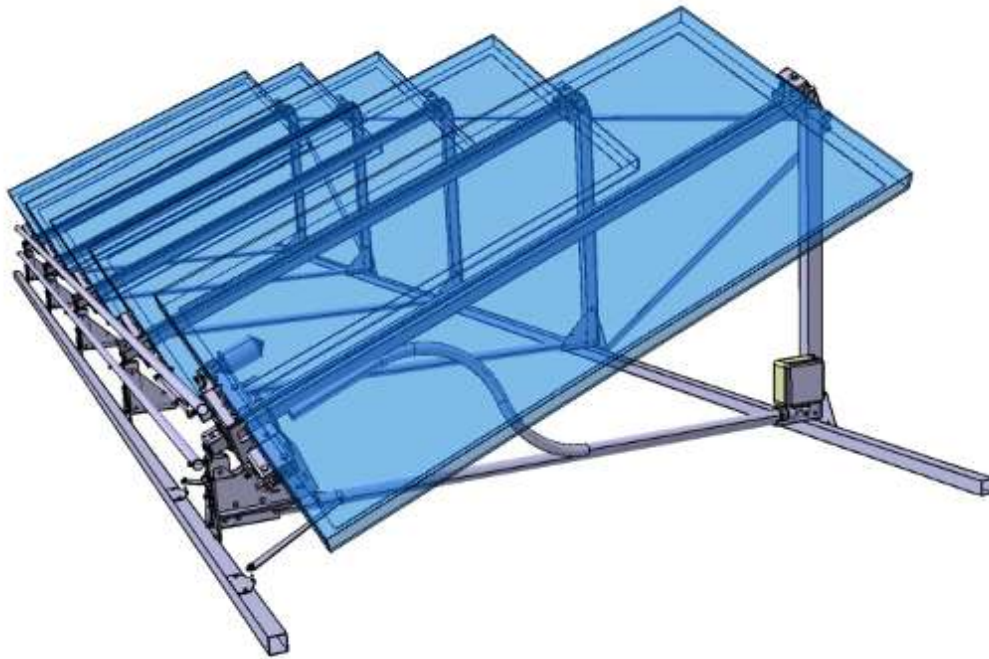


OPTIM-TOP Configurator Software Manual



Software Manual

Revision 1.0



www.sun-tracker-optimtop.com



OPTIM-TOP Configurator

Software Manual

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Icons

Icons that the reader may encounter in this manual are shown below, together with their meanings.



Additional information

Provides the user with tips, tricks and other useful data.



Warning

Provides the user with important information. Ignoring this warning may cause the device not to work properly.



Critical warning

Provides the user with critical information. Ignoring this critical warning may cause damage to the device.

Use OPTIM-TOP Configurator to configure the user and factory parameters of an OPTIM-TOP solar tracker, as well as to read errors that may have occurred in the system.

OPTIM-TOP Configurator allows for:

- Configure the user parameters.
- Read errors that may have occurred in the system.

1.1 Getting Started

Minimum computer requirements to run OPTIM-TOP Configurator software are:

- Microsoft Windows OS version XP, Vista or 7.
- Processor 1GHZ or higher with at least 64Mb of RAM.
- At least 25MB of free disk space.
- USB port for controller serial connection.

In order to install the OPTIM-TOP Configurator software, you must have Administrator privileges.

After installing the **OPTIM-TOP Configurator** software on your computer, you can run the application from your Start > Programs menu > OPTIM-TOP Configurator > OPTIM-TOP Configurator or from the shortcut on your desktop.



To always use the latest version of OPTIM-TOP Configurator download the software from www.sun-tracker-optimtop.com/Documentation.aspx

This section explains the necessary steps that you will need to follow to install the OPTIM-TOP Configurator application. Please follow them to ensure that the installation is done correctly.

The installation of the OPTIM-TOP Configurator has two differentiable parts that are both installed through the OPTIM-TOP Configurator installer:

- The OPTIM-TOP Configurator software
- The OPTIM-TOP Communication driver

First thing you'll need to do is download the last version of the OPTIM-TOP Configurator installer from the OPTIM-TOP webpage (www.sun-tracker-optimtop.com/Documentation.aspx).

Once you have the installer just double click the "OPTIM-TOP Configurator installer.exe" file to begin the installation.

First of all, the language selection dialog will pop-up:



Figure 1: Installer language selection dialog

Select the language that you prefer to use and click the OK button.

Once the language is chosen, the welcome dialog will pop-up.



Figure 2: Welcome dialog

Click the Next button and the license agreement will be shown. You must accept it to install the OPTIM-TOP Configurator software.

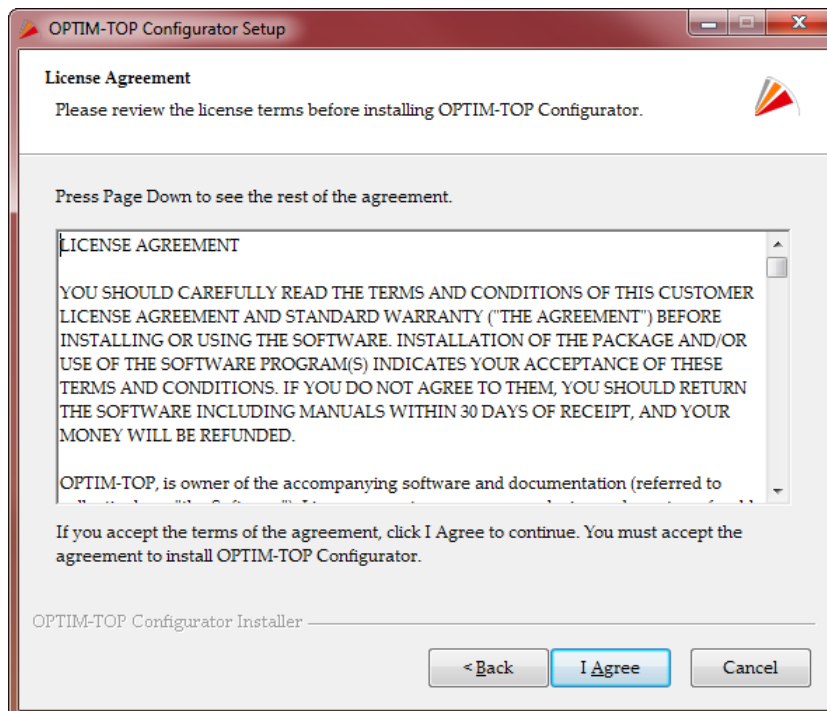


Figure 3: License agreement

In the next dialog, the installer will ask you where you want to install the OPTIM-TOP Configurator software.

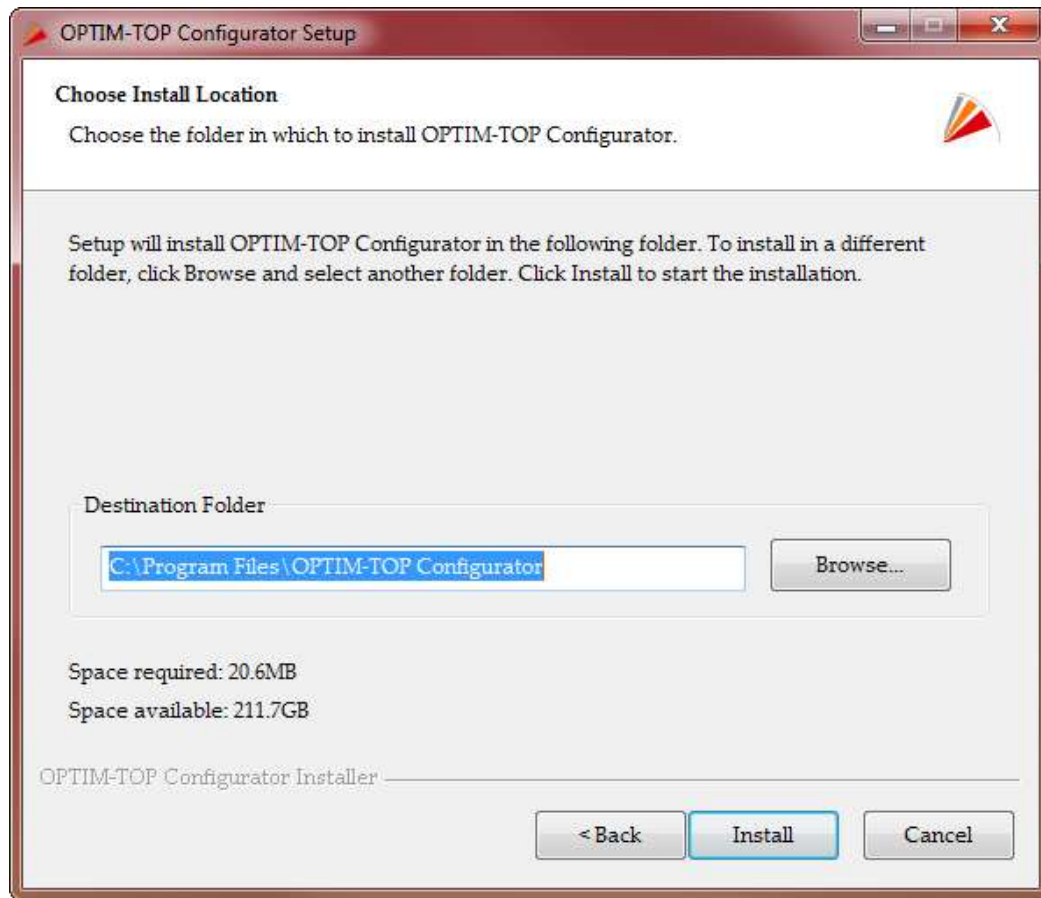


Figure 4: Choose an installation directory

Once you've chosen a directory, click the Install button to begin the OPTIM-TOP Configurator installation.

During this process the option of installing the communication driver will be given. Remember that you must install the communication driver to be able to establish a connection with the OPTIM-TOP control board. So click the Yes button and the installation of the driver will begin.

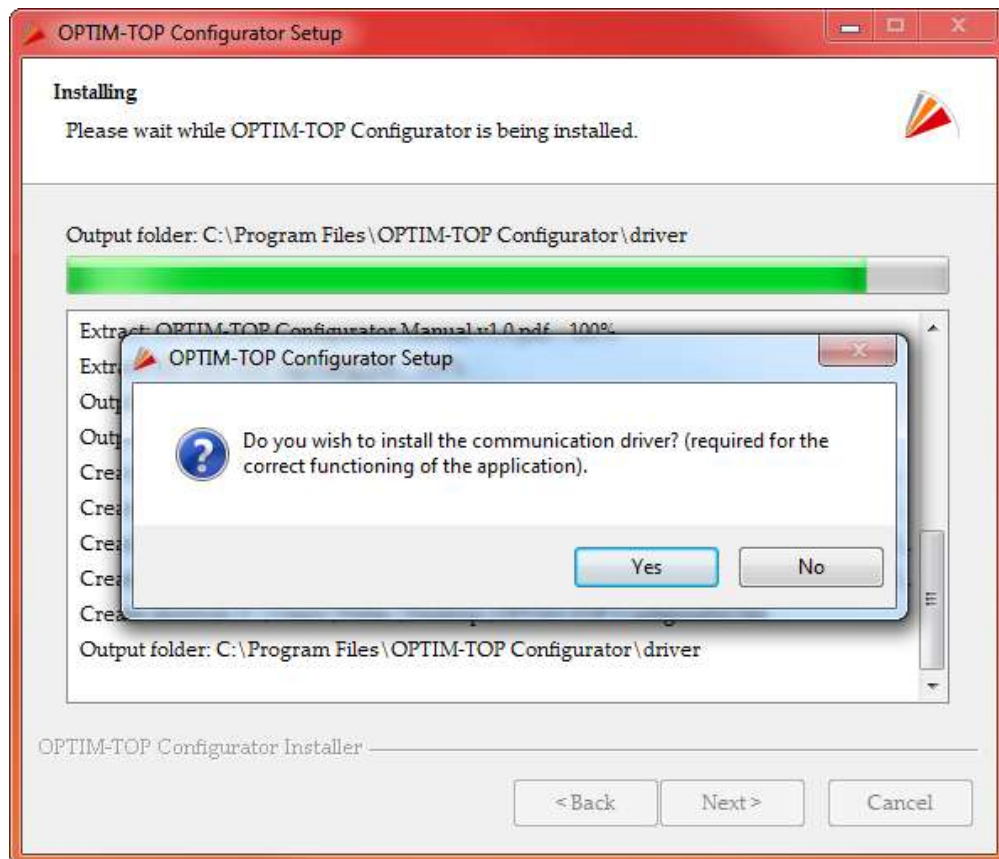


Figure 5: Install the communication driver

Once the windows security warning appears, click “Install this driver software anyway”.



Figure 6: Windows warning

Once the installation of the driver finishes, click the close button to continue with the installation of the OPTIM-TOP Configurator.

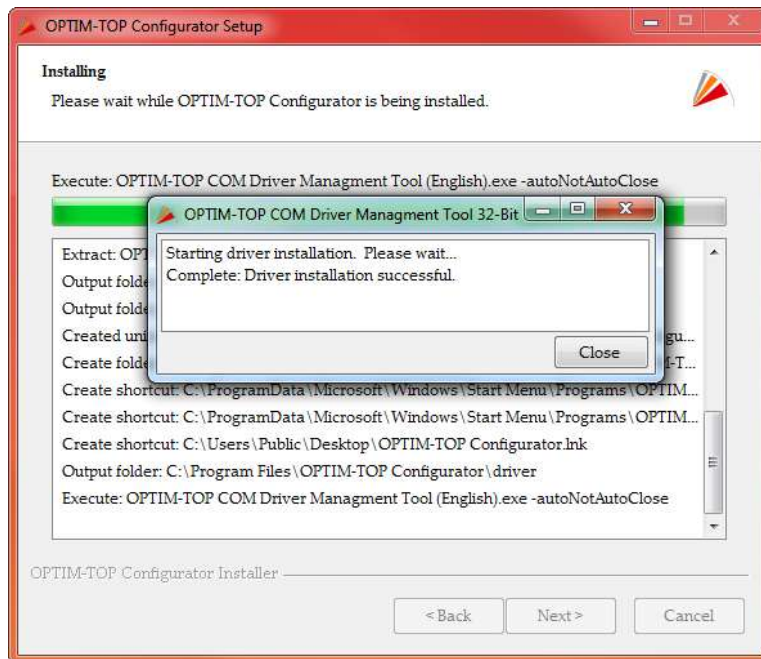


Figure 7: Driver installation finished



If the computer is not connected via USB with the OPTIM-TOP solar tracker when installing the software, the driver will just be saved in the computer driver store. On connecting later with the tracker, if Windows Vista or 7 is used, the driver will be installed automatically, if Windows XP is used, you'll need to select install the driver automatically if you're asked.

When the installation is completed click the Next button.

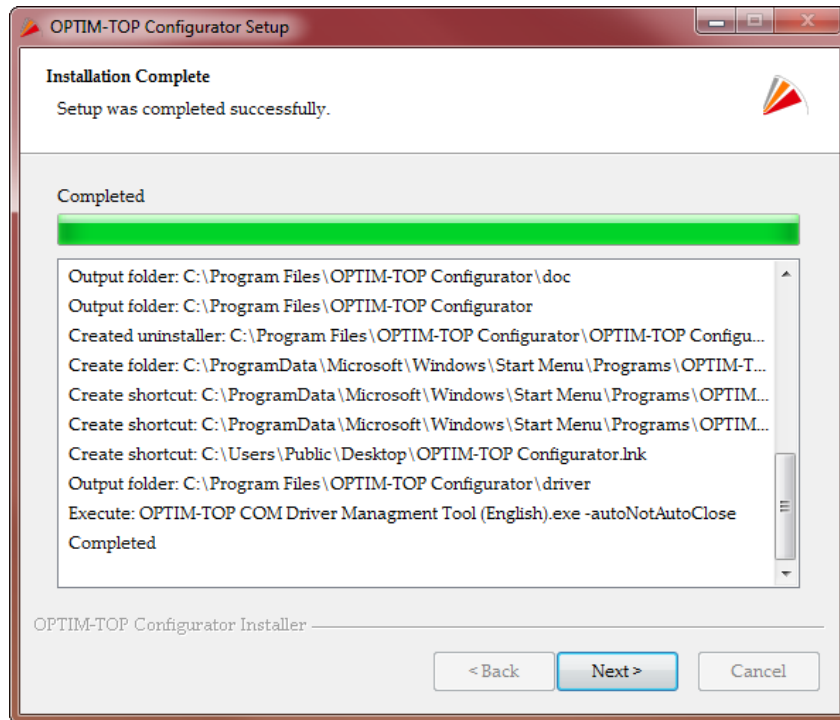


Figure 8: Installation completed

In the following dialog, click the Finish button to close the OPTIM-TOP Configurator installer.

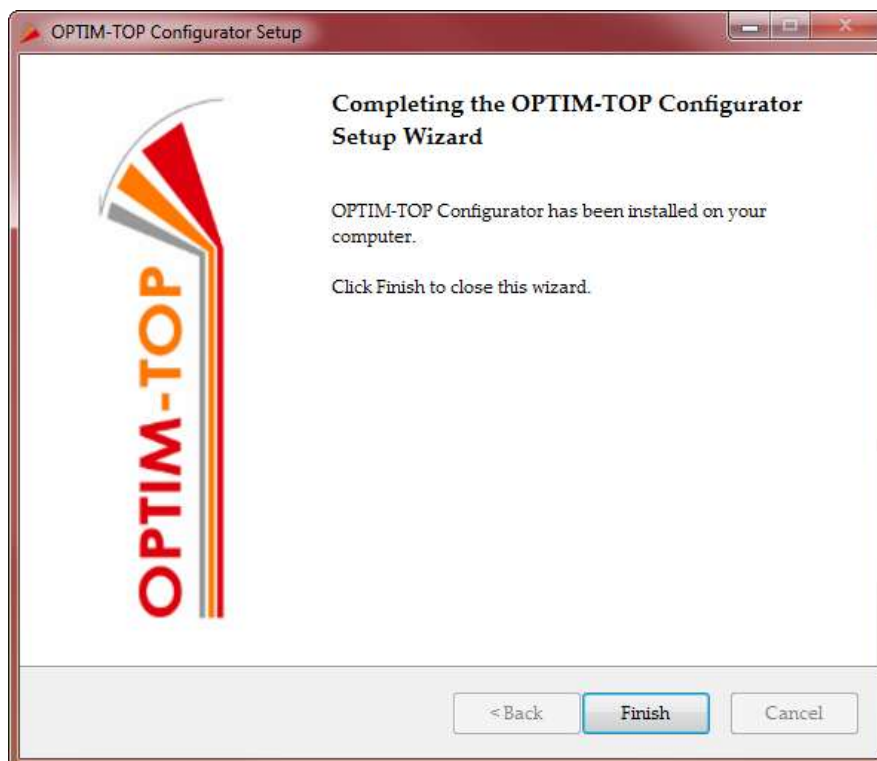


Figure 9: Finish dialog



The installer creates shortcuts on the desktop and in the Windows programs menu that will allow you to start the OPTIM-TOP Configurator software.

The installer also creates a shortcut, in the windows programs menu, to uninstall the OPTIM-TOP Configurator application from your computer.

3.1 Starting the application

To start the OPTIM-TOP Configurator, double click on the shortcut on your desktop or go to Start > Programs menu > OPTIM-TOP Configurator > OPTIM-TOP Configurator.

3.1.1 Language dialog

Upon starting the OPTIM-TOP Configurator software, a first dialog that allows the user to choose the language that desires to use will pop-up.

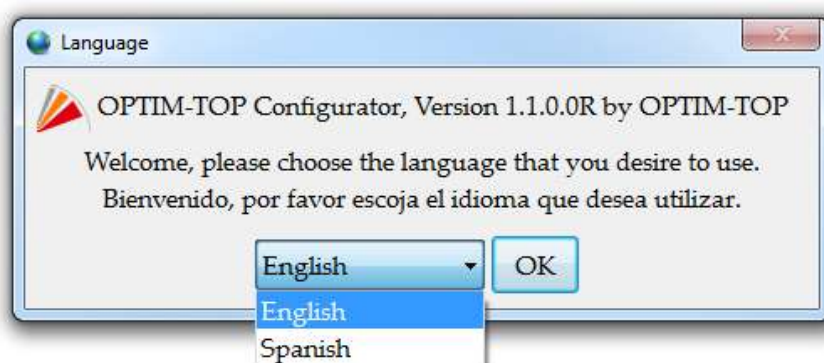


Figure 10: Application language dialog

To start the configurator, select a language from the list and click the OK button.



After clicking the OK button, the application will load the communication library. If this library is not found, an error will be displayed and the application will be ended. If this happens, try to reinstall the software.

3.2 Connecting to the OPTIM-TOP control board

3.2.1 Connecting the hardware

The first step you need to take in order to configure your system is to establish the communication with the OPTIM-TOP system. To do so, connect an USB between the OPTIM-TOP control board to your computer.



On connecting the USB, if the control board is in sleep mode (used when the sun is under the horizon to low the power consumption), the OPTIM-TOP tracker will wake up and will perform a homing process. During this process, the connection with the system will not be possible.

3.2.2 OPTIM-TOP Configurator dialog

Once a language is chosen, the dialog that allows the connection and disconnection with an OPTIM-TOP solar tracker system will be displayed.

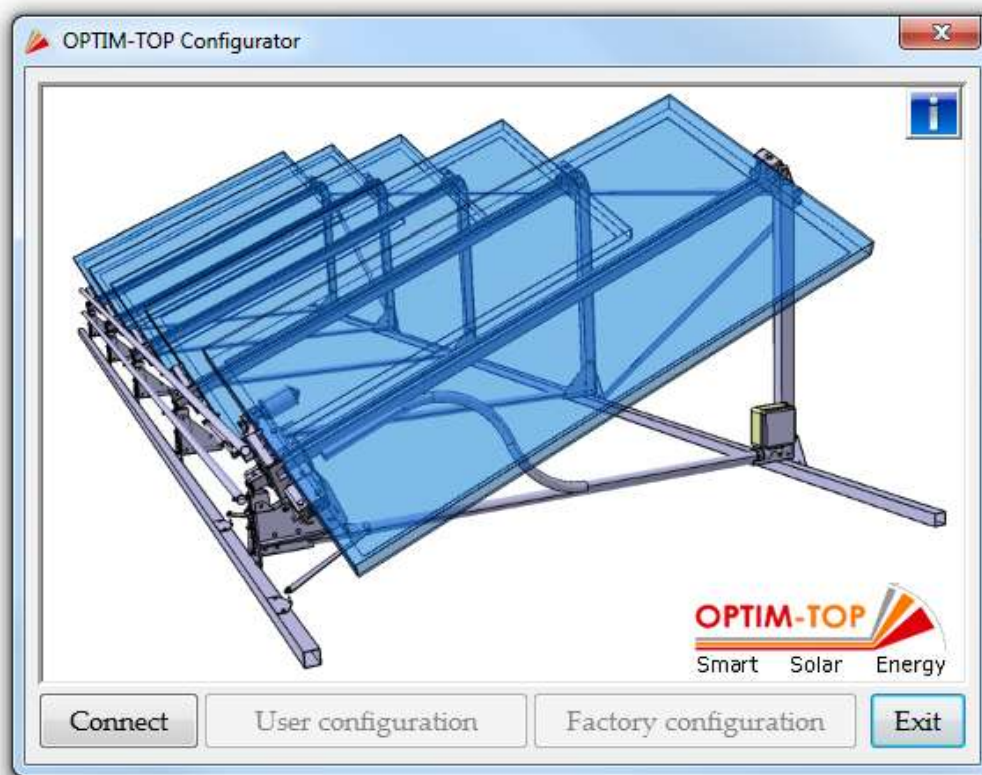


Figure 11: Before establishing the connection

As the rest of the application, this dialog is very easy to use, simply click on the connect button and the system will search through all the COM ports of your computer and locate the one where the OPTIM-TOP is connected.



When connecting to the OPTIM-TOP, it's possible that the photovoltaic panels start moving. Be sure to keep a safety distance and that there is nothing in their way.

If the connection with the Solar Tracker is not possible, a message will be displayed to the user.



Keep in mind that only one connection is allowed at a time.



If the connection with the Solar Tracker is not possible, make sure that the USB is correctly connected (it's recommendable to unplug it and plug it again). If it is, make sure that a COM port appears in the Windows Device Manager with the name *OPTIM-TOP USB Communication Port*. In case it does not appear, first make sure that the OPTIM-TOP system is connected to the electric network, if this doesn't work, try to reinstall the communication driver (chapter 2).



Some antivirus software could block the opening of COM ports.

Once the application has established the connection with the solar tracker system, its current configuration will be downloaded into the OPTIM-TOP Configurator. If a communication error occurs during this process, a message will be displayed to the user and the connection will be closed.

The next step that the application will perform is to try to stop the OPTIM-TOP system and put its photovoltaic panels at rest position (horizontal in reference to the tracker mechanical structure).

If the OPTIM-TOP solar tracker is in an error state, the error will be downloaded and a message, displaying the current problem, will be displayed to the user informing about the common reasons why that error happens. As always, if a communication error occurs, a message will be shown to the user and the connection will be closed.



If the OPTIM-TOP solar tracker is currently performing a homing process, a message will be displayed to the user asking him to try to connect when it's finished and the communication will be ended.

Once the connection is established and the current configuration of the OPTIM-TOP system has been downloaded into the application, the user and factory configuration will be enabled and the connect button will change into a disconnect one.

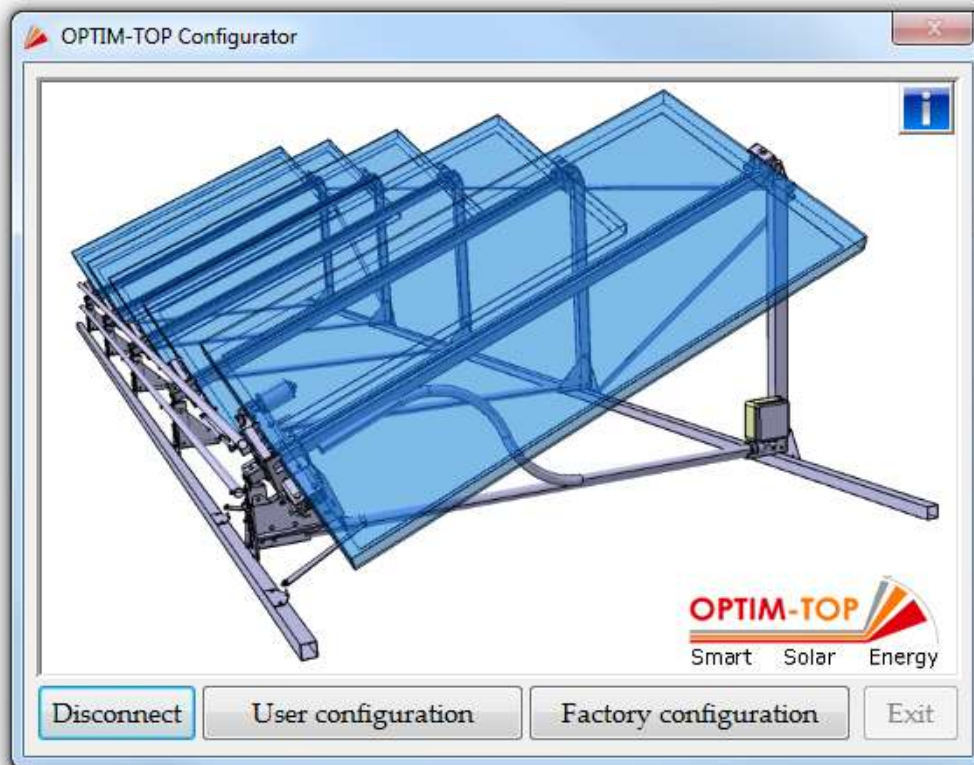


Figure 12: Connection established with the OPTIM-TOP

When the disconnect button is pushed, the communication with the OPTIM-TOP control board will be ended and, if the system is not in an error state and it has valid user and factory configurations, the OPTIM-TOP solar tracker will start its normal functioning.



When disconnecting from the OPTIM-TOP, it's possible that the photovoltaic panels start moving. Be sure to keep a safety distance and that there is nothing in their way.



Remember that you can check the OPTIM-TOP control board LEDs, once the application has been disconnected, to see the current state of the solar tracker.



Also remember that, if the OPTIM-TOP system is in an error state, after fixing the problem, you must reset the power of the system (keeping it down for at least 1 minute) to initialize its normal mode of operation.



The button with the information symbol at the top-right part of the dialog, opens a internet browser window to the web where the OPTIM-KIT documentation can be downloaded.

The exit button of the OPTIM-TOP Configurator, closes the application (if a connection with an OPTIM-TOP system is active this option will be disabled).

If the user configuration button of the OPTIM-TOP Configurator dialog is pushed, a dialog that allows to set the user configuration will pop-up.

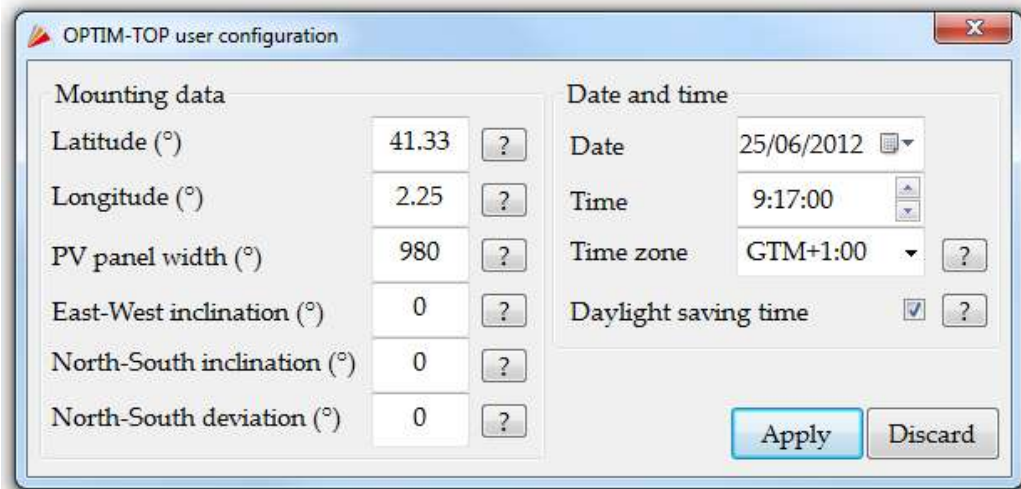


Figure 13: User configuration dialog

The user configuration dialog, divides the parameters into two blocks, Mounting data and Date and time, which are explained in the next subsections.



Some parameters have a help button  that will make pop-up a dialog that provides the user with useful information.

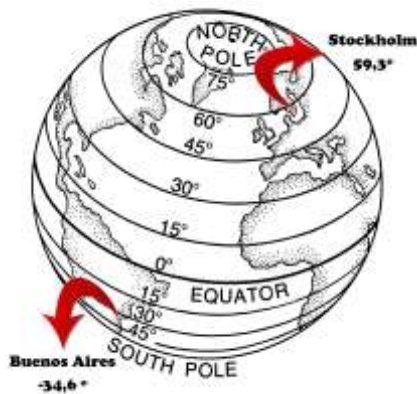
The user configuration dialog also has a couple of more buttons:

- The apply button will send the configuration displayed on the dialog to the solar tracker and close the dialog. If some communication error occurs during this process, a message will be displayed to the user and the communication will be closed.
- The discard button will close the dialog without updating the configuration of the Solar Tracker.

4.1 Mounting data

This section of the solar tracker user configuration dialog, allows setting the parameters that are related with the site where the OPTIM-TOP solar tracker has been installed, as well as the photovoltaic panels that have been mounted into the system.

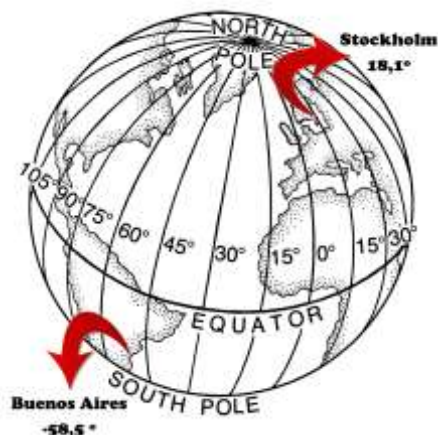
4.1.1 Latitude



Latitude is a geographic coordinate that specifies the North-South position of a point on the Earth's surface. Lines of constant latitude, or parallels, run East–West as circles parallel to the equator. Latitude is an angle which ranges from 0° at the Equator to 90° at the North Pole and to -90° at the South Pole. GPS coordinates can be found in <http://maps.google.com>.

Figure 14: Latitude

4.1.2 Longitude



Longitude is a geographic coordinate that specifies the East-West position of a point on the Earth's surface. The longitude of places is measured as an angle, East or West from the Greenwich Meridian, ranging from 0° at the Greenwich Meridian to 180° eastward and -180° westward. GPS coordinates can be found in <http://maps.google.com>.

Figure 15: Longitude

4.1.3 Photovoltaic panel width

This parameter, as shown in the picture, specifies the amplitude of the photovoltaic panels mounted in OPTIM-TOP system. This value will be used in the calculations that are done to avoid shadows between contiguous photovoltaic panels in the sun tracking algorithm.

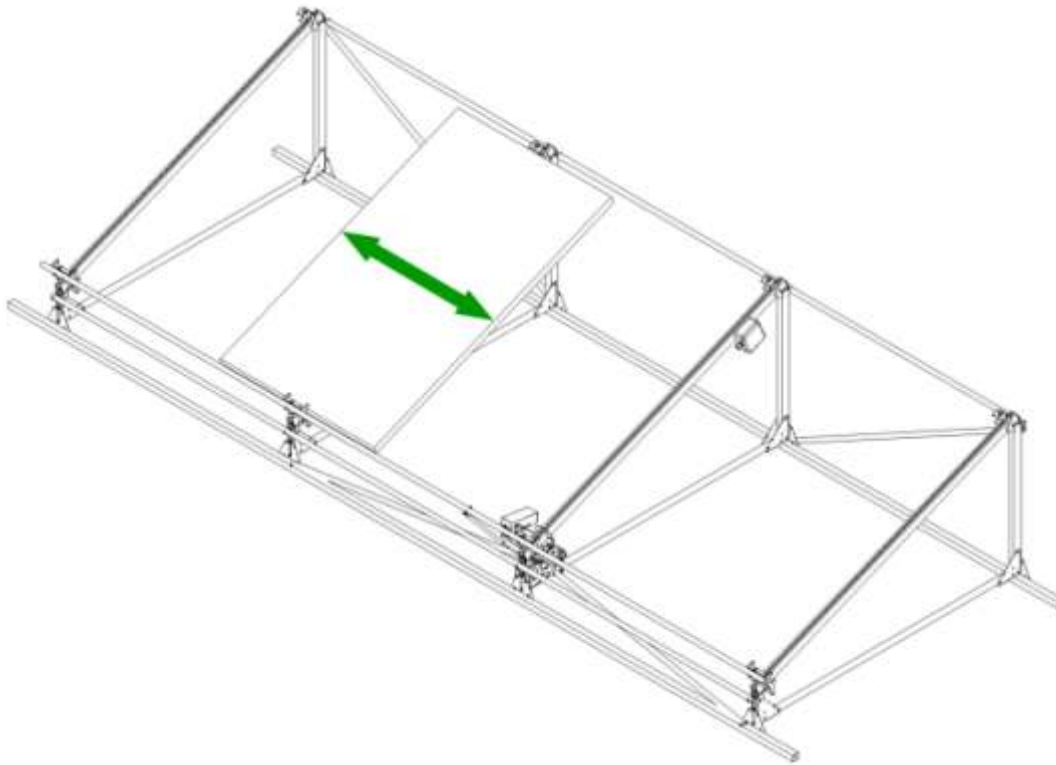


Figure 16: Photovoltaic panel width

4.1.4 East-West inclination

This parameter specifies the inclination of the structure respect its East-West axis. This angle will depend on the inclination of the building and its roof. It has to be measured with an appropriate device. The angle will be positive if the structure elevates from the East and negative if it does from the West.

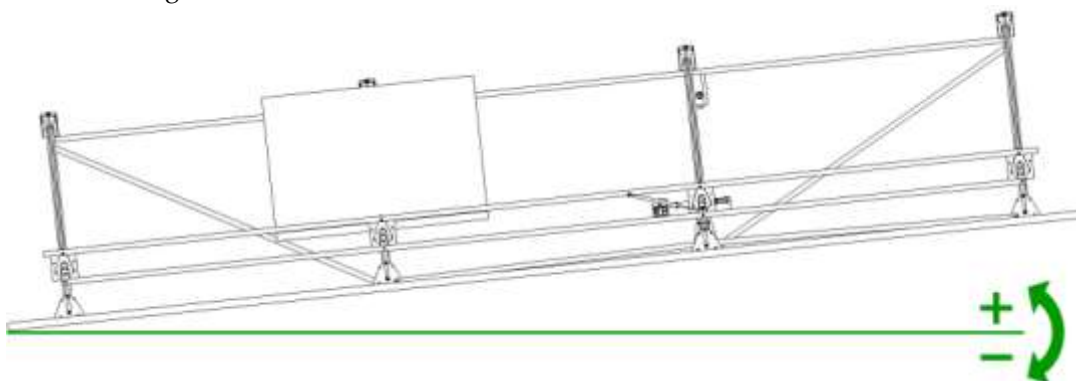


Figure 17: East-West inclination

4.1.5 North-South inclination

This parameter specifies the inclination of the structure respect its North-South axis. This angle will depend on the inclination of the building and its roof. It has to be measured with an appropriate device. The angle will be positive if the structure elevates from the North and negative if it does from the South.

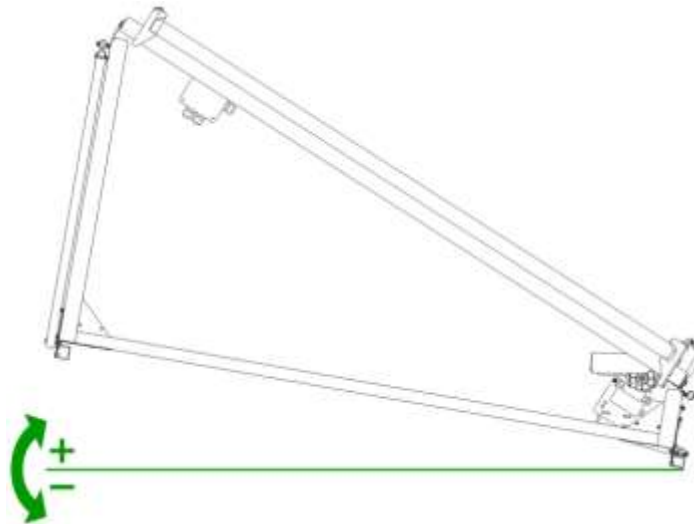


Figure 18: North-South inclination

4.1.6 North-South deviation

This parameter specifies the angle between the North-South axis of the Earth and the axis of rotation of the photovoltaic panels. This angle will depend on the installation of the Sun Tracker system and it has to be measured with an appropriate device. This angle will be positive in the South-East quadrant and negative in the South-West one.

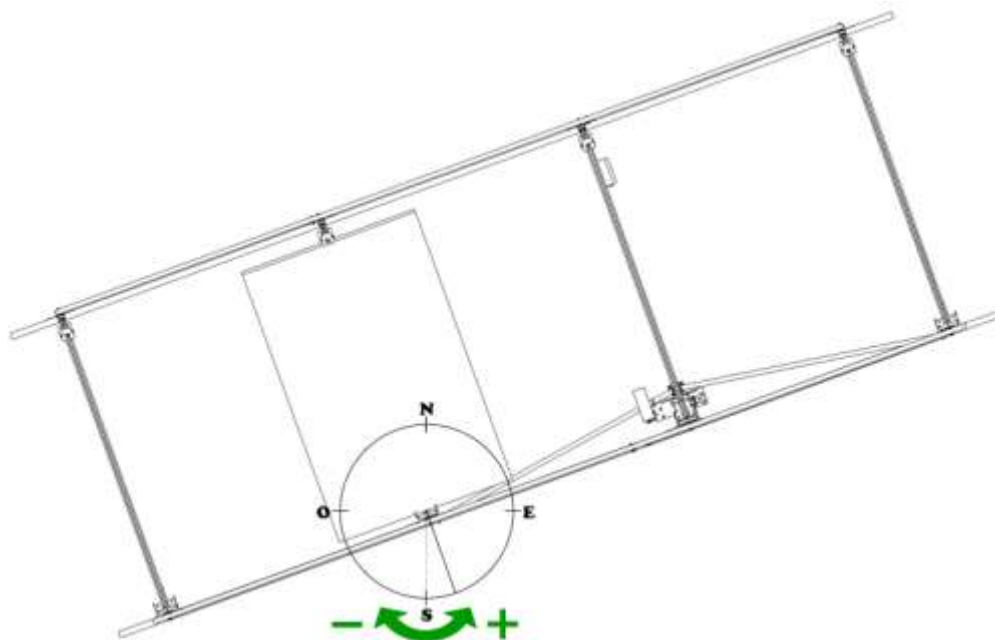


Figure 19: North-South deviation

4.2 Date and time

This section of the user configuration dialog, allows setting the parameters that are related with the current date and time.

4.1.2 Date

Indicates the current date of the site where the OPTIM-TOP solar tracker system is mounted.

4.1.2 Time

Indicates the current legal time of the site where the OPTIM-TOP solar tracker system is mounted.

4.1.3 Time zone

A time zone is a region on Earth that has a uniform standard time for legal, commercial and social purposes. Most of the 39 time zones on land are offset from Coordinated Universal Time (UTC) by a whole number of hours (UTC-12 to UTC+14), but a few are offset by 30 or 45 minutes. Time zones can be found in http://en.wikipedia.org/wiki/Time_zone.



Figure 20: Time zone

4.1.3 Daylight saving time

Daylight saving time (DST) (also summer time in several countries), indicates if the practice of advancing the clocks so that evenings have more daylight and mornings have less, is used in the place where the OPTIM-TOP solar tracker system is installed.

Typically clocks are adjusted forward one hour near the start of spring and are adjusted backward in autumn.

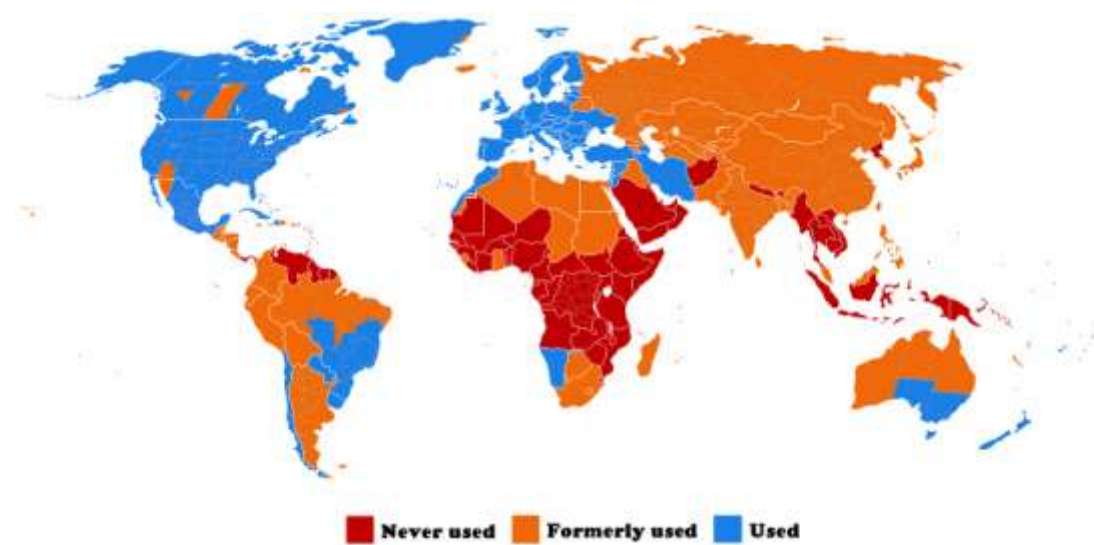


Figure 21: Daylight saving time