

Leica High-Definition Surveying Systems



Leica HDS3000

The Industry Standard for High-Definition Surveying

Leica
Geosystems

HDS

High-Definition Surveying™: Laser Scanning Redefined

High-Definition Surveying, or HDS™, is a refined description of what has often been referred to as “3D laser scanning.” There are two primary reasons why Leica has chosen this refined description. First, HDS more accurately describes and communicates the technology in terms of how it’s different from other surveying methods. Second, with its new family of HDS products, Leica has matured the technology to the point where it is truly now a full-fledged surveying method – not just an interesting technology...

Definition through Density

It is the high density of the data, more than any other single feature, which distinguishes this technology from surveying methods based on discrete points. When high-density data is viewed on a computer screen, enhanced with intrinsic color effects and 3D visualization, the technology provides unique “high-definition” information. For the surveyor and engineer, this added completeness and visualization translate into a better final deliverable, more accurate and timely designs, and better overall customer value.

Through the commitment and continuing innovation of Leica Geosystems, laser scanning has reached a new plateau that deserves a new distinction in the industry: High-Definition Surveying.

Leica welcomes you to the world of HDS.

The Leica HDS3000

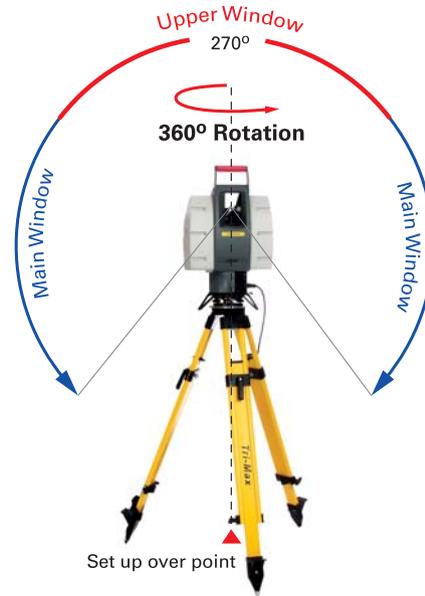
The Leica HDS3000, the first “surveyor friendly” 3D laser scanner, is the flagship of Leica’s HDS product family, making high-definition field data capture more efficient and easier for a wider range of surveying and engineering projects. There are many characteristics of the HDS3000 that set it apart from other instruments in its class, including:

- Maximum 360°x270° field of view, unique dual-window design
- Fully selectable field-of-view and scan density
- Bore-sighted digital camera for automatically calibrated photo overlays
- <6mm spot size @ 50 m
- <6mm positional accuracy @ 50 m
- Height-of-instrument (H.I.) measurement
- Set-up on known or assumed survey points
- Flexible “hot-swap” power supply system
- QuickScan™ button to easily define field-of-view



Laser Scanning for Surveyors

With the Leica HDS 3000, high-definition surveying has never been easier and friendlier for surveyors and measurement professionals. For example, it utilizes a standard tripod set-up over either a known or an assumed survey point. Captured point clouds can be accurately aligned to local coordinate systems for direct compatibility with existing project designs. Instrument orientation and a fully selectable field-of-view can be quickly and easily defined with the push of the new QuickScan button. A unique dual-window design allows for efficient utilization of its 360° x 270° maximum field-of-view without re-orientation of the instrument, including full dome capture of the entire scene. With Leica’s SmartScan Technology™, additional regions in the scene can be selectively captured with finer detail as needed. These HDS3000 features combine to not only make laser scanning friendlier for surveyors, but also more productive for all measurement professionals.



Easy Field-to-Finish Workflows

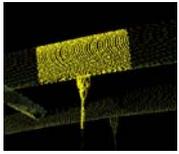
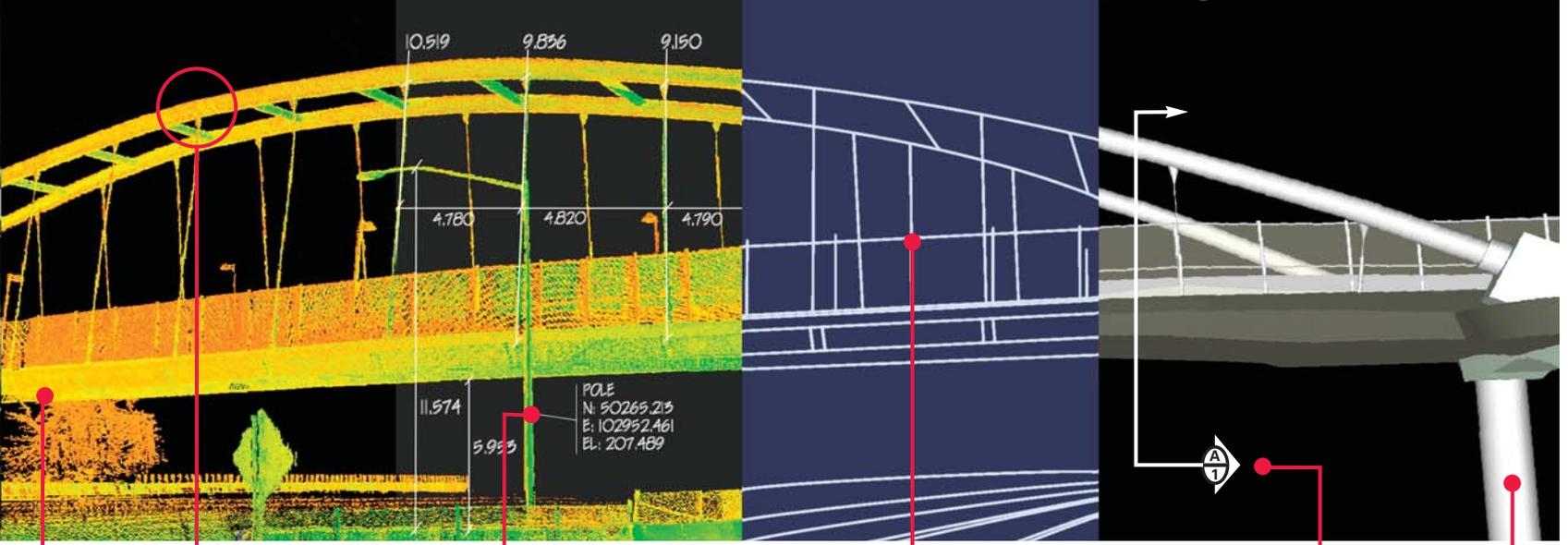
Establish a new survey point
(or use existing control)

Setup using standard
tripod and tribrach

Connect to “hot-swap”
power supply.



HDS Delivers: For Surveyors *and* Engineers



SmartScan Technology

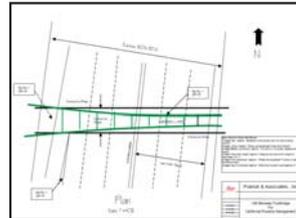
One of the most significant benefits of HDS is the level of detail that can be obtained. This capability is clearly demonstrated with SmartScan Technology, which allows the instrument operator to selectively capture any region with finer detail as needed.

Visualization

High-Definition Surveying provides powerful visualization of the job site, right on your desktop. Users can easily navigate the scene and closely inspect areas of interest. Virtual "fly-throughs," multi-media animations, and free viewing software can be used to communicate project information in ways never before imagined.

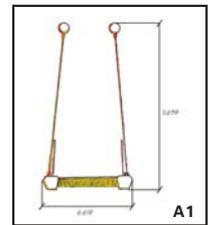
Immediate Measurements

Accurate dimensions are measured directly from the point cloud data or geometric objects. Each point is a survey measurement, with unique Northing, Easting, and Elevation coordinates. Points can be feature-coded and processed for automated map making.



Cross-Sectioning

Cross-sectional lines and point cloud slices can be instantly generated along an alignment at user-defined station intervals for transportation applications. Point cloud slice management further facilitates the workflow for generating as-builts for building facades, pipe runs, and a variety of other objects.

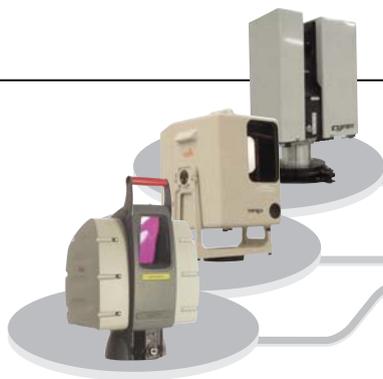


2D Maps & Drawings

2D maps are generated easily from the 3D point cloud data in numerous applications including pipe designs, cadastral and engineering surveys, building facades, and virtually any other project where accurate 2D "as-built" or "as-is" maps are required.

3D Modeling

Powerful, comprehensive 3D modeling - including steel structure, cylinders (pipes), planar patches, meshes, and other geometry - use best-fit algorithms with user-defined tolerances.



Cyclone-SCAN

Cyclone-REGISTER

Cyclone-MODEL,
Cyclone-SURVEY,
Cyclone CloudWorx

2D or 3D maps/drawings,
geo-referenced point clouds,
3D models, dimensions,
ASCII coordinate lists, etc.

Cyclone Software—Where It All "Comes Together"

Software plays a critical role in handling the high-definition point clouds effectively and aid the speedy extraction of engineering information. Cyclone, Leica's HDS software suite, is considered by many as the industry standard solution to capture, visualize, extract, analyze, and represent point cloud data in the form of traditional or enhanced deliverables. With Cyclone CloudWorx, the learning curve can be slashed by utilizing HDS data directly in the CAD environment.

This complete range of application-specific and industry-relevant Cyclone modules has made working with point clouds easier and more efficient than ever before.



The Leica HDS Family

HDS3000

Versatile, multi-purpose scanner that combines high efficiency with high accuracy for a wide range of civil engineering, plant, and building projects.



Time-of-flight
FOV: 360° x 270°

Time-of-flight
FOV: 40° x 40°

Phase-shift
FOV: 360° x 270°



HDS4500

Ultra-high speed, shorter range scanner, ideal for projects with very short time windows for field data collection and for other field-efficient needs.

HDS2500

High accuracy scanner, ideal for fixed or raised installations when leveled tripod mounting is not practical, or areas with less stringent field-of-view requirements.



Cyclone & CloudWorx

The industry standard point cloud capture, processing and CAD integrated utilization software.

The Right Tool for the Job

As the adoption and use of laser scanning has grown over time, it's become clear that no single technology or scanner can fully address every project need. Therefore, Leica Geosystems, as the industry leader, proudly offers a family of products to service this growing spectrum of uses.

Leica Geosystems' product family not only includes powerful and versatile time-of-flight ranging systems, the Leica HDS2500 and Leica HDS3000, but also features an ultra-high-speed, phased-based ranging system, the Leica HDS4500. This portfolio of products becomes complete with Cyclone™ and CloudWorx™ software, providing a full set of Leica-quality geo-referencing, surveying, and CAD integrated engineering tools for creating accurate deliverables and managing large data sets with unparalleled ease.

Regardless of the application, Leica's HDS family provides the "right tool for the job".

Measure and record the height-of-instrument ("H.I.")

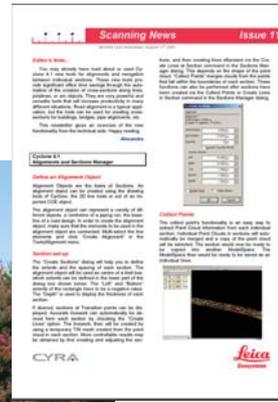
Press the QuickScan button to define the field-of-view.

HDS photo & point cloud capture in progress!

Visualize incoming point cloud in real-time!



The Leica Advantage



**Delivering
the "Whole
Product" Solution**



- **World-class service and support**
- **Largest network of existing users**
- **Full range of accessories**
- **Dedicated training facilities**

Leica Geosystems has the broadest, most advanced product offering in terms of hardware and

software for plant, civil, building and survey applications. However, successful implementation and deployment involves more than the scanner and software. It involves all of the connecting aspects that enable your organization to take optimal advantage of the technology: professional training (classroom and on-site), full technical support—local and factory, full range of accessories for field work, regular "tech tips", comprehensive marketing and business support resources, full product documentation (manuals and online help), project consulting services, and more. From dedicated classrooms equipped with the latest computers, to a full range of scan targets, to monthly Technical Newsletters, and an expan-

sive marketing website just for Leica Geosystems' customers, you receive the benefits of a truly "whole product" that's ready to go.

What's more, Leica's HDS products are focused on applications specific to the plant, civil, building, and survey markets and are installed at numerous such sites. You'll also see Leica at key industry conferences, featured in key industry magazines & websites, and in partnerships with other leading vendors to these markets, such as Leica's partnership with Bentley Systems under which Bentley sells and supports worldwide Bentley CloudWorx software, a Leica product.



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