dx5" Wx6" H, 240 mm Dx127 mm Wx152 mm H
Weight	2.5 kg, nominal

Standard Accessories	
Scanner and accessory carrying case	
Additional rechargeable integrated battery	
Charging/power cable, ethernet cable, A/C cable	
Battery charger / A/C power supply	
Battery charging cradle for internal battery	
Cyclone™-SCAN software	
Cleaning kit	

Hardware Options	
Notebook PC, Tablet PC, or PDA	
HDS6100 scan targets and target accessories	
Service agreement for Leica HDS6100	
Extended warranty for Leica HDS6100	
External camera kit (third party product)	

Notebook PC for scanning <sup>Δ</sup>	
<b>Component</b>	<b>required (minimum)</b>
Processor	1.7 GHz Pentium M or similar
RAM	1024 MB SDRAM (2 GB for Vista)
Network card	Ethernet
Display	SXGA+ (64 MB or greater video RAM rec.)
Operating system	Windows XP Professional (SP2 or higher) (32 or 64) Windows 2000 (SP3 or higher with up to date security patches) Windows Vista (32 or 64)

Control Options	
Leica Cyclone SCAN software (see Leica SCAN data sheet for full list of features)	
Onboard touch panel	
Web browser	

Ordering Information, including upgrade from Leica HDS6000	
Contact Leica Geosystems or authorized representatives	

All specifications are subject to change without notice.

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

<sup>1</sup> SmartScan™ technology feature

<sup>Δ</sup> Minimum requirements for modeling operations are different. Refer to Cyclone data sheet specifications.

\* At 127.000 pts/sec scan rate, one sigma

\*\* At 127.000 pts/sec scan rate, one sigma;

subject to modeling methodology for modeled surface

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

Laser class 3R in accordance with

IEC 60825-1 resp. EN 60825-1

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