

Leica ScanStation 3D laser scanner with total station features

See also
ScanStation
brochure!



Leica Geosystems HDS versatile, user-friendly laser scanner

ScanStation is a new class of scanner

Leica ScanStation is the first instrument to combine four critical total station features into one scanner for as-built and topographic surveys: (1) full field-of-view, (2) survey-grade dual-axis (tilt) compensation, (3) survey-grade accuracy for each measurement, and (4) excellent, useful range. These features, along with a host of others, make Leica ScanStation the industry's most versatile, productive, and user-friendly scanner.

Full field-of-view

ScanStation features a full horizontal and vertical field-of-view, just like that of a total station.

Survey-grade dual-axis compensation

ScanStation employs the same 1" resolution, dual-axis (tilt) compensator as in a Leica total station. Users can set ScanStation up over known points and take advantage of familiar traversing & resectioning workflows. Benefits include lower field & office costs and greater field flexibility.

Survey-grade accuracy for each measurement

Leica ScanStation delivers survey-grade accuracy for each measurement, just like a total station. ScanStation's ultra-fine scanning and small laser spot –even at longer ranges– also let users achieve optimal project control and registration.

Excellent practical, useful range

ScanStation's capture range (up to 300 m for 90% surface reflectivity) combines with its narrow beam and ultra-fine scanning capabilities to handle the vast majority of typical sites for reflectorless instruments.

Get more information or contact Leica Geosystems for a demonstration at: www.leica-geosystems.com/hds

- when it has to be **right**

Leica
Geosystems

Leica ScanStation Product Specifications

General

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

System Performance

Accuracy of single measurement

| | |
|-----------------------------|--------------------------------------|
| Position* | 6 mm |
| Distance* | 4 mm |
| Angle (horizontal/vertical) | 60 μ rad/60 μ rad, one sigma |

Modeled surface

precision**/noise 2 mm, one sigma

Target

acquisition*** 2 mm std. deviation

Dual-axis

compensator Selectable on/off
Resolution 1", dynamic range +/- 5'

Data integrity monitoring Periodic self-check during operation and startup

Laser Scanning System

| | |
|--------------------|---|
| Type | Pulsed; proprietary microchip |
| Color | Green |
| Laser Class | 3R (IEC 60825-1) |
| Range | 300 m @ 90%; 134 m @ 18% albedo |
| Scan rate | Up to 4,000 points/sec, maximum instantaneous rate Average: dependent on specific scan density and field-of-view |

Scan resolution

Spot size From 0 - 50 m : 4 mm (FWHH - based); 6mm (Gaussian - based)

Selectability Independently, fully selectable vertical and horizontal point-to-point measurement spacing†

Point spacing Fully selectable horizontal and vertical; 1.2 mm minimum spacing, through full range†

Maximum sample density 1.2 mm†

Scan row (horizontal) 20,000 points/row, maximum†

Scan column (vertical) 5,000 points/column, maximum†

Field-of-view (per scan)

Horizontal 360° (maximum)†

Vertical 270° (maximum)†

Aiming/Sighting 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†
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

Bubble level External

Electrical

Power supply 36 V; AC or DC; hot swappable; two (2) Power Supply units provided with system

Power

consumption <80W avg.

Battery type Sealed lead acid

Power ports Two (2) simultaneous use, hot swappable

Typical duration >6 hours, typical continuous use (room temp.)

Power status indicators Five (5) LEDs indicate charging status and power levels

Environmental

Operating temp. 0° C to +40° C

Storage temp. -25° C to +65° C

Lighting Fully operational between bright sunlight and complete darkness

Humidity Non-condensing

Shock 40 G's (max. to scanner transport case)

Dust/humidity IEC Specification IP52

Physical

Scanner

Dimensions 10.5" D x 14.5" W x 20" H
265 mm x 370 mm x 510 mm
w/o handle and table stand

Weight 19.5 kg, nominal

Power Supply Unit

Dimensions 6.5" D x 9.25" W x 8.5" H
165 mm x 236 mm x 215 mm
w/o handles

Weight 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
Extended warranty for Leica ScanStation

Notebook PC for Scanning^Δ

| Component | required (minimum) |
|------------------|--|
| 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 †
Scan filters: range, intensity †
Selection of scan area via scribed rectangle or pre-sets†
Atmospheric correction
Customizable longitude/latitude grid lines
Targeted, single-shot pre-scan ranging †
Script management for auto scan sequencing †
View scanner locations and field-of-view

Level of detail (LOD) for fast visualization
Auto rechecking (re-acquisition) of targets †

Auto acquisition of HDS targets †
Target identification

Traversal †
Field Setup - Resection †

Field Setup - Known Backsight †

Field Setup - Known Azimuth †

Traversal and resection reports

Direct coordinate/station entry †

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 †

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 †

Global digital image viewer †

Point-and-scan QuickScan to set horizontal FoV †

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

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)

Ordering Information

Contact Leica Geosystems or authorized manufacturer's representatives

All specifications are subject to change without notice.

All \pm accuracy specifications are one sigma unless

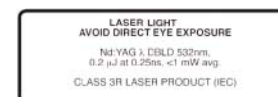
otherwise noted

† 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



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