

# Leica ScanStation 2

## Exceptional Speed, Outstanding Versatility

See also  
ScanStation 2  
brochure!



### 10-fold scan speed increase makes ScanStation™ category even more productive and versatile

#### Leica ScanStation 2: a higher standard

ScanStation 2 adds blazing speed to the four, fundamental total station features that made ScanStation a new category of laser scanner for as-built and topographic surveys. Now, with a 50,000 points/sec maximum instantaneous scan rate, full field-of-view, survey-grade tilt compensation, survey accuracy for each measurement, and excellent range, ScanStation 2 has set a new standard for versatility, productivity and ease-of-use in High-Definition Surveying™ (HDS™).

#### Unprecedented speed in a pulsed scanner

Pulsed or “time-of-flight” scanners are often considered highly versatile thanks to their excellent distance capabilities. As the fastest pulsed scanner, ScanStation 2 adds sharply increased productivity, plus denser scanning capability for even higher quality deliverables.

#### Full field-of-view

Like a total station, ScanStation 2’s full horizontal and vertical field-of-view (FOV) provides optimum versatility and productivity.

#### Survey-grade, dual-axis (tilt) compensation

Users can setup ScanStation 2 over known points, traverse, resection and even stakeout or point its visible beam to a pre-selected position. Benefits include lower project costs, greater field flexibility, and higher project accuracy.

#### Survey-grade accuracy for each measurement

ScanStation 2 delivers survey accuracy for each measurement. Its ultra-fine scanning and small laser spot also let users achieve optimal project control and registration.

#### Excellent practical, useful range

ScanStation 2’s capture range (up to 300m for 90% surface reflectivity) combines with its narrow beam and ultra-fine scanning capabilities to address a wide variety of sites.

- when it has to be **right**

**Leica**  
Geosystems

# Leica ScanStation 2

## Product Specifications

### General

<b>Instrument type</b>	Pulsed, dual-axis compensated, very-high speed laser scanner, with survey-grade accuracy, range, and field-of-view
<b>User interface</b>	Notebook or Tablet PC
<b>Scanner drive</b>	Servo motor
<b>Camera</b>	Integrated high-resolution digital camera

### System Performance

<b>Accuracy of single measurement</b>	
Position*	6 mm
Distance*	4 mm
Angle (horizontal/vertical)	60 µrad/60 µrad, one sigma
<b>Modeled surface precision**/noise</b>	
	2 mm, one sigma
<b>Target acquisition***</b>	
	2 mm std. deviation
<b>Dual-axis compensator</b>	
	Selectable on/off Resolution 1", dynamic range +/- 5'
<b>Data integrity monitoring</b>	
	Periodic self-check during operation and startup

### Laser Scanning System

<b>Type</b>	Pulsed; proprietary microchip
<b>Color</b>	Green
<b>Laser Class</b>	3R (IEC 60825-1)
<b>Range</b>	300 m @ 90%; 134 m @ 18% albedo
<b>Scan rate</b>	Up to 50,000 points/sec, maximum instantaneous rate Average: dependent on specific scan density and field-of-view

### Scan resolution

<b>Spot size</b>	From 0 - 50 m : 4 mm (FWHH - based); 6mm (Gaussian - based)
<b>Selectability</b>	Independently, fully selectable vertical and horizontal point-to-point measurement spacing <sup>1</sup>
<b>Point spacing</b>	Fully selectable horizontal and vertical; < 1 mm minimum spacing, through full range <sup>1</sup> ; single point dwell capability

<b>Maximum sample density</b>	< 1 mm <sup>1</sup>
-------------------------------	---------------------

### Field-of-view (per scan)

<b>Horizontal</b>	360° (maximum) <sup>1</sup>
<b>Vertical</b>	270° (maximum) <sup>1</sup>
<b>Aiming/Sighting</b>	Optical sighting using QuickScan™ button

### Scanning Optics

	Single mirror, panoramic, front and upper window design Environmentally protected by housing and two glass shields
--	---

### Scan motors

	Direct drive, brushless
--	-------------------------

### Data & power transfer to/from rotating turret

	Contact-free: optical data link and inductive power transfer
--	--

### Communications

	Static Internet Protocol (IP) Address
--	---------------------------------------

### Integrated color digital imaging

	User-defined pixel resolution: Low, Medium, High <sup>1</sup> Single 24° x 24° image: 1024 x 1024 pixels (1 megapixel) @ "High" setting Full 360° x 270° dome: 111 images, approx. 64 megapixels, automatically spatially rectified
--	--

### Status Indicators

	3 LEDs (on stationary base) indicate system ready, laser "on", and communications status
--	--

### Level indicator

	External bubble and via laptop
--	--------------------------------

### Electrical

<b>Power supply</b>	36 V; AC or DC; hot swappable; two (2) Power Supply units provided with system
<b>Power consumption</b>	
	< 80W avg.
<b>Battery type</b>	Sealed lead acid
<b>Power ports</b>	Two (2) simultaneous use, hot swappable
<b>Typical duration</b>	>6 hours, typical continuous use (room temp.)
<b>Power status indicators</b>	Five (5) LEDs indicate charging status and power levels

### Environmental

<b>Operating temp.</b>	0° C to +40° C
<b>Storage temp.</b>	-25° C to +65° C
<b>Lighting</b>	Fully operational between bright sunlight and complete darkness
<b>Humidity</b>	Non-condensing
<b>Shock</b>	40 G's (max. to scanner transport case)
<b>Dust/humidity</b>	IP52 (IEC 60529)

### Physical

<b>Scanner</b>	
<b>Dimensions</b>	10.5" D x 14.5" W x 20" H 265 mm x 370 mm x 510 mm w/o handle and table stand
<b>Weight</b>	18.5 kg, nominal
<b>Power Supply Unit</b>	
<b>Dimensions</b>	6.5" D x 9.25" W x 8.5" H 165 mm x 236 mm x 215 mm w/o handles
<b>Weight</b>	12 kg, nominal

### Standard Accessories Included

	Scanner transport case
	Tribrach (Leica Professional Series)
	Survey tripod
	Ethernet cable for connection of scanner to notebook PC
	Two Power Supply cases. Each includes:
	Power Supply
	Cable for battery connection to scanner
	Power Supply charger
	User manual
	Cleaning kit
	Cyclone™-SCAN software

### Hardware Options

	Notebook PC
	Tablet PC
	HDS scan targets and target accessories
	Service agreement for Leica ScanStation 2
	Extended warranty for Leica ScanStation 2
<b>Notebook PC for Scanning<sup>Δ</sup></b>	
<b>Component</b>	<b>required (minimum)</b>
Processor	1.4 GHz Pentium M or similar
RAM	512 MB SDRAM
Network card	Ethernet
Display	SXGA+
Operating system	Windows XP (SP1 or higher) Windows 2000 (SP2 or higher)

### Cyclone-SCAN

	Independent vertical and horizontal scan density <sup>1</sup>
	Scan filters: range, intensity <sup>1</sup>
	Selection of scan area via scribed rectangle or pre-sets <sup>1</sup>
	Atmospheric correction
	Customizable longitude/latitude grid lines
	Targeted, single-shot pre-scan ranging <sup>1</sup>
	Script management for auto scan sequencing <sup>1</sup>

	View scanner locations and field-of-view
	Level of detail (LOD) for fast visualization
	Auto rechecking (re-acquisition) of targets <sup>1</sup>
	Auto acquisition of HDS targets <sup>1</sup>
	Target identification
	Traverse <sup>1</sup>
	Field Setup - Resection <sup>1</sup>
	Field Setup - Known Backsight <sup>1</sup>
	Field Setup - Known Azimuth <sup>1</sup>
	Traverse and resection reports
	Stakeout and id-point
	Point to and dwell on preselected coordinates
	Direct coordinate/station entry <sup>1</sup>
	Dual-axis compensation on/off
	Engage/disengage turret
	Target and instrument height input
	Lighting control for digital images
	Acquire and display digital image
	Set image resolution (high, medium, low)
	Support of external digital images
	Real-time 3D visualization while scanning <sup>1</sup>
	Fly-around, pan & zoom, rotate clouds, meshes, models in 3D
	View point clouds with intensity or true-color mapping
	Auto creation of panoramic digital image mosaic <sup>1</sup>
	Global digital image viewer <sup>1</sup>
	Point-and-scan QuickScan to set horizontal FoV <sup>1</sup>
	User-defined quality-of-fit checks
	Measure & dimension: slope dist., Δx, Δy, Δz
	Create, manage annotations and layers
	Save/restore views
	Save screen images
	Undo/redo support

### Direct Import Formats

	Cyclone native IMP object database format,
	Cyclone Object Exchange (COE) format
	ASCII point data (XYZ, SVY, PTS, PTX, TXT)
	Leica's X-Function DBX format, Land XML, ZFS, ZFC, 3DD

### Direct Export Formats

	ASCII point data (XYZ, SVY, PTS, PTX, TXT), DXF
	Leica's X-Function DBX format, Land XML, PTZ

### Indirect Export Formats

	AutoCAD (via AutoCAD, COE for MicroStation plug-in)
	MicroStation (via COE for MicroStation plug-in)
	PDS (via MicroStation, COE for MicroStation plug-in)
	AutoPLANT (via AutoCAD, COE for AutoCAD plug-in)

All specifications are subject to change without notice.  
All ± accuracy specifications are one sigma unless otherwise noted

<sup>1</sup> SmartScan Technology™ feature  
\* At 1 m - 50 m range, one sigma  
\*\* Subject to modeling methodology for modeled surface  
\*\*\* Algorithmic fit to planar HDS targets  
Δ Minimum requirements for modeling operations are different. Refer to Cyclone data sheet specifications

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

Windows is a registered trademark of Microsoft Corporation. Other trademarks and trade names are those of their respective owners.

Illustrations, descriptions and technical specifications are not binding and may change. Printed in Switzerland - Copyright Leica Geosystems AG, Heerbrugg, Switzerland 2007. 760362enUS - VI.07 - RDV