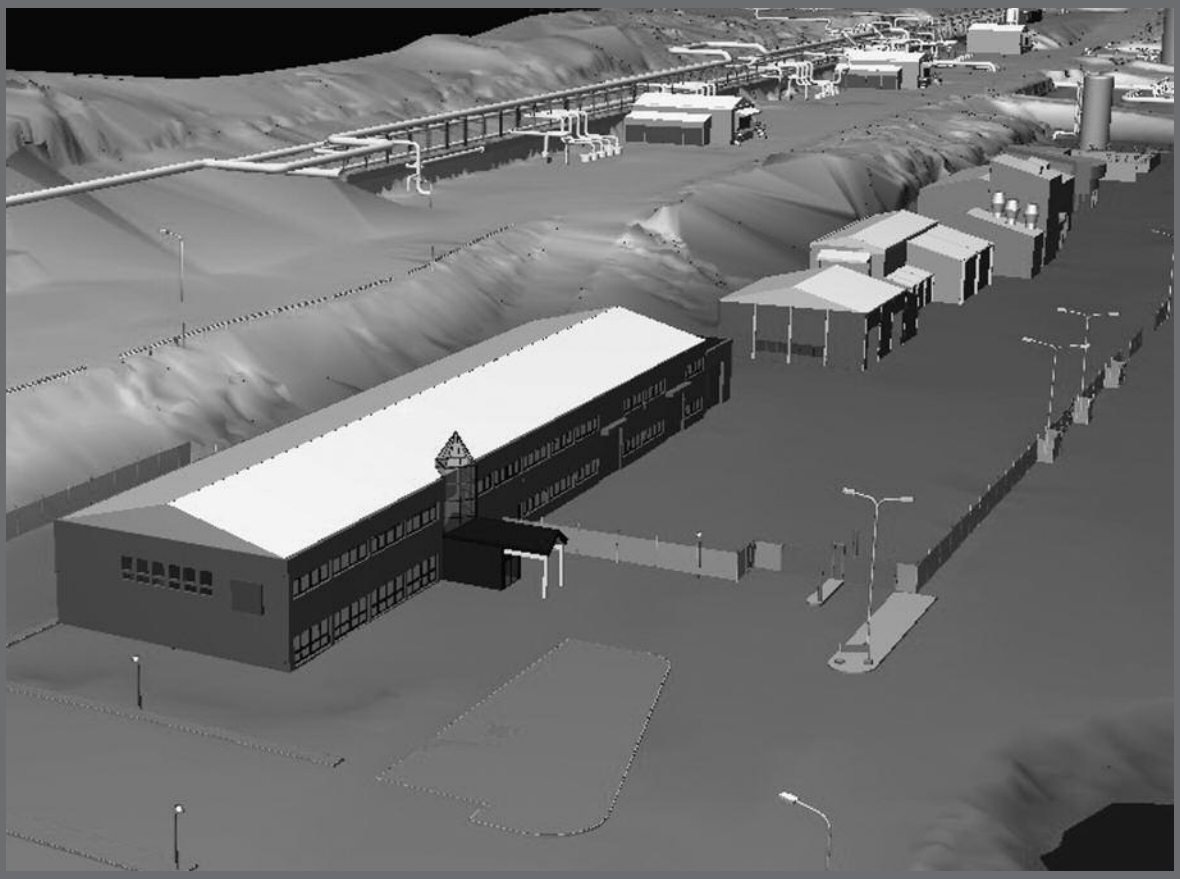
Leica Cyclone 7.0
Leica CloudWorx 4.0 and 2.0
Technical Specifications



- when it has to be **right**

Leica Geosystems

Leica Cyclone 7.0 Technical Specifications

HDS Scanner Control and Operation	SCAN HDS3000	SCAN Scan-Station	SCAN Scan-Station 2	SCAN Scan-Station C10	SCAN HDS4500	SCAN HDS6000	REGISTER	MODEL	SURVEY	PUBLISHER	IMPORT	Free VIEWER	VIEWER Pro
Acquire and display image	◆	◆	◆	◆							◆[1]	◆[1]	◆[1]
Acquire image at specified resolution (high, medium, low)	◆	◆	◆	◆							◆[1]	◆[1]	◆[1]
Panoramic viewing of multiple images	◆	◆	◆	◆							◆[1]	◆[1]	◆[1]
Panoramic viewing of point clouds	◆	◆	◆	◆	◆	◆					◆[1]	◆[1]	◆[1]
User-customizable latitude/longitude grid lines	◆	◆	◆	◆	◆	◆					◆[1]	◆[1]	◆[1]
Remote operation	◆	◆	◆	◆		◆					◆[1]	◆[1]	◆[1]
Selection of area to be scanned via scribed:													
Rectangle	◆	◆	◆	◆	◆	◆					◆[1]	◆[1]	◆[1]
Polygon				◆							◆[1]	◆[1]	◆[1]
Independent vertical and horizontal selection of scan density	◆	◆	◆	◆							◆[1]	◆[1]	◆[1]
Scan filters (rectangular target area, range, return intensity)	◆	◆	◆	◆	◆	◆					◆[1]	◆[1]	◆[1]
Realtime, 3D navigation, even while scanning	◆	◆	◆	◆							◆[1]	◆[1]	◆[1]
Scripted scan sequencing	◆	◆	◆	◆	◆	◆					◆[1]	◆[1]	◆[1]
Automated rechecking (re-acquisition) of targets	◆	◆	◆	◆	◆	◆					◆[1]	◆[1]	◆[1]
Automated rechecking (re-acquisition) of targets via Scripting	◆	◆	◆	◆	◆	◆					◆[1]	◆[1]	◆[1]
Automated rechecking (re-acquisition) of targets via Traverse		◆	◆	◆		◆					◆[1]	◆[1]	◆[1]
Automated rechecking (re-acquisition) of targets via Field Setup		◆	◆	◆		◆					◆[1]	◆[1]	◆[1]
Find Black and White Targets from picks	◆	◆	◆	◆	◆	◆					◆[1]	◆[1]	◆[1]
Semi-automatic target acquisition	◆	◆	◆	◆	◆	◆					◆[1]	◆[1]	◆[1]
Target identification via available Target IDs	◆	◆	◆	◆	◆	◆					◆[1]	◆[1]	◆[1]
Set target height for use in Registration	◆	◆	◆	◆	◆	◆					◆[1]	◆[1]	◆[1]
Approximate geo-referencing to coordinate system	◆	◆	◆	◆		◆					◆[1]	◆[1]	◆[1]
Automatic linking of scans & images with scanner	◆	◆	◆	◆							◆[1]	◆[1]	◆[1]
Color scanned points from images	◆	◆	◆	◆							◆[1]	◆[1]	◆[1]
Set atmospheric correction parameters	◆	◆	◆	◆							◆[1]	◆[1]	◆[1]
Check Calibration					◆	◆							
Add/replace known coordinates		◆	◆	◆		◆					◆[1]	◆[1]	◆[1]
Check/re-level scanner		◆	◆	◆		◆					◆[1]	◆[1]	◆[1]
Enable dual-axis compensator		◆	◆	◆							◆[1]	◆[1]	◆[1]
Enable tilt sensor						◆					◆[1]	◆[1]	◆[1]
Field Setup (Known Backsight, Known Azimuth, Resection)		◆	◆	◆		◆					◆[1]	◆[1]	◆[1]
Import known coordinates		◆	◆	◆		◆					◆[1]	◆[1]	◆[1]
Pause/resume scan		◆	◆	◆		◆					◆[1]	◆[1]	◆[1]
Traverse		◆	◆	◆		◆					◆[1]	◆[1]	◆[1]
Traverse Editor		◆	◆	◆									
Traverse report		◆	◆	◆		◆					◆[1]	◆[1]	◆[1]
Toggle ScanWorld Leveled							◆						
Self-test					◆						◆[1]	◆[1]	◆[1]
Selective scan import by region			◆	◆	◆	◆					◆[1]	◆[1]	◆[1]
Stakeout		◆	◆	◆		◆					◆[1]	◆[1]	◆[1]
Set sphere target diameter	◆	◆	◆	◆	◆	◆					◆[1]	◆[1]	◆[1]
Acquire target within fence	◆	◆	◆	◆	◆	◆					◆[1]	◆[1]	◆[1]
Point laser at specific coordinate location			◆	◆							◆[1]	◆[1]	◆[1]

[1] Enabled when connected to HDS system.

Visualization, Modeling & Query Tools, and Registration	SCAN HDS3000	SCAN Scan-Station	SCAN Scan-Station 2	SCAN Scan-Station C10	SCAN HDS4500	SCAN HDS6000	REGISTER	MODEL	SURVEY	PUBLISHER	IMPORT	Free VIEWER	VIEWER Pro
3D navigation	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Panoramic view mode	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆

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Visualization, Modeling & Query Tools, and Registration	SCAN HDS3000	SCAN Scan-Station	SCAN Scan-Station 2	SCAN Scan-Station C10	SCAN HDS4500	SCAN HDS6000	REGISTER	MODEL	SURVEY	PUBLISHER	IMPORT	Free VIEWER	VIEWER Pro
Cloud Level of Detail for fast visualization	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Model Level of Detail for fast visualization	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Decimation of point clouds (every nth point)	◆	◆	◆	◆	◆	◆	◆	◆	◆				
Selectable levels of point cloud density							◆	◆	◆	◆	◆	◆	◆
Quickly show/hide point clouds							◆	◆	◆	◆	◆	◆	◆
View point clouds with intensity mapping, image color mapping, elevation based color mapping	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆*	◆*	◆
Map external digital photo to point clouds (Texture map)	◆	◆	◆	◆	◆	◆		◆	◆				
Create Multi-image from cube-mapped images	◆	◆	◆	◆	◆	◆		◆	◆				
View texture mapped colors on point clouds	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆*	◆*	◆
Limit Box for efficient viewing and interaction of selected regions	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆*	◆**	◆
Limit Box Manager to organize multiple limit boxes	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆*	◆*	◆
Set Limit Box by fence							◆	◆	◆				◆
Global registration of multiple scans							◆						
Geo-referencing		◆	◆	◆		◆	◆						
Cloud-to-cloud registration							◆						
Automated registration using HDS targets							◆						
Automated registration using point clouds							◆						
Editing Target labels/names	◆	◆	◆	◆	◆	◆	◆						
View scanner locations	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		◆*	◆
Unify point clouds							◆	◆	◆		◆		◆
Basic conceptual design & 2D drawing tools								◆	◆				
Insertion of objects								◆					
Replication and editing of objects								◆	◆				
Planar patch editing													
Make Square or Rectangular								◆	◆				
Create/Fill Hole								◆					
User-defined quality-of-fit checks							◆	◆	◆				
Region growing													
Plane							◆	◆	◆				
Cylinder							◆	◆	◆				
Sphere							◆	◆					
Smooth surface to segment extraneous data							◆	◆	◆				
Automated Pipe Run with elbows								◆					
Virtual Surveyor™ to assign survey feature codes to points								◆	◆				
Mesh													
Creation (basic, complex, TIN)								◆	◆				
Intelligent decimation								◆	◆				
Decimation based on user-specified grid spacing								◆	◆				
Polyline and breakline support								◆	◆				
Delete and add faces								◆	◆				
Fill in holes								◆	◆				
Generate contours from meshes								◆	◆				
Surface Deviation													
Cut/fill contours								◆	◆				
Table output on user-specified grid								◆	◆				
Points on user-specified grid								◆	◆				
Generate cross-sections through point clouds along an alignment													
Sections Manager								◆	◆				
Create Lines at Station								◆	◆				

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Visualization, Modeling & Query Tools, and Registration	SCAN HDS3000	SCAN Scan-Station	SCAN Scan-Station 2	SCAN Scan-Station C10	SCAN HDS4500	SCAN HDS6000	REGISTER	MODEL	SURVEY	PUBLISHER	IMPORT	Free VIEWER	VIEWER Pro
Create profiles, plans and sections									◆	◆			
Station Notation display relative to an alignment	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		◆*	◆
Fit edge template for curve extraction (e.g. curbs, flowlines)								◆	◆				
Measure & dimension point clouds and models													
Slope distance	◆	◆	◆	◆	◆	◆	◆	◆	◆				◆
X, Y, Z distances	◆	◆	◆	◆	◆	◆	◆	◆	◆				◆
Geometric Object Volume								◆	◆				◆
Surface area								◆	◆				◆
Horizontal and Vertical Clearances								◆	◆				
Angle to Horizontal							◆	◆	◆				◆
Angle to Vertical							◆	◆	◆				◆
Back angle							◆	◆	◆				◆
Cut/fill volume								◆	◆				◆
Piping takeoff query								◆					
Automated visual interference checking								◆					
Fit cylinders, structural steel from catalogs								◆					
Insert piping components from catalogs (reducer, elbow, branch, flange, valve)								◆					
Piping Mode to add insulation thickness, Line ID, specification, Symbol Key (SKEY)								◆					
Set object creation parameters	◆	◆	◆	◆	◆	◆	◆	◆	◆				
Create and manage object annotation	◆	◆	◆	◆	◆	◆	◆	◆	◆				
Output feature codes and annotated vertices, spheres, to ASCII								◆	◆				◆
Generate 2D drawings from 3D models								◆	◆				
3D redlining								◆	◆				◆
Scanner simulation							◆	◆	◆				
Multiple coordinate system support							◆	◆	◆				◆
Assign colors & materials to objects	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆			
Create and manage layers	◆	◆	◆	◆	◆	◆	◆	◆	◆				◆**
Save/restore viewpoints	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆			◆
Save screen image as image file	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆			◆
Object Grouping								◆	◆				
Geometry types that can be created:													
HDS flat targets	◆	◆	◆	◆			◆						
HDS spherical targets[2]	◆	◆	◆	◆	◆	◆	◆						
Black/White targets	◆	◆	◆	◆	◆	◆	◆						
Patch (plane)[2]							◆	◆					
Extruded patch								◆					
Box[23]								◆					
Corner[2]							◆	◆	◆				
Steel shape[23] (e.g. I-beam)							◆	◆					
Cylinder[23]							◆	◆	◆				
Sphere[23]							◆	◆					
Vertex							◆	◆	◆				
Line							◆	◆	◆				
Elbow[23], Reducing Elbow[3]								◆					
Cone[23]								◆					
Torus[3]								◆					
Reducer (Eccentric, Concentric)[3]								◆					
Flange (Blind, Weld-Neck)[3]								◆					
PipeTee[3]													
Valve[3]								◆					
Polyline, Polygon								◆	◆				

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Rectangle, Square								◆	◆				
Arc, Circle								◆	◆				
Ellipse								◆	◆				
Cubic spline								◆	◆				
Point-of-view camera								◆	◆				◆
Pointed (Ballistic) cone								◆	◆				
Environmental lighting								◆	◆	◆			
Create fly-throughs and output sequence of image files or .AVI (Audio Video Interleave) file								◆	◆				
Elevation check	◆	◆	◆	◆	◆	◆	◆	◆	◆				
Pipe Modeling user interface								◆					
Publish Sitemap and TruView Panoramic File Sets										◆			
Ortho Image output	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆			
Estimate normals								◆	◆		◆		

[2] These types can be created using best-fit methods. * As delivered in database, cannot modify

[3] These types can use catalog tables. **No grip editing for size

TruSpace\Keyplan	SCAN HDS3000	SCAN Scan-Station	SCAN Scan-Station 2	SCAN Scan-Station C10	SCAN HDS4500	SCAN HDS6000	REGISTER	MODEL	SURVEY	PUBLISHER	IMPORT	Free VIEWER	VIEWER Pro
Open\View KeyPlan							◆	◆	◆	◆			◆
Create KeyPlan							◆	◆	◆	◆			
Edit KeyPlan							◆	◆	◆	◆			
Open TruSpace							◆	◆	◆				◆
Extract targets in TruSpace							◆	◆	◆				
Measurements in TruSpace							◆	◆	◆				◆
View Multi-Image in TruSpace							◆	◆	◆				◆
Change Color Mapping							◆	◆	◆				◆
Open ModelSpace view from TruSpace							◆	◆	◆				◆
Publish TruView from KeyPlan										◆			
Sync view- TruSpace to ModelSpace							◆	◆	◆				◆
Quick Limit box from TruSpace to ModelSpace							◆	◆	◆				◆

Data Import	SCAN HDS3000	SCAN Scan-Station	SCAN Scan-Station 2	SCAN Scan-Station C10	SCAN HDS4500	SCAN HDS6000	REGISTER	MODEL	SURVEY	PUBLISHER	IMPORT	Free VIEWER	VIEWER Pro
ASCII (XYZ, SVY, PTS, PTX, TXT, Customized format)							◆	◆	◆		◆	◆**	◆
RIEGL .3DD							◆	◆	◆		◆		◆
Cyclone Object Exchange (COE) format (from CAD, MicroStation, via COE Data Transfer)							◆	◆	◆		◆		◆
ZFS, SCAN, SC2	◆	◆	◆		◆	◆					◆		◆
ZFS, ZFC***							◆	◆	◆		◆		◆
BMP, TIFF, JPEG, PNG							◆	◆	◆		◆		◆
LandXML							◆	◆	◆		◆		◆
SIMA								◆	◆		◆		◆
Optech: ixf											◆		
FARO: fls, fws											◆		
RIEGL: rsp											◆		
LAS							◆	◆	◆		◆		
Import project data collected on ScanStation C10								◆	◆				
◆** Enabled if licensed copy of CloudWorx is installed on the same machine				◆				◆	◆		◆****		
◆*** ZFC data from 4500 and 5003 only													
◆**** bin files only													

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Data Export	SCAN HDS3000	SCAN Scan-Station	SCAN Scan-Station 2	SCAN Scan-Station C10	SCAN HDS4500	SCAN HDS6000	REGISTER	MODEL	SURVEY	PUBLISHER	IMPORT	Free VIEWER	VIEWER Pro
AutoCAD DXF R12	◆	◆	◆		◆	◆	◆	◆	◆				◆
Cyclone Object Exchange (COE) format (to AutoCAD, MicroStation via COE Data Transfer)	◆	◆	◆		◆	◆	◆	◆	◆				◆
ASCII (XYZ, SVY, PTS, PTX, TXT, Customized format)	◆	◆	◆		◆	◆	◆	◆	◆				◆
Binary Point Cloud (PTZ)**							◆						
PTG							◆						
BMP, TIFF, JPEG, PNG	◆	◆	◆		◆	◆	◆	◆	◆	◆			◆
Ortho Image, GeoTIFF, TWF (World File)	◆	◆	◆		◆	◆	◆	◆	◆	◆			◆
Sitemap, TruView										◆			
SDNF 3.0 (Intergraph Steel Detailing Neutral File)								◆					
PCF (Alias Piping Component File)								◆					
Leica System 1200								◆	◆				◆
LandXML								◆	◆				◆
Cyclone II TOPO *.cwf & *.pci	◆	◆	◆		◆	◆	◆	◆	◆	◆		◆	◆
Automatic 5-day trial license period													◆

Other general Cyclone Features	
Metric or imperial units of measure	Client/server object database foundation
Decimal Degrees or Degrees, Minutes, Seconds angular units of measure	Multi-threading to take advantage of multiple processors
Bearing unit of measure for Azimuth of Resection	Hierarchical project layout
Simultaneous view of video image and scanned data image	Flexible license support
Customizable, exchangeable user interface: hotkeys, toolbars	Terminal Services support
64-bit large number support	Multi-user profile configuration management
64-bit graphics support	Incremental, intelligent loading of 3D models
Continuous auto-save	Parametric objects
Undo/Redo	Online help

Leica CloudWorx 4.0 and 2.0 Technical Specifications

Visualization, Modeling & Query Tools	CW AutoCAD Basic 4.1	CW AutoCAD Pro 4.1	CW Microstation 4.0	CW PDMS 2.0	CW SmartPlant Review 2.0	CW SmartPlant 3D 1.0
Large Point Cloud Support	◆	◆	◆	◆	◆	◆
Level of Detail (LOD) graphics	◆	◆	◆	◆	◆	◆
Intensity mapping and True color	◆	◆	◆	◆	◆	◆
Limit Box Manager	◆	◆	◆	◆	◆	◆
Cutplane Manager (sections, slices)	◆	◆	◆	◆	◆	◆
Hide Regions Manager (fences)	◆	◆	◆	◆	◆	◆
Layers in Cyclone database	◆	◆	◆	◆	◆	◆
Tracing	◆	◆	◆	◆		
Measure: 3D point coordinate	◆	◆	◆	◆	◆	◆
Measure Point-to-point	◆	◆	◆	◆	◆	◆
Measure Point-to-design entity	◆	◆	◆	◆	◆	◆
Limit box	◆	◆	◆	◆	◆	◆
Design Point Placement: Pipe Center D-Point, D-Point at pick				◆		
Flange Tie-Point Location Tool: Place flange D-Point from point cloud				◆		
Interference Checking		◆	◆	◆	◆	◆
Flange Tie-Point Location Tool		◆	◆			◆
Modeling (Least-Squares fitting)						
Pipes		◆	◆			
Planar Patch		◆	◆			
2D lines,Polylines arcs		◆	◆			
Advanced clash management database system		◆	◆			
Open KeyPlan		◆	◆			◆
Open TruSpace		◆	◆			◆
Sync TruSpace viewer to Viewport or Viewer in CAD system		◆	◆			◆
Sync CAD Drawing tools to TruSpace		◆	◆			
Quick Limit Box from TruSpace		◆	◆			◆

Whether you're designing a modification to a complex refinery piping system, fully checking the clearance of a new tunnel or meticulously rehabilitating a historic building, you need reliable measurements. The specialized 3D laser scanning systems and software by Leica Geosystems provide you with exact data of what's there.

When your as-built information has to be right, rely on Leica Geosystems, the company that professionals trust for their scanning solutions. Leica Geosystems is best known for pioneering scanning technology with trustworthy, total solutions: versatile, accurate laser scanners, industry standard point cloud software, and a full complement of accessories, training and support.

Precision, quality and service from Leica Geosystems.

When it has to be right.

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