

Controlling a Telescope Mount from a PC over Bluetooth Using ASCOM Drivers

This guide describes how to connect a Celestron telescope mount to your computer over Bluetooth using ASCOM drivers which will allow you to control the telescope mount using standard ASCOM based astronomy software.

Our test setup is based on a Celestron telescope GT Mount with NexStar+ hand control and the operating system is Windows 7 64-bit.

This setup has been tested and confirmed working with the following software and mounts but will most likely work with all ASCOM based software; and since most mounts mainly works the same way we expect it will also work with most (possibly all) mount variations.

Tested and confirmed working software:

- Cartes du Ciel
- Starry Night Orion Special Edition
- PHD2
- Meade Autostar Suite

Tested and confirmed working mounts:

- Celestron CGE Mount
- Celestron GT Mount
- Celestron SLT Mount
- Meade LX200R Mount (using Meade interface cable)
- Meade LX75 (using Meade interface cable)

Tested and confirmed working controllers:

- NexStar+ hand control
- Celestron StarSense Auto Telescope Alignment Accessory
- Celestron NexRemote (by [using paired adapters](#) only)

The Setup	2
A look at the parts you need	2
Installing the drivers	5
Pairing the serial Bluetooth adapter with your computer	6
Connecting the Bluetooth adapter to the hand controller	12
Known Issues	16

The Setup

The setup is rather straightforward and looks like this:



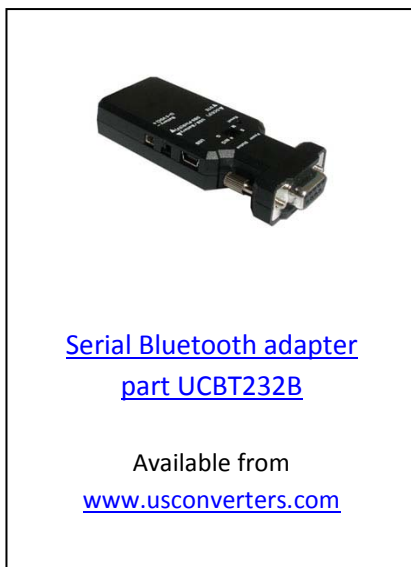
You will need a computer with built-in Bluetooth or a USB Bluetooth dongle if your computer does not have built-in Bluetooth.

The serial Bluetooth adapter is connected to the hand control via a RJ11 to DB9 female cable. The hand control is then connected to the telescope mount.

You will need a male/male gender changer to connect the serial Bluetooth adapter to the DB9 end of the RJ11 to DB9 cable.

A look at the parts you need

Below is a list of parts we use for this setup; some are required, some are highly recommended and some are optional.



or



Required
(included with adapter)



[Male / male gender changer](#)
[part CN05B](#)

Available from

www.usconverters.com

You will need this to be able to connect the Serial Bluetooth adapter to the RS232 end of the RS232 / RJ11 cable which is connected to the hand control.

Required



[RS232 / RJ11 Cable](#)
[part 93920](#)

Available from

www.celestron.com

This cable is used for connecting the serial Bluetooth adapter to the hand control.

Optional



[USB to RS232 adapter](#)
[part XS882](#)

Available from

www.usconverters.com

This part is optional in most cases and only needed if you need to change the serial Bluetooth adapter's settings. In most cases this is not needed since most telescopes has 9600bps as default. Alternatively the Bluetooth adapter's baud rate can be changed over Bluetooth however this can be a challenge if you are not familiar with this process; using this USB to RS232 adapter is much easier.

Optional



[USB Bluetooth dongle](#)

[part ES-388](#)

Available from

www.usconverters.com

You only need this USB Bluetooth adapter if your laptop or desktop computer does not already have Bluetooth capabilities.

Optional



[Rechargeable USB Battery](#)

[part 206647](#)

Available from

www.usconverters.com

This rechargeable lithium USB battery pack is optional but very useful if you have no other power source for the serial Bluetooth adapter.

Installing the drivers

Make sure you have the latest ASCOM drivers and Celestron drivers installed on your computer. As of this writing (June 2014) the latest drivers are:

ASCOM Platform 61SP1RC1, this is a Release Candidate currently available here:
<http://www.usconverters.com/downloads/ASCOMPlatform61SP1RC1.zip>

When this version of ASCOM is officially released it will be available here:
<http://ascom-standards.org/Downloads/Index.htm>

Notice: this setup will **NOT** work with any versions earlier than above version ASCOM Platform 61SP1

Celestron Unified (5.0.30):
<http://ascom-standards.org/Downloads/ScopeDrivers.htm>
Direct download link:
[http://download.ascom-standards.org/drivers/Celestron\(5.0.30\)Setup.exe](http://download.ascom-standards.org/drivers/Celestron(5.0.30)Setup.exe)

(Optional, only if you use a USB to RS232 adapter)
FTDI drivers for the USB to RS232 adapter:
http://www.usconverters.com/downloads/drivers/ftdi_drivers_manuals_all.zip

Pairing the serial Bluetooth adapter with your computer

If your serial Bluetooth adapter's serial number is 14090200 or higher then the default baud rate is 9600bps which is also the default baud rate for most telescope mounts and you can continue with pairing the adapter with your computer as described below. If your serial Bluetooth adapter's serial number is 14090200 or lower the default baud rate is 19200bps and you will need to first change it to 9600 before you proceed (please see the adapter's setup guide for how to change the baud rate).

Now you need to pair the serial Bluetooth adapter with your computer.

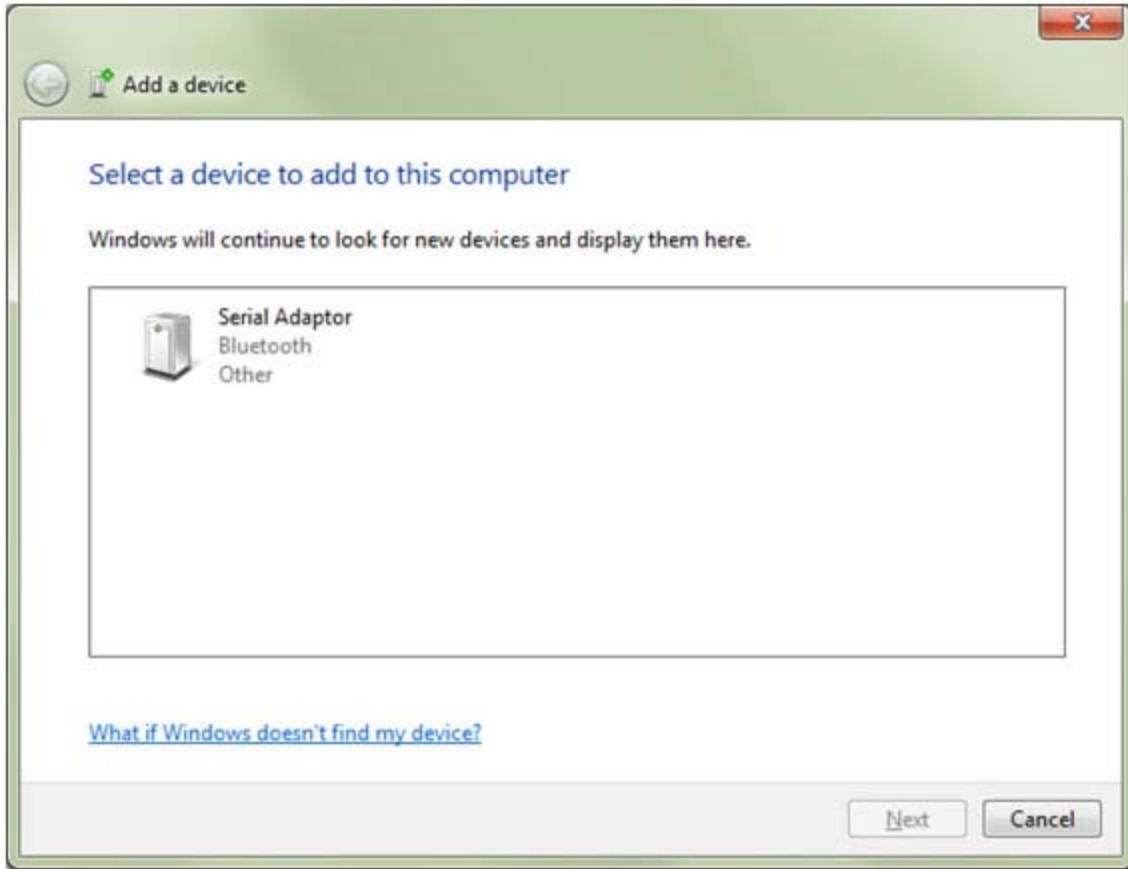
You will need to use a USB Bluetooth dongle if your computer does not already have Bluetooth capabilities; otherwise click the Bluetooth icon in Windows task bar:



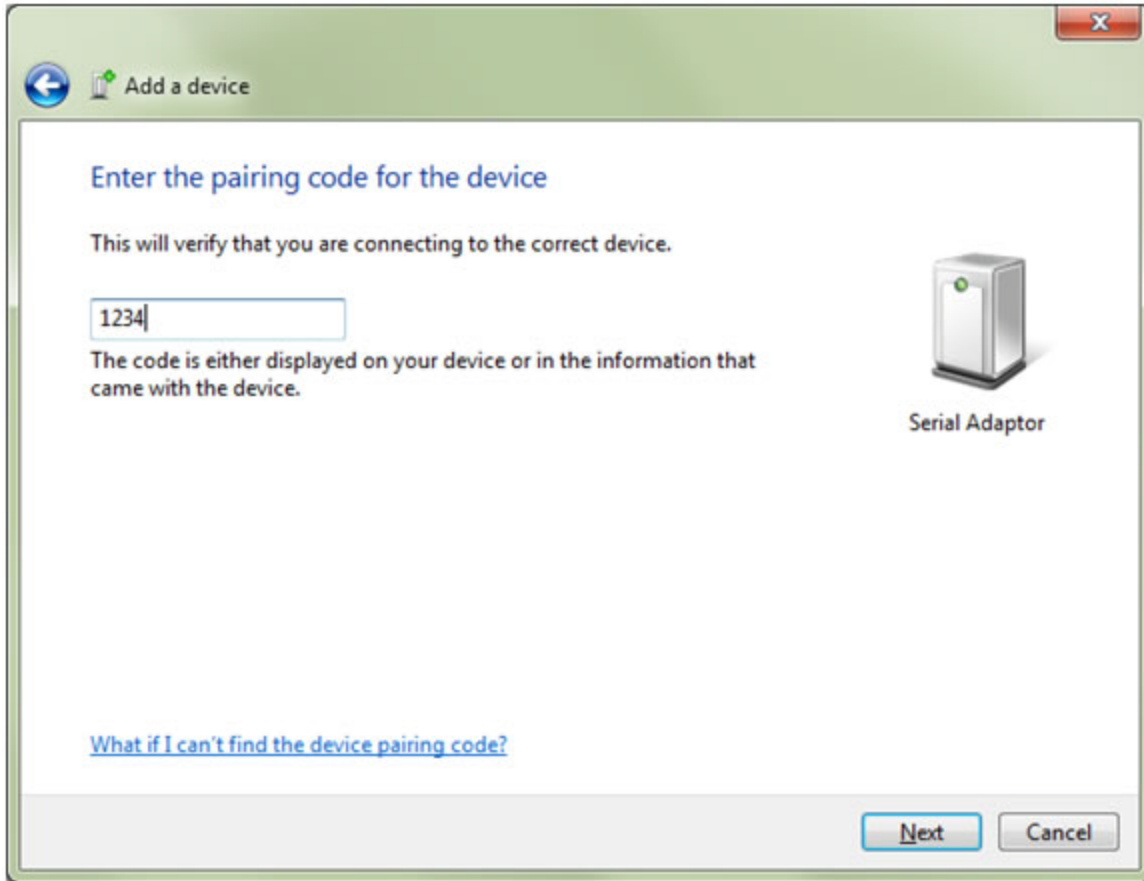
Click "Add a Device"



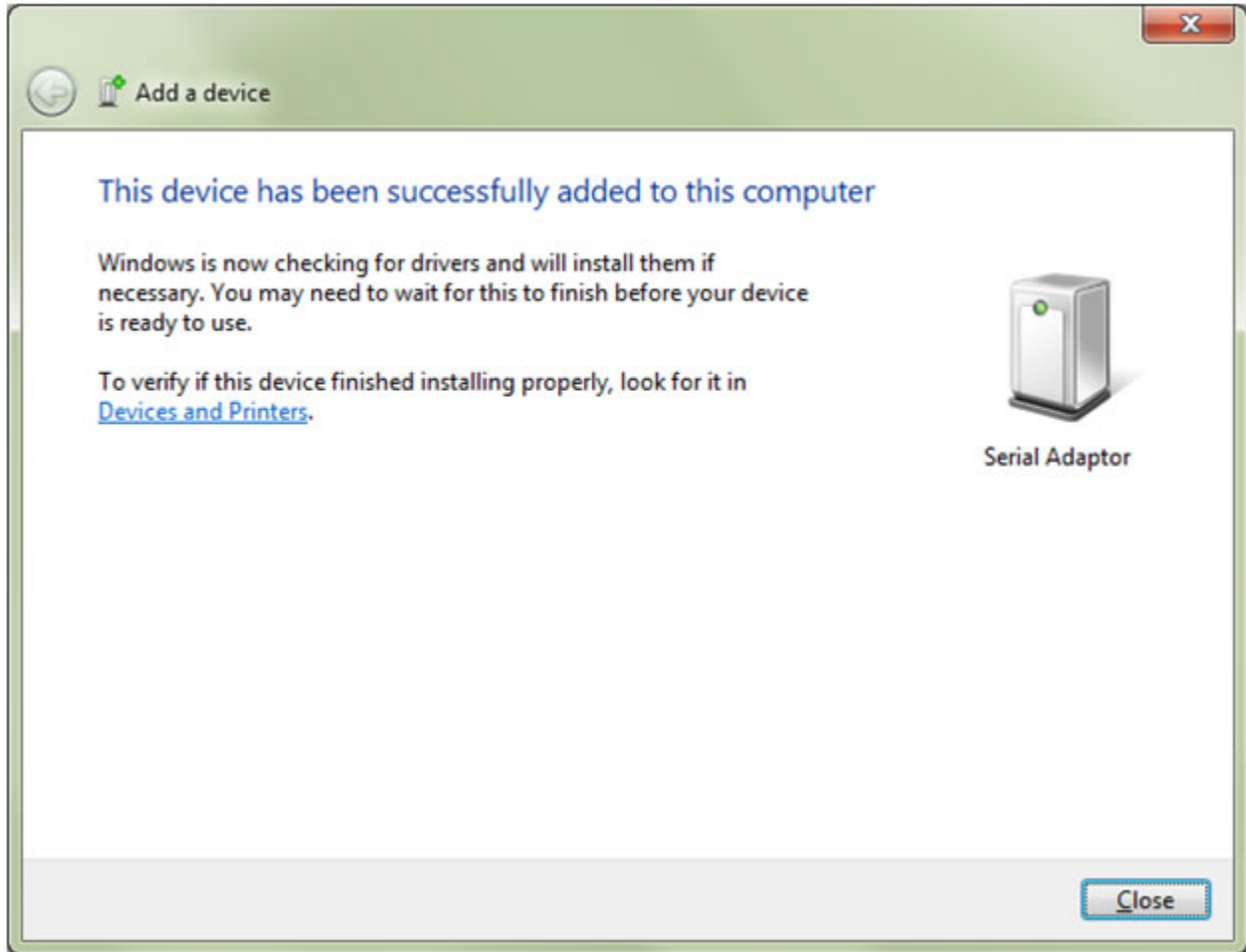
Select the Serial Adapter and click "Next":



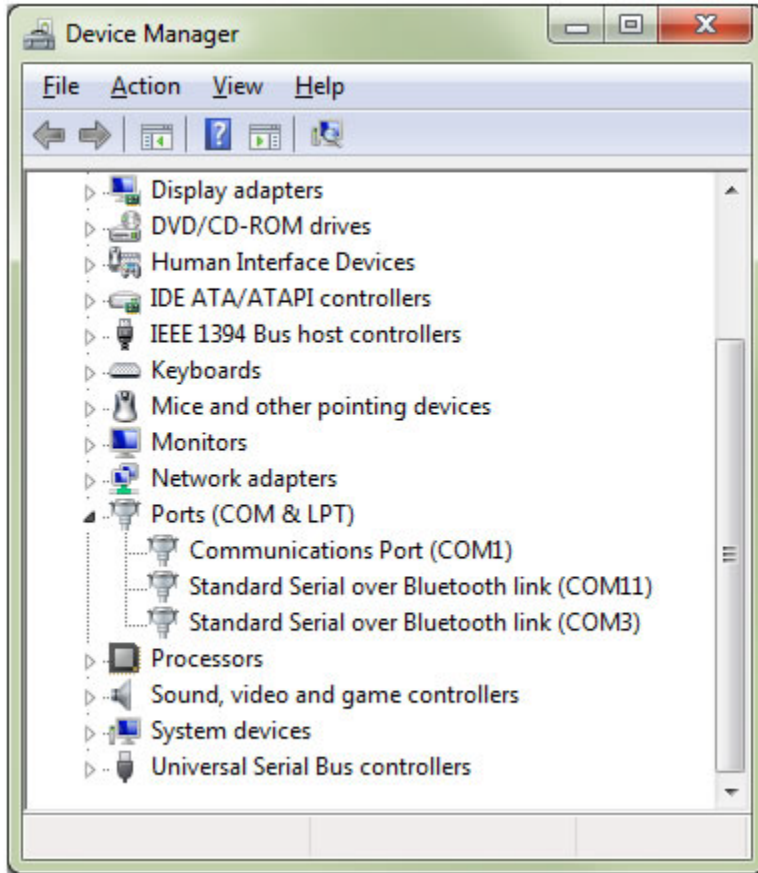
Enter the pairing code for the adapter: 1234



Windows should now pair with the serial Bluetooth adapter and you should get the following message:



In Device Manager two serial over Bluetooth ports should now show up:



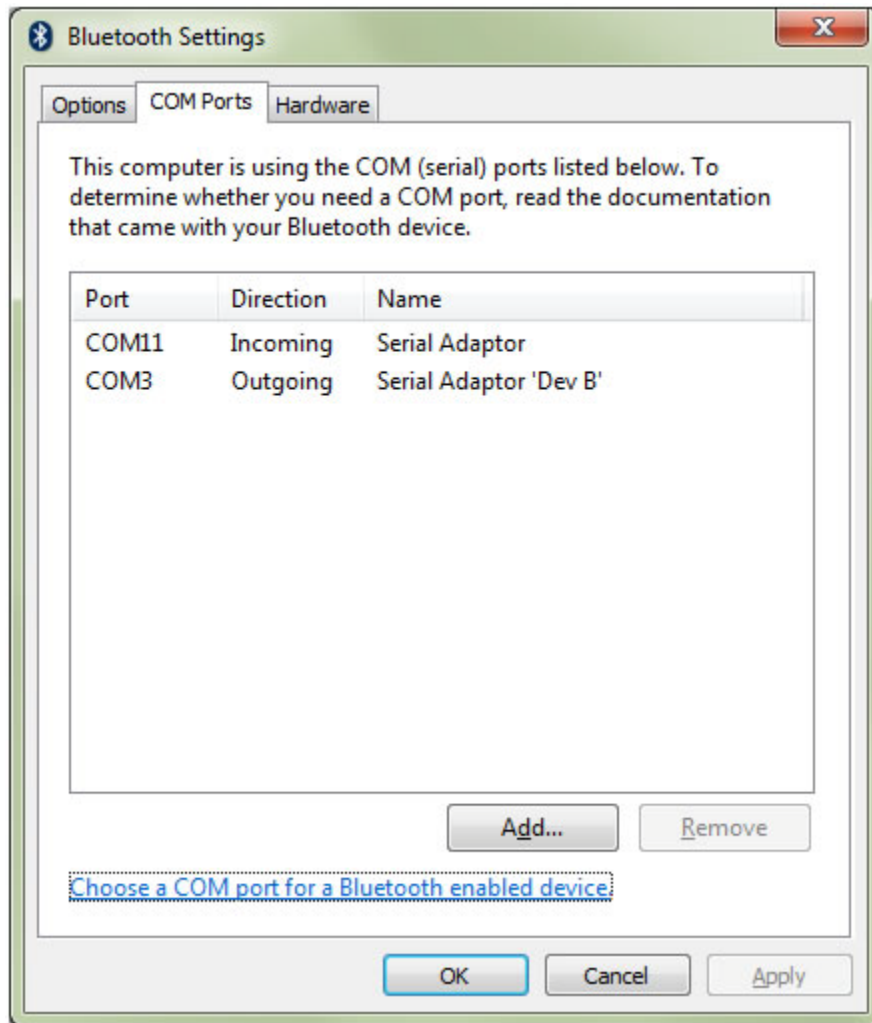
Now again click the Bluetooth icon in Windows task bar:



Click "Open Settings"



Two serial ports, an incoming and an outgoing, should now show up under the “COM Ports” tab. In this example Windows has created **COM 3**, which is called “Serial Adaptor ‘Dev B’”, this is the port we are going to use since this is the outgoing port for the serial Bluetooth adapter.

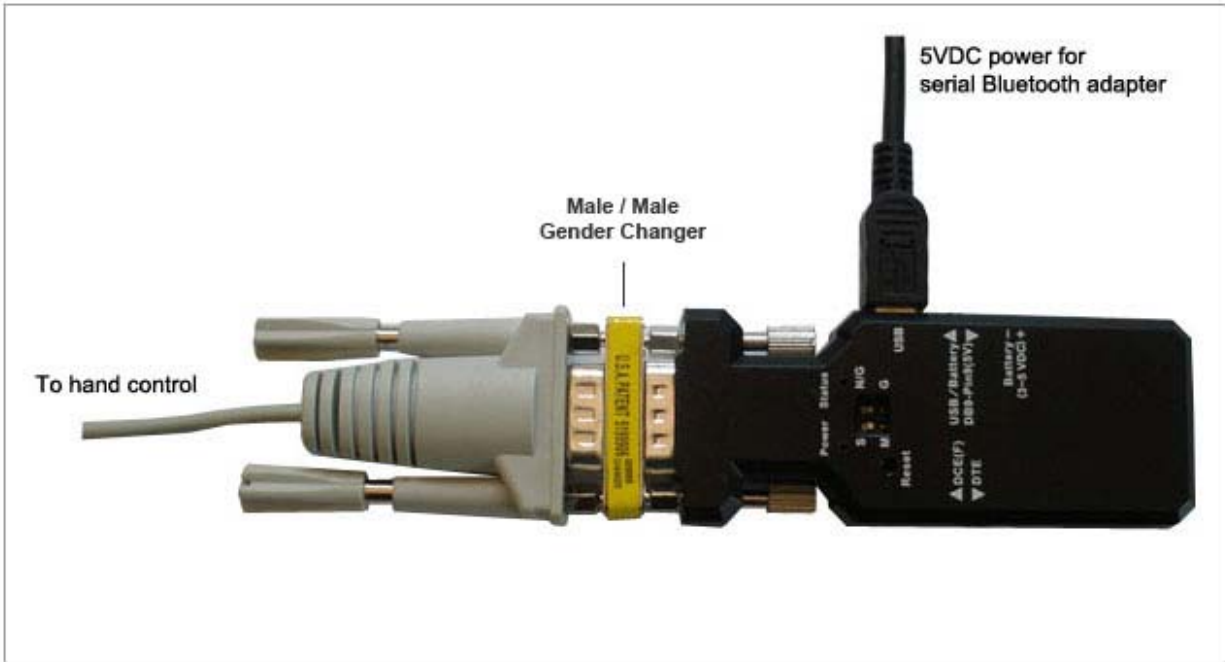


The serial Bluetooth adapter is now paired with your computer and ready to use.

Connecting the Bluetooth adapter to the hand controller

You are now ready to connect your computer to the hand control via the serial Bluetooth adapter.

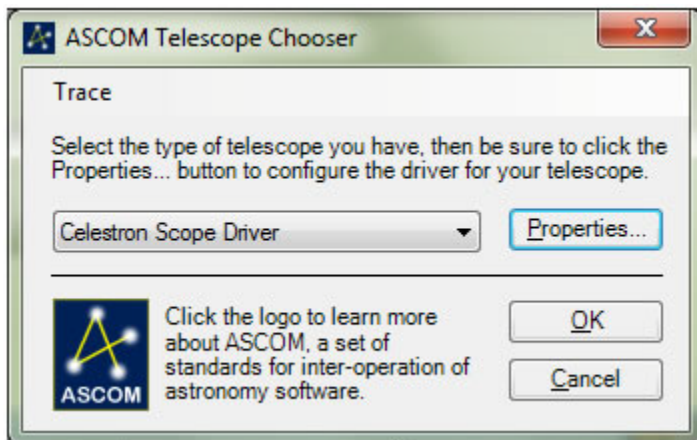
First connect the serial Bluetooth adapter to the hand control using the RS232 / RJ11 cable and the male/male gender changer. Below is an illustration of the connections from the hand control cable to the Bluetooth adapter. **NOTICE: The DCE/DTE switch on the side of the adapter must now be in position DTE.**



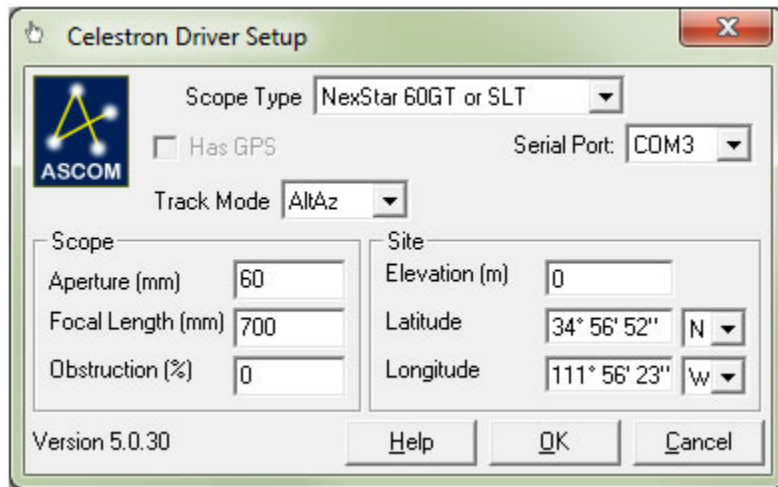
Align your telescope using the hand control or other means.

Start Cartes du Ciel. In the menu line click 'Telescope' -> 'Telescope Settings' and select 'ASCOM'.

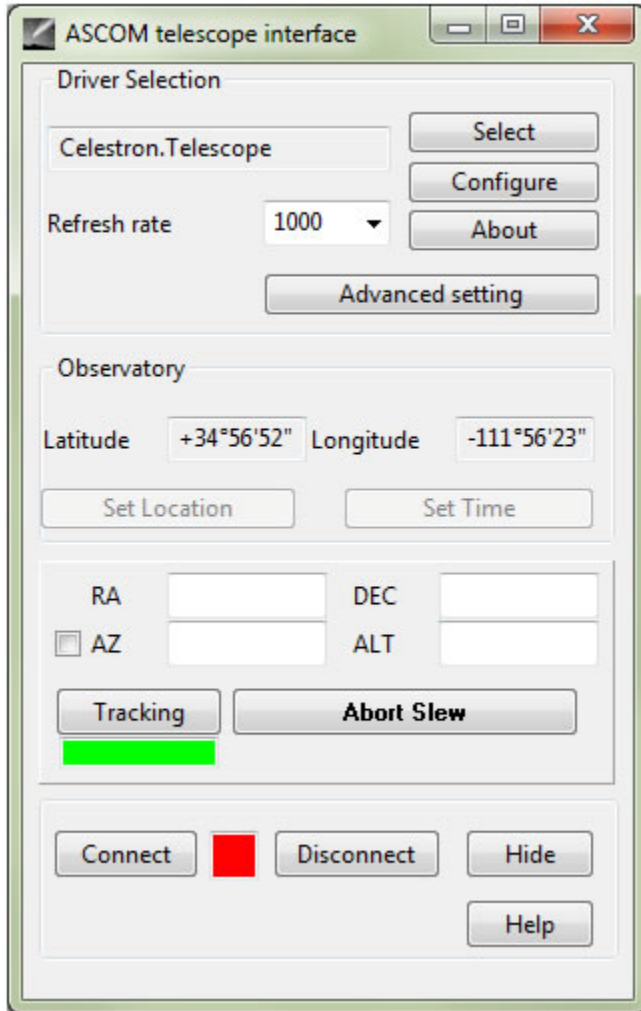
Click 'Telescope' again and then click 'Control Panel'. Click 'Select' in the ASCOM telescope interface window and then select 'Celestron Scope Driver' from the dropdown menu.

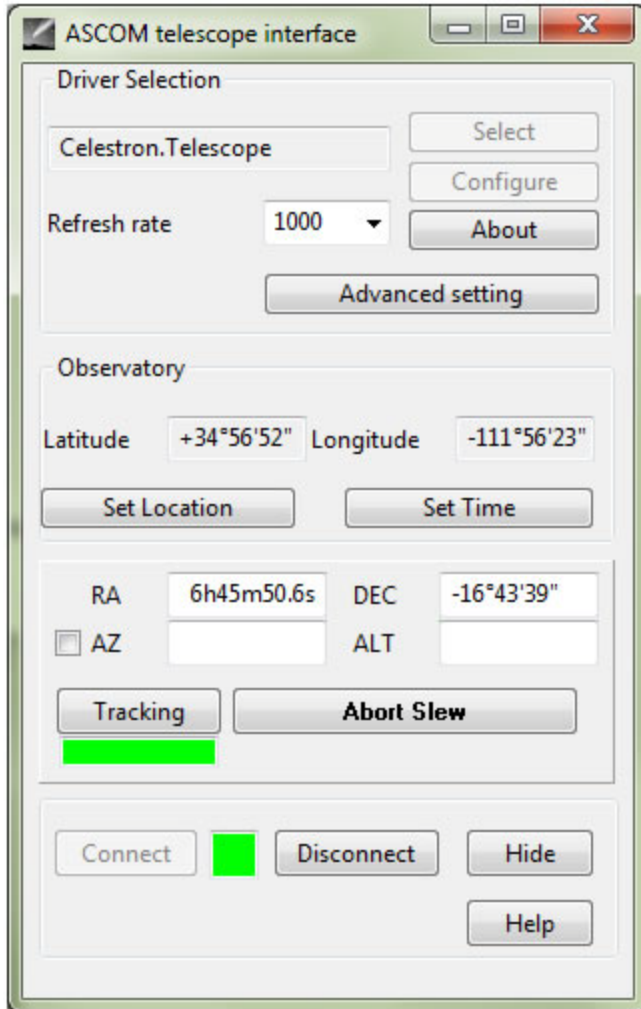


Click the 'Properties' button and set the serial port number to the number created by the Bluetooth dongle; in this example COM 3.
Select the Scope type and click 'OK'. Also click 'OK' in the ASCOM Telescope Chooser window.



Now click 'Connect' in the control panel window:

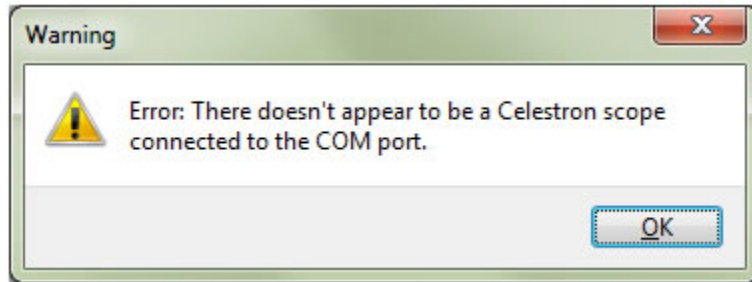




You can now control the telescope mount by clicking on a star in Cartes du Ciel and click the 'Slew' button.
Once you are connected the red and blue LED lights on the serial Bluetooth adapter should be solid on.

Known Issues

If you are getting this error when you try to connect:



then there might be several causes and solutions:

1. You have either connected the serial adapter incorrectly or the baud rate command was not properly set or the COM port has not been successfully created.

For the two first reasons you will need to recheck your setup and confirm that the serial Bluetooth adapter's baud rate actually is 9600.

If the serial Bluetooth COM ports for some reason has not successfully been created a computer restart usually helps. Check the COM port numbers after restart.

2. There have been reports that some mounts require the PROMPT and ECHO signals from the serial Bluetooth adapter disabled to be able to communicate correctly. In this case you can disable these by sending the following commands to the serial Bluetooth adapter:

```
PROMPT=N  
ECHO=N
```