

# Leica Cyclone 5.5 REGISTER

Powerful 3D point cloud registration and geo-referencing software for surveyors and engineers

## Cyclone REGISTER

provides the most complete set of tools available for aligning point clouds captured from different scanning positions, quickly and accurately. Point clouds can be registered to a common coordinate system using constraints defined by HDS™ targets, common geometry, overlapping point clouds, and survey or control data. These powerful features result in optimum registration and provide significant time and cost-savings by reducing the need to place and extract targets.

## Automatic Target Matching and Registration

Cyclone REGISTER automatically matches targets or modeled objects from different scanning positions to create a system of constraints, which is used to integrate the point cloud data into a single coordinate system. Point clouds can be geo-referenced to survey or known control data, quickly and easily. Users even have the flexibility to utilize all of these capabilities with leveled point cloud sets collected with the Leica ScanStation.

## Powerful, Easy-to-Use Cloud Registration

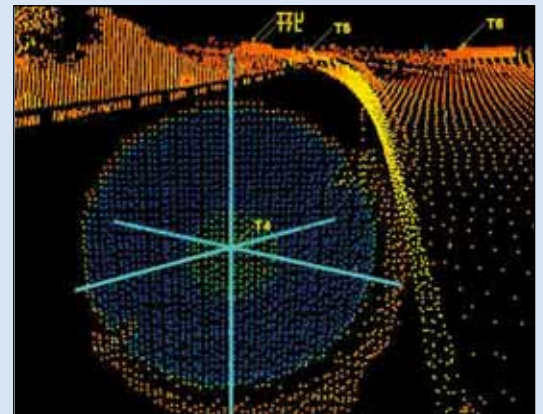
Leica Cyclone REGISTER is the industry's most popular application for registering and geo-referencing of laser scan data, regardless of which scanner is used. The unique cloud-to-cloud constraints technology provides an alternative method to using targets or can be used to enhance cloud data that includes targets. Wizard based controls provide an easy to use method ensuring the highest level of productivity and highest accuracy in the industry. Cloud constraints can be more extensive and detailed than discrete target constraints, resulting in optimal registration based on the overlap. Cloud constraints can also be used to further optimize the point cloud data that has been registered using targets.

## 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.

## Integrated Suite of Leica Software Modules

Leica Cyclone consists of an integrated suite of modules, allowing customization for the individual user. Cyclone MODEL is the complete, full-featured tool set of Cyclone software for information extraction and 3D modeling.



Cyclone MODEL enables solutions in many applications including plant, survey, and civil engineering. Cyclone SURVEY is a subset of the Cyclone MODEL module and is ideal for surveyors. Cyclone VIEWER is a free, view-only version of Cyclone software. The CloudWorx family of applications lets users efficiently view and process scan data within specific CAD applications.

- when it has to be **right**

**Leica**  
Geosystems

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Features		Benefits
<p><b>Large Point Cloud and Model Support</b></p> <ul style="list-style-type: none"> <li>Visualization</li> <li>Navigation</li> <li>3D Limit Box Manager for spatial navigation</li> <li>Interactive visualization of large models and data sets</li> <li>Efficient loading</li> <li>Cyclone Object Database Client/Server technology               <ul style="list-style-type: none"> <li>- Fast data processing</li> <li>- Efficient data management</li> </ul> </li> </ul>	<p><b>Registration Diagnostics</b></p> <ul style="list-style-type: none"> <li>Overall accuracy</li> <li>Target constraint error</li> <li>Cloud constraint Root Mean Square (RMS) error and error histogram</li> </ul> <p><b>Data Import</b></p> <ul style="list-style-type: none"> <li>ASCII (XYZ, SVY PTS, PTX, TXT, customized format)</li> <li>Zoller+Fröhlich ZFS, ZFC</li> <li>Riegl 3DD</li> <li>COE (Cyclone Object Exchange)</li> <li>AutoCAD, MicroStation via Cyclone COE Data Transfer plug-in (free)</li> <li>BMP TIFF JPEG</li> <li>CGP</li> <li>Leica System 1200</li> </ul> <p><b>Data Export</b></p> <ul style="list-style-type: none"> <li>ASCII (XYZ, SVY PTS, PTX, TXT, Customized format)</li> <li>DXF</li> <li>COE (Cyclone Object Exchange)</li> <li>AutoCAD, MicroStation via Cyclone COE Data Transfer plug-in (free)</li> <li>BMP TIFF JPEG</li> <li>Leica System 1200</li> </ul>	<p>Flexibility and control for optimum Registration</p> <p>Supports combination of target and cloud constraints</p> <p><b>Time and Cost Savings</b></p> <ul style="list-style-type: none"> <li>Minimize field time</li> <li>- Reduced target placement</li> <li>- Use of cloud constraints in areas with no common targets or modeled objects</li> </ul> <p>Automatic matching of targets and objects to create a system of constraints reduces tedious tasks</p> <p><b>High Confidence Results</b></p> <ul style="list-style-type: none"> <li>Detailed Registration Diagnostics</li> <li>Comprehensive statistics</li> <li>Fast, easy registration supports preliminary registration activities in the field to verify data completeness and coverage</li> </ul> <p><b>Fully Integrated</b></p> <p>Registered data is ready for use in Cyclone or Cloud Worx software for information extraction and modeling</p> <p><b>Easy to Learn and Easy to Use</b></p> <ul style="list-style-type: none"> <li>Intuitive interface and work flow</li> <li>Short learning curve</li> </ul> <p><b>Workgroup Support</b></p> <p>Data sharing in network environment with Cyclone SERVER</p> <p><b>System Requirements</b></p> <ul style="list-style-type: none"> <li>Microsoft Windows XP (SP1 or higher), Windows 2000 (SP3 or higher with up to date security patches)</li> <li>2.0 GHz Pentium® 4 or higher/ Pentium® M Processor 1.7 GHz or higher</li> <li>512 MB RAM (1GB or more recommended)</li> <li>SVGA or OpenGL accelerated graphics card Ethernet network card, for licensing</li> </ul>
<p><b>Rendering</b></p> <ul style="list-style-type: none"> <li>Level of Detail (LOD) graphics</li> <li>Intelligent memory management</li> <li>Constraint Management               <ul style="list-style-type: none"> <li>- Extract HDS Spherical, Planar and Black / White targets from high resolution scans</li> <li>- Review, organize, manage constraints</li> <li>- Edit target labels within REGISTER</li> <li>- Create cloud constraints from complete or partial point clouds</li> </ul> </li> </ul>		
<p><b>Registration</b></p> <ul style="list-style-type: none"> <li>Target-based               <ul style="list-style-type: none"> <li>- Accurately geo-reference point cloud data to survey or control data coordinates</li> <li>- Automatically constrain ControlSpace objects via labels or geometric matching</li> </ul> </li> <li>Cloud-based               <ul style="list-style-type: none"> <li>- Optimize target registration with cloud constraints</li> <li>- Auto Cloud Constraints</li> </ul> </li> <li>Automatically finds overlapping scans               <ul style="list-style-type: none"> <li>- Cloud Constraint Wizard</li> <li>- Quick data navigation to identify overlapping points</li> <li>- Establish cloud constraints</li> <li>- Global registration using cloud constraints</li> </ul> </li> <li>Accurate and optimum results through bundle adjustment of target and cloud constraints</li> </ul>		

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