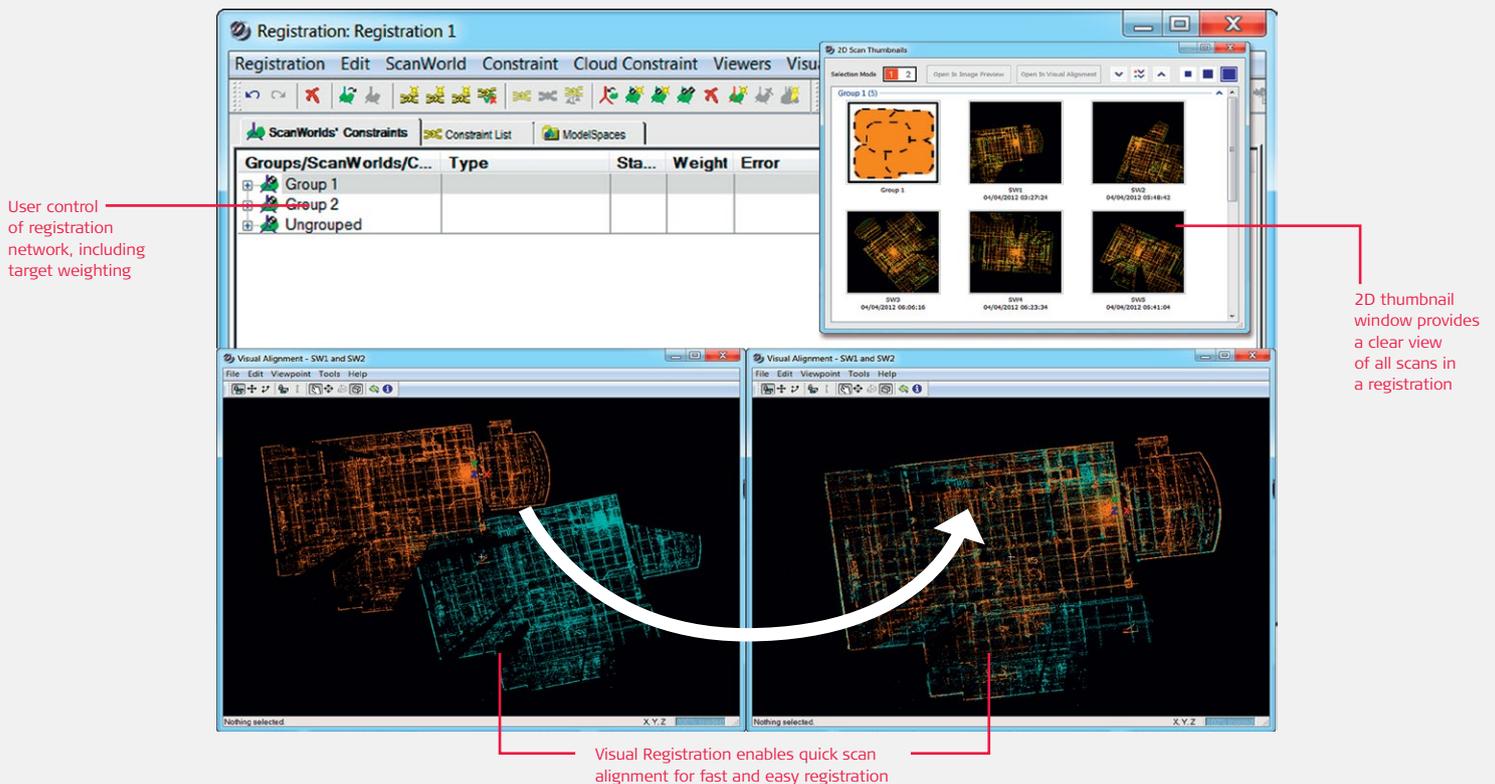


Leica Cyclone REGISTER 9.1

Laser scan registration and Geo-referencing



For quality project results with complete statistical reports

Leica Cyclone REGISTER is the industry's most popular software for registering and geo-referencing laser scan data to a common coordinate system.

Accurate registration and geo-referencing is a must for successful High Definition Surveying (HDS™) projects. Cyclone REGISTER is the most rigorous, complete and productive software available for this important process.

Users can take advantage of registration options based on scan targets, scene features, overlapping point clouds, and/or survey data.

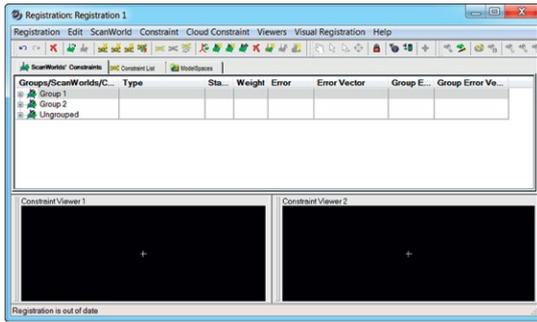
Cyclone REGISTER provides detailed statistical reports suitable for inclusion as project deliverables. Reports cover registration accuracy, error statistics and histograms for each target and/or cloud constraint.

Available automation features, friendly wizards and powerful algorithms provide unsurpassed office productivity, even for very large scan data sets.

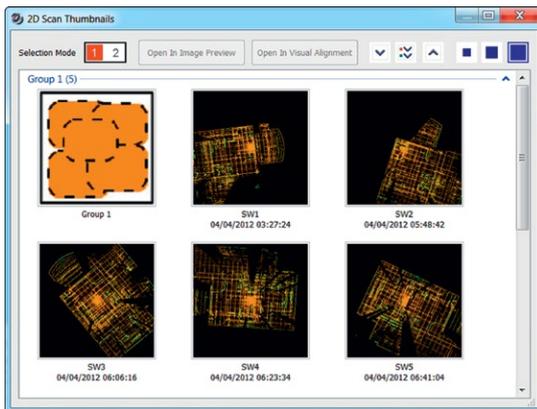
Features and Benefits

- Direct import of Leica Pegasus project data, including device trajectories
- Direct import of DotProduct *.dp files
- Batch import of iSTAR and Spheron panoramic images
- Texture mapping with Auto-Align for panos to scans, supporting iSTAR, Spheron, and Nodal Ninja workflows
- Texture mapping with HDR Tone Map editor
- Auto Alignment allows fast, automatic alignment of scans at import or post-import
- SmartAlign layout tool at import improves auto-alignment speed
- Visual Alignment allows quick user-alignment of scans
- Cloud-to-Cloud registration as standalone or with targets
- Automatic target finding and fitting
- For use with Leica Geosystems and third party point cloud data
- Fly Mode for smooth, 3D fly-through navigation, including 3D mouse support, in ModelSpace View window

Leica Cyclone REGISTER 9.1



New Auto Alignment aligns scans together and creates and opens a Registration automatically for fast and easy Registration project completion.



New 2D Scan Thumbnail window provides the user with a clear view of all scans within a project. Scans can now be viewed visually right after import all in one window.

Powerful, Easy-to-Use Auto Alignment of Scan Data

Cyclone REGISTER's suite of features includes Auto Alignment automatically detects matching surfaces in the overlap areas of scans and creates Cloud-To-Cloud constraints. The user simply has to optimise the constraints to complete the registration process. The SmartAlign tool provides an added option for the user to guide the auto-alignment, increasing speed of results.

New Visual Alignment

Scans can now be viewed side-by-side in the same registration area and moved together visually for fast and easy registration. Along with the new 2D scan Thumbnail window, Visual Alignment is a great complement to Auto Alignment for adding additional scans or aligning scans not initially aligned in the Auto Alignment process.

Automatic Target Finding, Fitting and Matching

The automated target finding wizard finds and extracts the exact center point of visible targets. Users review thumbnail views, verify and modify the fit. An automated matching method creates constraints between all setup positions, greatly enhancing the productivity of the entire registration process. This automated process can be used with hundreds of scan positions and thousands of targets. It is most useful with phase-based scanning in interior, industrial and congested urban settings where total collection ranges are restricted. Testing shows it reliably finds and fits more than 90% of the targets within the specified range and angle of incidence.

Manage Field Collected Traverse Data

For scanners with dual-axis level compensation, users can deploy standard survey traverse methods while scanning in the field. This collection method provides for automated registration. Cyclone REGISTER provides complete, in-office traverse management capability for managing, editing, and cleaning up field collected traverse data.

Detailed Registration Diagnostics

Leica Cyclone REGISTER reports the overall accuracy of the registration. Detailed registration statistics include the error for each target constraint and the Root Mean Square (RMS) error and error histogram for each cloud constraint.

Leica Cyclone REGISTER Specifications*

Auto Alignment	Automatically creates Cloud-to-Cloud Constraints and automatically creates and opens a Registration SmartAlign tool enhances productivity with faster Auto-Align results.
Visual Alignment	Includes the 2D Thumbnail Window and the Visual Alignment window
Constraint management	Cyclone Object Database Technology: fast efficient point cloud mgt. Create cloud constraints from complete or partial point clouds
Target management and registration	Target based; geo-referenced to survey control data; highly optimised, wizard driven cloud-to-cloud capability. Accurate results via bundle adjustment techniques Extract HDS Spherical, Planar and Black/White targets Automated overlap and target finding wizards Optimised target acquisition and registration workflows
Diagnostics	Overall accuracy reports Target constraint error reporting Cloud constraint Root Mean Square (RMS) error and error histogram
Traverse data mgt.	Office-side traverse content management Add, remove, edit targets, re-run traverse, etc.
Import	Point data formats: XYZ, PTS, PTX, LAS, E57, ZFS, DP, FLS, FLW Project data from Leica HDS and Pegasus scanners Image/Camera and model data: COE, BMP, TIFF, JPEG, PNG, NCTRI, SPH Control data from ASCII & X-Function DBX
Export	Point data formats: XYZ, PTS, PTX, E57, DXF, PCI/CWF, DBX Image and model data: COE, BMP, TIFF, JPEG, PNG Store in JetStream ProjectVault**

Hardware and System Requirements

Minimum Specifications

Processor: 2 GHz Dual Core processor or better

RAM: 2 GB (4 GB for Windows 7)

Hard Disk: 40 GB

Display: SVGA or OpenGL accelerated graphics card (with latest drivers)

Supported operating systems: Windows 7 (32 or 64 bit), Windows 8 & 8.1 (64 bit only), Windows 10 (64 bit only)

File System: NTFS

Recommended Specifications

Processor: 3.0 GHz Quad Core w/ Hyper-threading or higher

RAM: 32 GB's or more 64 bit OS

Hard disk: 500 GB SSD Drive

Large project disk option: RAID 5, 6, or 10 w/ SATA or SAS drives

Display: Nvidia GeForce GTX 680, Quadro K4000 or ATI Radeon 7850 or better, with 2 GB's memory or more

Operating system: Microsoft Windows 7 - 64bit

File system: NTFS

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- when it has to be **right**

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* Reference the Leica Cyclone 9.1 Technical Specifications document for a complete listing of product specifications.

** Enabled if Generator is licensed and configured correctly on JetStream ProjectVault