



Trimble 4D Control

SOFTWARE, VERSION 4.6

These release notes describe the latest improvements made to the Trimble® 4D Control™ software, version 4.6.

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Introduction

The Trimble® 4D Control™ software is a fully-scalable solution for monitoring applications.

Options range from simple post-processed monitoring operations to complete real-time systems that combine optical total stations, GNSS receivers, and geotechnical sensors.

In real-time monitoring, the software manages total stations and/or GNSS receivers, collects and stores the data from all sensors, performs analysis for motion, and generates reports and alerts.

The release notes give you brief, high-level description of new features and enhancements that help you to ensure your continued success. The document also contains information on system requirements, installation and upgrade procedures.

New look and feel

Up to now Trimble 4D Control has been composed of three main components, Trimble Pivot™ Platform software, Trimble 4D Control Desktop software, and Trimble 4D Control Web.

The following changes have been made to the look and feel:

- ▶ **Trimble 4D Control Server:** Trimble Pivot Platform software has now been renamed to Trimble 4D Control Server. This now more clearly identifies the purpose of the back-end component of the software. The Trimble 4D Control Server runs 24/7 as a Windows® service, controlling the instrumentation in real time, and acquiring and processing the data.

The following improvements have also been made to Trimble 4D Control Server:

- **New installer:** With this version a new installer has been added that makes the installation procedure of Trimble 4D Control Server much simpler and more comprehensive.
- **64-bit:** Trimble 4D Control version 4.6 is fully 64-bit capable and therefore is no longer subject to memory limitations. This means all services and modules exclusively support the 64-bit technology.
- ▶ **Trimble 4D Control Web:** The management and configuration of monitoring projects and sensors is a crucial element of Trimble 4D Control and permits to connect data provided by the back-end server to its front end. Trimble 4D Control Web then provides access to a monitoring system over a fast, feature-rich web interface and is used to analyze and visualize monitoring projects.

So far projects and sensors have been created by the software component Trimble 4D Control Desktop. With this version of Trimble 4D Control the entire Project and Sensor Management is incorporated into Trimble 4D Control Web. This incorporation makes Trimble 4D Control Desktop obsolete and allows users being more effective in operating their system by not having to switch between different applications but using functionality combined in an advanced Trimble 4D Control Web.

New key features

In-place Inclinometer sensor

Trimble 4D Control now supports In-place Inclinometer sensors. An In-place Inclinometer (IPI) is designed for near vertical borehole applications where it is used to measure lateral displacement within a borehole.

Most commonly, the IPI is used in a system where multiple IPIs are installed at varying depths. In this way the profile of the subterranean displacement can be monitored.

The IPI sensor itself consists of several (uni-axial or bi-axial) tilt sensors. Data is sent to a data logger device such as the Campbell Scientific CR1000 that in turn outputs a comma-separated file. The Trimble 4D Control software reads in a new file for each new reading and in this way makes the file available.

The major features of the In-Place Inclinometer support are as follows:

- ▶ Dedicated In-place Inclinometer module

- ▶ Easy and flexible configuration for reading in sensor data
- ▶ New In-place Inclinometer chart view
- ▶ Configurable axis scaling and plot bands
- ▶ Stacked chart views representing various snapshots in time
- ▶ Alarming and analysis available for In-place Inclinometer data
- ▶ In-place Inclinometer report type

Added support for Settop M1 device

- ▶ **IST Connect cloud service:** The Trimble 4D Control software can be directly connected to a Settop M1 device. In addition, Trimble 4D Control software now also supports bi-directional active connections to a total station and a temperature sensor connected to the total station using the Settop MSI device's IST (Intelligent Settop Service) Connect cloud service. IST Connect allows users to access, manage, and control an instrument via the internet and can be used if there is no available static IP address for the Settop M1 device (for example, if it is operated using the built-in cell modem).

Note – *This version is not supported by Windows® 7 x64 SP1.*

- ▶ **Instrument control:** In addition to establishing a direct connection to a total station, the Settop M1 device can also be used to actively control the instrument and internally store round measurement information as a file (GKA format) that can be retrieved by Trimble 4D Control software once completed.

This file and the direct connection can be used if communication is not steady. A user benefits from the fact that information of the previous round measurement can still be retrieved even if there was a communication gap at the time the round was measured.

WMS layers

The Trimble 4D Control software now enables you to add Web Map Service (WMS) layers as base layers for the maps page on Trimble 4D Control Web.

Manual data entry

The Trimble 4D Control software now allows you to manually add sensor observations for certain sensor types, including level data. This can be done either by directly inputting observation data or by uploading a file that contains the observation data.

Historical data import and velocity backfill

If data for specific sensors is contained by the technical database, whereas the associated sensors are only added to a project at Trimble 4D Control Web at a later stage, one can now still use these data. This import functionality applies to the following sensor and data types:

- ▶ Targets
- ▶ Temperature (Papouch) sensor
- ▶ Pressure information (from the total station)

When importing historical data velocity values, both positions as well as slope distances are backfilled.

Note – *For backfilling corrected slope distances and velocities, historical temperature and pressure information is required.*

Analysis type: Cross section

The cross section analysis type allows you to compare one or more values from similar sensors visually over time. In addition to a time slider, you can also select a specific date. One axis of the analysis shows displacements based on the settings, whereas the second axis shows distances for all used points relative to the specified point of origin. Both custom and calculated distances can be used in reference to the domain axis.

Report type: Positional sensor readings

Using the new report type *Positional Sensor Readings*, you can easily export readings for one sensor, a selection of sensors or a sensor group. The report type has the following key characteristics:

- ▶ Report can be scheduled
- ▶ Definable time period for which all readings should be included
- ▶ Selectable reference date
- ▶ Customizable data types can be added to the report
- ▶ Absolute velocity values
- ▶ Output in Microsoft® Excel® spreadsheet format

Free-hand regression lines

Using this new feature, you can carry out fast analysis of displacement and react quickly to any danger related to the movement. By holding down the **Ctrl** button and clicking two points on a regular chart or analysis graph, you will instantly get information on the displacement and its velocity. This enables you to obtain additional sensor information on the fly without the need to post-process data.

Additional round mode

When using the new round mode F1/F2, the total station measures all targets first in Face 1, and then in the opposite order in Face 2.

Incremental integrity check

With this option enabled, a target is not necessarily removed from the adjustment even if both the first and the repeated measurement of one round exceed the configured integrity threshold. This occurs if the difference between these two target measurements is within the specified integrity threshold.

Data file management

Data files such as images or documents for specific sensors that are uploaded to Trimble 4D Control Web can now be managed at a central location. You can search for certain data files by name or date as well as obtaining an overview of the orphaned and unused data files.

Enhancements

Reports section

All available report types are now contained in a new report section on Trimble 4D Control Web. Reports can be configured individually and added to the report scheduler from the report section. The following report types are available:

- ▶ Alarm report
- ▶ Analysis report
- ▶ High-rise sessions report

- ▶ In-Place Inclinometer report
- ▶ Log report
- ▶ Positional Sensor Readings report
- ▶ System Status report

Coordinate system handling

The new project and sensor management of Trimble 4D Control Web automatically retrieves coordinate system information from the Trimble 4D Control Server. In this way the coordinate system is set in one place only and this ensures that the information is always consistent throughout the system.

Analysis Improvements

- ▶ **Usability of Velocity series:** The workflow to add velocity series to an analysis at Trimble 4D Web is more intuitive and flexible now. For example the calculation window size is now detached from the choice on how many velocity values should be plotted on the corresponding velocity chart (e.g. one value per day, one value per hour).
- ▶ **Slope Distance Velocity series:** The Velocity series for slope distances can now be added to an analysis. This applies to both uncorrected and ppm corrected slope distances.
- ▶ **Series names:** Series names can be customized and do not necessarily represent the sensor name.
- ▶ **Hide Legend:** The analysis legend may be hidden.
- ▶ **Tooltip for Inverse Velocity:** Inverse velocity regression lines show a tooltip to obtain a forecast on the *Zero intersect date*.

Full-axis rotation

All known axis rotation functionality of Trimble 4D Control Server is now available on the Trimble 4D Control Web. This means that the coordinate system can be rotated individually for each target by using one of the following methods:

- ▶ Manual Input
- ▶ Bearing to point
- ▶ Bearing between points

Enable/disable points for round measurements

The round settings of a data collector and a data receiver module now include functionality that allows you to select certain points to be disregarded in the following round measurements. Disabled points are not processed but remain part of the point list so that they can easily be enabled again.

Store and re-use calculation sensor formulas

Formulas that are created for use by a calculation sensor are stored now so that they are available for selection and can easily be reused when adding further calculation sensors.

Map view

- ▶ **Control point icon:** Points that are fixed in any adjustment can optionally be visualized as triangle instead of the regular sensor icon.
- ▶ **Level sensor readings:** Level information is included as vertical displacement.

Multiple base radios

It is now possible to use more than one base radio with Trimble 4D Control software. Due to this improvement there is no longer any limitation on the number of total stations that can be connected to the software via radio.

SSL encryption

The Alarm Manager module now allows you to specify whether or not the connection to the email server should be established using SSL (Secure Sockets Layer) encryption.

Supported operating systems

Version 4.6 of Trimble 4D Control software supports the following operating systems:

- ▶ Windows Server® 2012 R2
- ▶ Windows Server 2008 R2 SP1
- ▶ Windows 10 Professional x64
- ▶ Windows 7 Professional x64 SP1

Supported SQL Servers

- ▶ Microsoft SQL Server® 2016

Note – *This version is not supported by Windows 7 x64 SP1.*

- ▶ Microsoft SQL Server 2014
- ▶ Microsoft SQL Server 2012
- ▶ Microsoft SQL Server 2008 R2 Express

If you plan to build a large monitoring system with multiple sensors and multiple processing engines, Trimble highly recommends upgrading from the SQL Express version to a full SQL installation (versions 2008 and later are supported).

Installation

If you want to install Trimble 4D Control software version 4.6 on a server where no previous version is installed, do the following:

1. Run the installation of Trimble 4D Control Server. For further information on the installation of Trimble 4D Control Server refer to the *Trimble 4D Control Server Installation Guide* that is available in the Manuals folder of the installation DVD, from the setup splash screen of Trimble 4D Control Version 4.6, or online at <http://installation.server.t4d.trimble.com/version4.6>.
2. Run the installation of Trimble 4D Control Web. For further information on the installation of Trimble 4D Control Web, refer to the *Trimble 4D Control Web Installation Guide* that is available in the Manuals folder of the installation DVD, from the setup splash screen of Trimble 4D Control Version 4.6 or online at <http://installation.web.t4d.trimble.com/version4.6>.

Upgrading Trimble 4D Control Software

Before starting the upgrade to version 4.6

- ▶ If you currently use one of below features, apps, contact MonSol_Support@trimble.com before you start the upgrade to Trimble 4D Control version 4.6:
 - Seismo Geodetic app
 - Radar app
 - 3D visualization
 - Fast Fourier transforms
- ▶ Take note of the following (for support bulletins on the items listed here, go to <http://t4d.trimble.com/support/version4.6>)
 - The optional functionality *Measurement Corrections* has been reviewed. If *Measurement Corrections* is enabled, associated improvements might result in slight differences in terms of displacement charts and station residuals when comparing with the previous version.
 - Due to the full switch to 64-bit technology and associated changes some modules of the system configuration may need to be reinserted after the upgrade.
 - The SNPCOM service as well as the Trimble 4D Control Desktop application becomes obsolete with this version and will automatically be uninstalled when upgrading to version 4.6.
 - With regards to USB connections to total stations some manual steps might be required when upgrading to version 4.6.
 - The following functionalities are no longer available with version 4.6:
 - Map Quest as base layer at the maps view of Trimble 4D Control Web
 - The Apps view as part of Trimble 4D Control Server
 - Network Motion Engine, Rapid Motion Engine and RTK PP Engine
 - Both the GKA Storage and Raw Storage module

To update Trimble 4D Control software from a previous version to version 4.6, do the following:

1. If required update your current installation of Trimble 4D Control software to the latest version, version 4.5. Make sure that it includes the latest available software updates and that it runs correctly after starting the services, UI and the web interface.
2. Back up all Trimble 4D Control configuration files (*.tde) as well as the Microsoft SQL Server database content (*.bak).
3. Run the installation of Trimble 4D Control Server. The installer automatically detects the installed version 4.5 and first uninstalls the existing software. When the software is being uninstalled you are prompted to keep the existing databases. Select **Yes**.
Once you have completed this step, it may be necessary to trigger the installation of Trimble 4D Control Server version 4.6 again.
4. Run the installation of Trimble 4D Control Web. The installer automatically detects the installed version 4.5 and first uninstalls the existing software.
Once you have completed this step, it may be necessary to trigger the installation of Trimble 4D Control Web version 4.6 again.

For further information, contact monsol_support@trimble.com.

Legal Notices

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Release notice

This is the December 2016 (Revision A) of the *Trimble 4D Control Software Release Notes*. It applies to version 4.6 of the software.

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