

StellariumScope User's Guide

Original Version 2007.12.10, Scott Pinkham – ByteArts.com

Version 2010.03.14 Release Candidate 1, [Welsh Dragon Computing](#)

This is a complete re-write of StellariumScope with respect to how it configures Stellarium. It now uses the plugin system rather than the original config.ini system. If you try this version, please backup you config.ini and telescopes.json files first. **This version will not work with older versions of Stellarium (except possibly 0.10.3). It has only be tested with version 0.10.4 and Windows XP/Vista/7.**

It does not add any major features. See the documentation for new minor features.

Version 2010.02.06 alpha, [Welsh Dragon Computing](#)

- **This version has been replaced by the above version.**
- functions can be disabled for users that only want (say) the slew function. Please note that this means the enable check box works differently from all previous versions.
- the keys assigned to any function can be configured from the program instead of requiring an edit of the ini file (keys are still limited to Ctrl-1 to Ctrl-8 based upon Stellarium's requirements. Currently there is no way to alter this).
- colours have been changed
- it is possible to customize the colours that are used
- the program now works on computers using 120DPI. The initial run may require the windows to be adjusted in size.
- the size of the window is stored in the ini file so that adjustments are retrieved on the next run
- a menu item to display the name and location of the ini file has been added.
- this version has been tested only with Windows XP and Stellarium 0.10.2 (It should work with 0.10.4) I would recommend avoiding version 0.10.3.
- the ini file labels have been made more end user "friendly". Note: You should delete the old ini file before running the new StellariumScope version(you may want to save a copy.)
- attempts to start a second instance of StellariumScope no longer cause an error

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Version 2010.01.23 beta, [Welsh Dragon Computing](#)

Changes for this version:

- telescope connect is always enabled
- the default control keys have changed to 1, 3, 5
- you can edit the ini file to change the control keys
- documentation has been added to explain how to run StellariumScope on a computer different from Stellarium

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1. Overview

This program works in conjunction with the [Stellarium](#) planetarium software and the [ASCOM](#) telescope drivers to control a telescope that is connected to your Windows PC, allowing you easily pick an object and have the telescope move to point at that object. It can also be used to “synchronize” the telescope's position (RA/Dec) to a known object's position.

2. License

THIS SOFTWARE IS PROVIDED AS-IS, WITH NO WARRANTY EITHER EXPRESSED OR IMPLIED. USE AT YOUR OWN RISK.

3. Requirements

- Windows XP/Vista/7
- ASCOM telescope drivers and the required cable to connect your telescope to your PC. You can download the ASCOM package at www.ascom-standards.org. You can use the software without a telescope by choosing the “Telscope Simulator” driver.
- Stellarium software v0.10.4. You can download Stellarium from www.stellarium.org.

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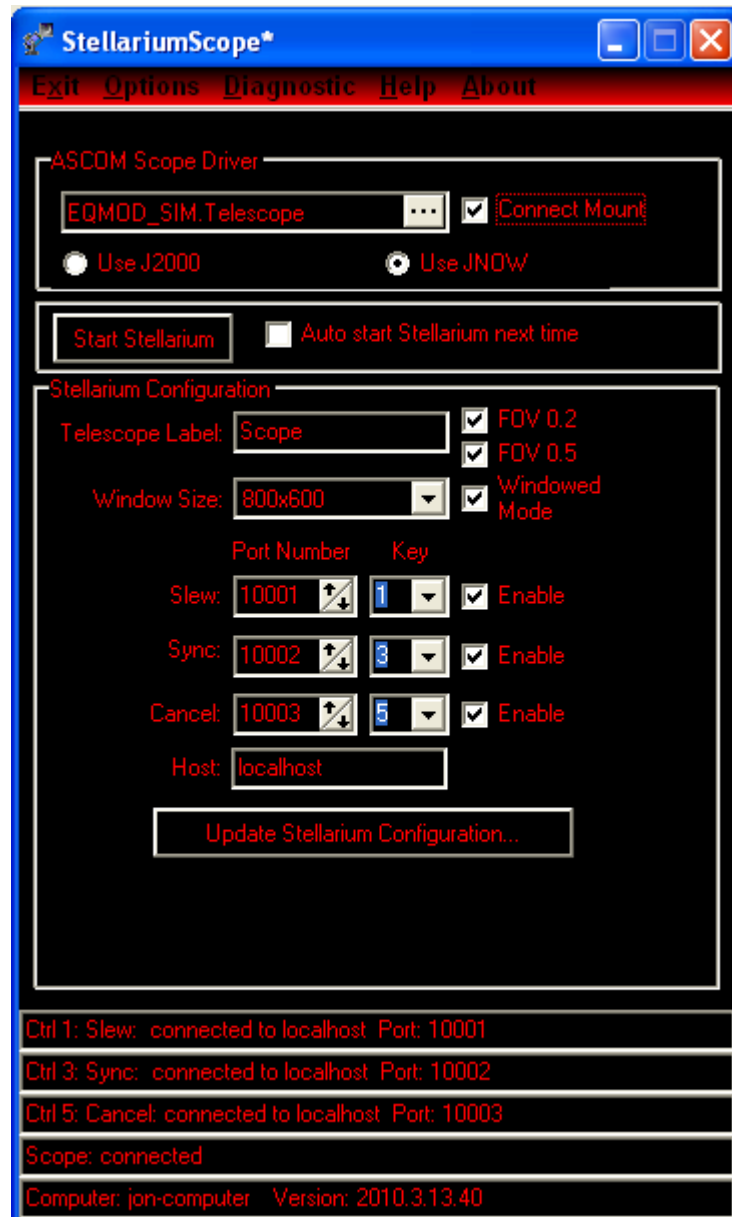
4. Installation

Before installing the StellariumScope software,

- install the ASCOM drivers for your telescope
- install Stellarium software.
- run Stellarium at least once so that it can create appropriate initialization files.
- download and install the StellariumScope package from www.welshdragoncomputing.ca under the menu item "StellariumScope". An older version of StellariumScope that you might prefer is still available at ByteArts.com
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When you run StellariumScope you will see a window similar to the following:



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5. Stellarium Configuration

By default, telescope control is not enabled in Stellarium, so you need to configure it. You do this using one of two methods:

- automatically from within StellariumScope,
- by manually configuring Stellarium using the *plugins* | *telescope control* option..

6. Stellarium Automatic Configuration (essential items)

The following information shows a number of settings with respect to Stellarium that can be made automatically. The settings with respect to the ports used for communication are essential (otherwise it won't work!).

	Port Number	Key	
Slew:	10001	1	<input checked="" type="checkbox"/> Enable
Sync:	10002	3	<input checked="" type="checkbox"/> Enable
Cancel	10003	5	<input checked="" type="checkbox"/> Enable

Stellarium and StellariumScope communicate with each other using a TCP/IP connection called a "socket". While this type of connection is normally used by computers to communicate with each other across the Internet, it is also used by software programs on the same computer to "talk" to the each other (as in this case).

10001 & 10002 & 10003 are the default TCP/IP port numbers that are used for the connection to the Stellarium program. These can be changed if they conflict with other ports used on your computer.

The default keys used to control slew, sync and cancel are Ctrl-1, Ctrl-3 & Ctrl-5 . You can use the drop down to select any keys from 1 through 9. The choice of these keys is based upon Stellarium. StellariumScope has no choice but to use this range of keys.

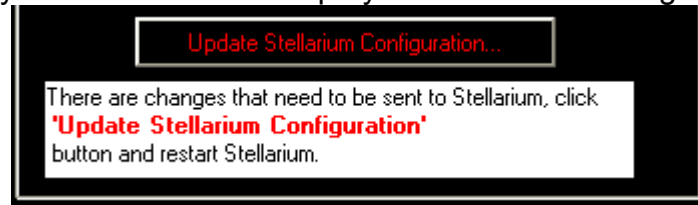
If you don't need a function to be activated (such as sync or cancel), simply uncheck the "enable" checkbox.

For any changes, remember to update the Stellarium configuration by using the [Update Stellarium Configuration] button.

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6. Stellarium Automatic Configuration (continued)

The very first time you use StellariumScope you will need to configure Stellarium.



- Simply click the [**Update Stellarium Configuration**] button to set the correct configuration for Stellarium to communicate with StellariumScope.
- You will be informed about the location of the *config.ini* file that is to be changed. If it is not the correct one you will have to use the manual process of configuration outlined later in this document
- Information will also be written to the file *telescopes.json*. This file is typically in a sub-folder of the above folder (*modules\TelescopeControl*)

The manual setup instructions listed below give for details about what is actually configured. Also see www.stellarium.org/wiki/index.php/Telescope_Control for more information.

Making any changes to the port number, key number or enabling/disabling will require an appropriate change to Stellarium (best accomplished by using the [Update Stellarium Configuration] button).

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7. Automatic Setting of Other Optional Stellarium Settings

There are several other optional Stellarium settings that can be configured. You can make all or some of the following changes but you must click the

[Update Stellarium Configuration]

button and restart Stellarium (if it's running) after you have changed the options..



Once your telescope is properly connected, Stellarium will display its position. You can choose the label that is displayed and you can also choose to display one or two ocular FOV indicators to give you some idea of the telescopes FOV.

Stellarium displays appears in several different formats. The default mode fills the screen without any borders or top title bar. However, you can select a reduced size in a traditional window format by selecting "Windowed mode" and your preferred size

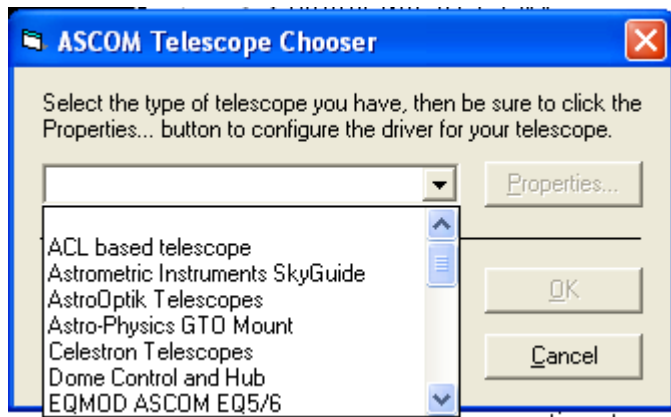
Important:

For any of the above settings to be applied you must

- a) ***click the [Update Stellarium Configuration] button***
- b) ***restart Stellarium if currently running.***

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8. Scope Driver Setup



- Connect the telescope to the computer and power on the telescope
- run StellariumScope
- select the ASCOM telescope driver by clicking on the “...” button in the ASCOM Scope Driver box. The ASCOM Telescope Chooser dialog box will then be displayed allowing you to select and configure the interface with the telescope. Once you have selected your mount, you may need to use the [Properties] button to configure the control port, data settings etc.
- Check the “Connect” box to enable the connection to the telescope.
- Click on J2000 or JNOW as appropriate. You can change back and forth at any time.

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9. Starting Stellarium

You can start Stellarium by clicking the [Start Stellarium] button or you can start Stellarium from any of the associated Windows icons.

Please note that if you have a window opened with the name Stellarium the [Start Stellarium] button will not work.



You can also choose to have StellariumScope automatically run the Stellarium program whenever you run StellariumScope.

10. StellariumScope Main Menu

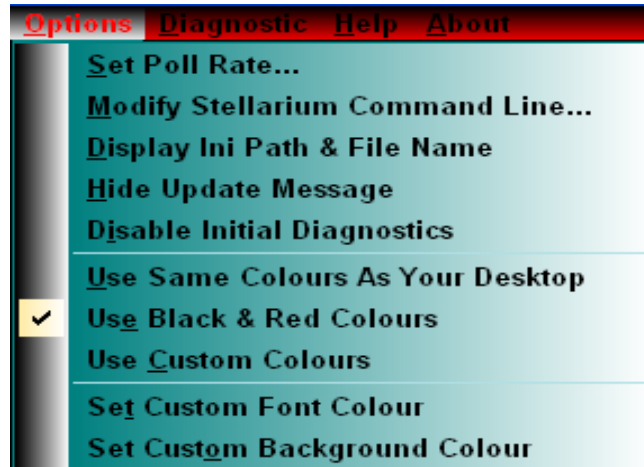


The main menu is essential self-explanatory.

1. The options are explained below
2. the diagnostic menu item checks the configuration of Stellarium against the StellariumScope settings
3. the Help menu item displays this PDF

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11. Other StellariumScope Options



You can change the frequency at which StellariumScope queries the telescope position by selecting “Set Poll Rate” from the Options menu and entering in the polling interval in seconds. Keep in mind that if the poll interval is too fast then telescope may not be able to respond in time and/or may return spurious values. If the interval is too slow, then the telescope position displayed in Stellarium will update slowly.

You can also choose to change the Stellarium start up command line from the Options menu. This would be useful for cases where you have more than one version of Stellarium installed. Perhaps you have installed Stellarium 0.10.x in (say) folder Stellarium2 and you want StellariumScope to start version 0.10.x even though version 0.9.x is installed in folder Stellarium.

You can display the path and file name that StellariumScope has calculated in order to find folders used for configuration. There are so many varieties of installation, StellariumScope may not figure out the correct location. Looking at this value will help you diagnose issues of configuration.

You may wish to hide the update message that appears below the [Update Stellarium Configuration] button. This would possible be the case if you have manually setup Stellarium but StellariumScope doesn't know this and reports the need to perform an update.

You may wish to disable the initial diagnostics that gives a pop up message if StellariumScope questions your configuration. Again, this is possibly the case if you have done a manual installation.

You can select different options for colour.

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12. Manual Configuration

1. Start Stellarium
2. Click the "Configuration" icon on the left
3. Select "Plugins"
4. Select "Telescope Control"
5. Tick "load at Startup" if not already ticked. If it was not already ticked you will have to restart Stellarium before the next step
6. Click [Configure] button
7. Use [Add] or [Configure] buttons as appropriate.
8. Make sure to select "External software or remote computer" for "Telescope controlled by"
9. You should set "Start/Connect at Startup"
10. If you are using the sync and cancel features, the telescopes names need to be "Sync" and "Cancel". The slew telescope name is your choice.
11. Set Host and port as appropriate
12. Click [OK]

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13. Using Two Computers

There are a number of reasons that you may want to run Stellarium on one computer and have StellariumScope and your telescope drivers running on another networked computer. As long as Stellarium knows the IP address of the computer where StellariumScope is located and you have allowed traffic through any firewalls, it works quite well.

You will probably should use use a fixed IP address for the StellariumScope computer.

One way to do it:

1. Install StellariumScope on both computers
2. Configure StellariumScope with the same options on both computers
3. modify the "Host" entry from 'localhost' to the iIP address of the telescope control computer (i.e not the IP address of the Stellarium computer).
4. Use the [Update Stellarium Configuration] button on both computers.
5. Close down StellariumScope on the Stellarium computer.
6. Start up Stellarium

Here are some reasons that Stellarium will not communicate with StellariumScope when 2 computers are involved.

1. The StellariumScope/telescope driver computer has been rebooted with a new/different IP address.
2. The control keys defined for StellariumScope do not match the control keys defined for Stellarium.
3. The ports defined for StellariumScope do not match the ports defined for Stellarium.

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14. Controlling the Telescope

Once the software has been configured, you are ready to control your telescope using Stellarium! Just follow these steps:

1. Power on the telescope and connect it to the computer.
2. Start the StellariumScope program and click on the "Connect" box to enable telescope control. Check the status bar at the bottom of the window and make sure it says "Scope: Connected".
3. Run Stellarium (if it's not already). Check the status bar at the bottom of the StellariumScope window and make sure it says "Connected" for Slew (and probaly), Synch & Cancel
4. Click on an object in Stellarium, then press **<Ctrl+1>** (the control key and the 1 key together). *Note; This is the default key for slew... use the key that you have defined.* The scope will slew to the object. You can cancel the slew by pressing **<Ctrl+5>** (if the feature has been enabled). Again, use the key that you have defined.
5. You may then need to adjust the scopes pointing. Use the appropriate controls on the mount and then synchronize the mount to the current object by clicking **<Ctrl+3>** (the control key and the 3 key together). The telescope is not actually moved, but the RA and Dec coordinates of the scope are set to match the object.

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15. Problems

Most difficulties typically relate to the configuration of Stellarium not matching the StellariumScope setup. If you have difficulties making Stellarium control your telescope you should:

1. confirm the settings you have selected for StellariumScope. The critical ones are the ports you have selected for control and the ASCOM scope driver.
2. Then click the **[Update Stellarium Configuration]** button .
3. Then restart Stellarium.

These steps make sure that Stellarium and StellariumScope agree on their communications protocols.

NOTE ABOUT FIREWALLS: If you have a firewall enabled, then you could possibly see a warning when you run StellariumScope – in this case, you should “unblock” StellariumScope in your firewall software, otherwise it will not be able to communicate with Stellarium. StellariumScope does not send any information over the Internet. In most cases the firewall will not be an issue and no settings will have to be changed.

16. Uninstalling StellariumScope

To uninstall StellariumScope use the Windows “Add or Remove Programs” option. You may also have to manually remove the following folder:

C:\Program Files\ByteArts\StellariumScope

You may also have a left-over file call StellariumScope.ini in the Stellarium configuration folder.

If you continue to use Stellarium without StellariumScope, you will have to manually remove the 'telescopes' using the Stellarium configuration option. See details in the manual installation section of this documentation.