Leica HDS6100
Latest generation of ultra-high speed laser scanner

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.

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Leica HDS6100
Product Specifications

General	
Instrument type	Compact, phase-based, dual-axis sensing, ultra high-speed laser scanner, with survey-grade accuracy and full field-of-view
User interface	Onboard touch panel, or external notebook or Tablet PC, or PDA
Scanner drive	Servo motor
Data storage	Integrated hard drive
Camera	No integrated camera; Cyclone SCAN supports use of external camera

System Performance	
Accuracy of single measurement	
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
Modeled surface precision**/noise	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
Target acquisition***	2mm std. deviation
Dual-axis sensor	Selectable on/off; 3.6" resolution
Data integrity monitoring	Self-check at start-up; optional checks using Cyclone-SCAN

Laser Scanning System	
Type	Phase-shift
Laser Class	3R (IEC 60825-1)
Range	79 m ambiguity interval; 79 m @90%; 50 m @18% albedo
Scan rate	Up to 508,000 points/sec, maximum instantaneous rate
Scan resolution	
Spot size	3 mm at exit (based on Gaussian definition) + 0.22 mrad divergence; 8 mm @25 m; 14 mm @50 m
Selectability	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

Field-of-view	
Horizontal	360° (maximum)
Vertical	310° (maximum)
Aiming/Sighting	Optical horizontal sighting using QuickScan™ feature
Scanning Optics	Vertically rotating mirror on horizontally rotating base; Environmentally protected by shield
Scan motors	Direct drive, brushless; proprietary
Data transfer	Ethernet or USB 2.0 device (two ports)
Data storage capacity (onboard)	60 GB, min
Communications	Ethernet or integrated Wireless LAN (WLAN)
Status indicators	4-line alphanumeric display for laser status, system power & status; 1 LED for laser status
Level indicator	External bubble; digital readout on touch panel or via laptop

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

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

System Performance	
Scanner	
Dimensions	7.8"D x 11.6" W x 16.5" H, 199 mm D x 294 mm W x 360 mm H
Weight	14 kg, nominal (includes integrated battery)
Battery (external)	
Dimensions	9.5" D x 10" W x 12" H, 240 mm D x 260 mm W x 300 mm H
Weight	16 kg, nominal
AC Power Supply	
Dimensions	9.5" D x 5" W x 6" H, 240 mm D x 127 mm W x 152 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 ∆	
Component	required (minimum)
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 +/- accruacy specifications are one sigma unless otherwise noted.
[1] SmartScan™ technology feature
∆ 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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