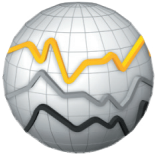# 4D CONTROL SOFTWARE

Software is the core of a monitoring project. It triggers alarms based on user defined thresholds as well as controls the measurements, manages data and compiles and analyzes the results. From campaign monitoring to real-time, multi-sensor operations, Trimble 4D Control can handle the challenge of complex monitoring applications.

Trimble® 4D Control™ brings the latest technology to installations for monitoring and analysis. Trimble 4D Control provides advanced, easy to use functionality that fits a wide range of monitoring needs. Trimble 4D Control software is built on the PIVOT™ Platform (Progressive Infrastructure via Overlaid Technology) which is a building block concept developed to address the specific needs of professionals in various market segments.
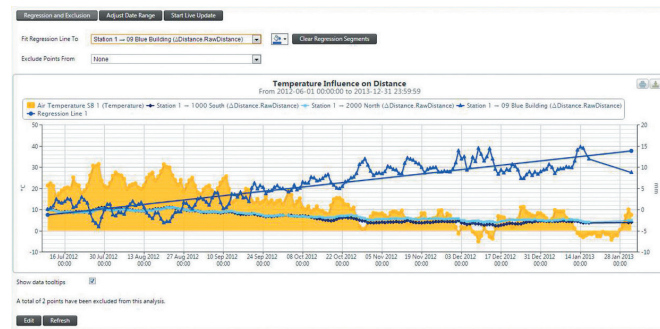
COMPLETE SENSOR MANAGEMENT

Trimble 4D Control manages all of your sensors. In addition to Trimble optical and GNSS sensors, Trimble 4D Control supports a wide variety of seismic, metrological and geotechnical instruments. It measures and stores the data according to schedules that you define. It manages measurement cycles, communications and the flow of incoming data.

AUTOMATED MEASURING 24/7

With Trimble 4D Control you can define groups of points to be measured and scheduled for observation. For optical measurements, you can simply 'train' the system by aiming the Trimble S7, S8, or S9 Total Station with FineLock technology to each point when setting up your project. The system then automatically measures to the points according to schedules that you have defined. For GNSS monitoring, you can control measurement intervals, cutoff angles and other parameters used in processing the GNSS data. For maximum flexibility, Trimble 4D Control lets you choose among different GNSS processing techniques to ensure the best results for your monitoring project.

ADVANCED DATA ANALYSIS AND VISUALIZATION

Trimble 4D Control contains sophisticated tools to analyze your data. At the core are Trimble's cutting-edge algorithms for network deformation analysis. Trimble 4D Control provides detailed evaluation of your data and highlights points that are moving. You can identify random or systematic measurement errors and spot movement in your points. Trimble 4D Control helps you see cyclic movement as well as sudden or unexpected changes in your project. Visualization tools in Trimble 4D Control provide a versatile overview of your monitoring network. The software's rigorous computations and powerful graphics let you conduct analysis of complex structures and motion.

• Inspect the entire network at a glance and use color-coded information to highlight motion or changes.

• Select specific points for detailed inspection and see charts showing the displacement of the points over time.

• Use Trimble 4D Control analysis functions to combine data from multiple sensors in a single chart.

With Trimble 4D Control you can define the direction of movement expected for each point. The point's motion is computed along or across this axis as well as in the vertical plane. It's a powerful tool in understanding the behavior of your monitoring project.
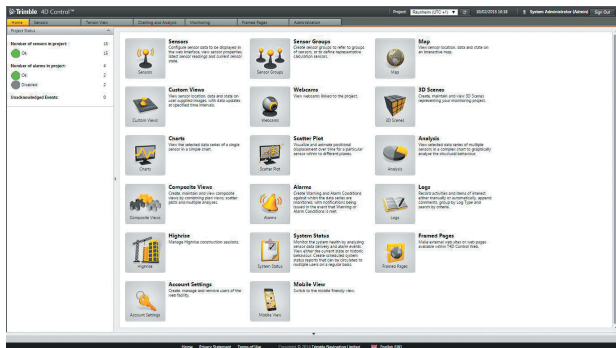
RESULTS AND ALERTS

Trimble 4D Control enables professionals to set the tolerances and conditions for alarms and tell the system who should be alerted. Specified recipients will receive alerts via e-mail and text messages. Advanced users can also use SQL to retrieve raw data directly from the database. They can then conduct custom analysis using information collected and stored by the system.

WEB ACCESS TO YOUR MONITORING PROJECTS

Trimble 4D Web is used to analyze and visualize monitoring projects, and provides access to your monitoring system over a fast, feature-rich Web interface. Whenever you connect to the Internet, you can connect to Trimble 4D Control Web and view your project in real-time.

- Powerful map and custom views to identify sensors and measurement points. You can use aerial photos or other imagery to provide detail background information.

- Fast and easy charting lets you plot the results of individual points or sensors.

- Visualize information from monitoring sensors in chart or tabular forms.

- Link to project webcams in real time and make visual inspection from any location.

- Post and manage updates and reminder to the project log to meet stakeholders' needs.

- Set conditions for issuing alerts and messages and manage in a secure environment.

- Controlled access to specified stakeholders by assigning different access levels to ensure information is available only to those who need it.

OVERVIEW OF MONITORING APPS

Trimble 4D Control supports various apps to enable a wide and growing range of capabilities for different monitoring requirements. Each app offers a number of modules and functionalities for specific monitoring operations such as instrument controls, data collection, data processing, data analysis and alarming. New apps can be added to existing installations at any time.

	Radar	Uses pre-processed data from a radar device to calculate displacements based on radar interferograms.
	High Rise	Uses GNSS and inclination sensors to monitor high-rise structures during construction and delivers precise and reliable coordinates on demand.
	Seismo Geodetic	Integrates strong motion and high frequency data for the combined processing of accelerometer and GNSS data using a Kalman filter to produce high rate GNSS displacement data.
	Geotechnical	Provides continuous high precision measurements and rapid updates to monitor over long distances.
	Pivot RTX	Performs absolute position estimation and coordinate integrity monitoring in real-time mode using the RTX technology.
	Pivot RTX-PP	Performs absolute position estimation and coordinate integrity monitoring in postprocessing mode using the RTX technology.
	Integrity Manager	Provides real- time and postprocessing engines to monitor GNSS reference stations.

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