SKYPIKIT ASCOM DRIVER FOR EQUATORIAL MOUNT

Revision 22.11.09

SKYPIKIT ASCOM DRIVER for telescope with equatorial mount

This ASCOM driver is designed to drive the different types of equatorial mounts whose motors are controlled by an Arduino-Skypikit system.

Dobsonian and altazimuth mounts are not supported by this driver. Another ASCOM driver will eventually be available for this type of mount.

This driver supports almost all available functions:
- Parking (Park and UnPark);
- Tracking at sidereal, lunar and solar speeds;
- Movement (sleewing) controlled by buttons;
- GOTO and SYNC to and on a celestial object or on a given coordinate;
- Autoguiding with PulseGuide and with an autoguiding camera and PHD2;

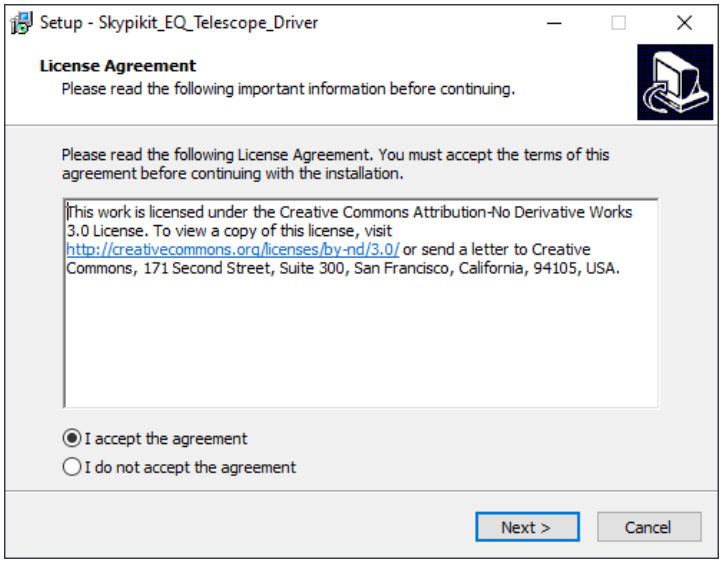
This driver does not support automatic meridian flipping of German mounts after crossing the meridian. So you have to do a manual flip.

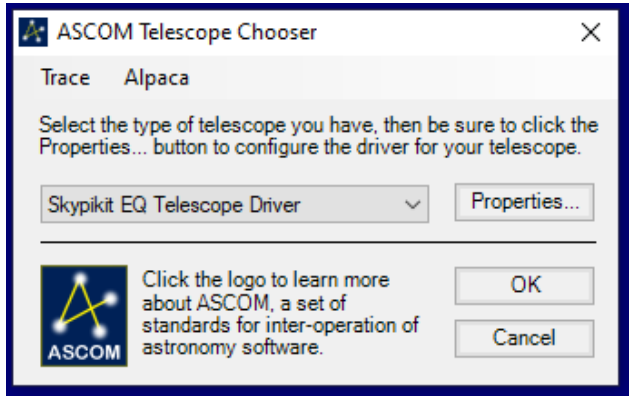
This driver has been tested with COELIX and N.I.N.A. astronomy software. It has passed the ASCOM compliance test and should therefore work with other astronomy software.

This document contains the following sections:

It is also suggested to consult the document on the Skypikit Motor Tester Tuner application and the help in COELIX on ASCOM telescope control.

SKYPIKIT ASCOM DRIVER for telescope with equatorial mount





Download the installer for this driver:
AscomSkypikitEQ_Setup.exe.

Run this program and follow the instructions to install the driver.

Note :
The ASCOM platform must already have been installed before installing this driver.

Go to your astronomy software that can control a telescope with ASCOM (COELIX or other) and bring up the form ASCOM Telescope Chooser.

Select telescope driver:
Skypikit EQ Telescope Driver
in the list of installed drivers.

Click on the Properties button to bring up the Driver Setup file.

Complete this form as explained on the following pages. Then click on the Chooser's OK button to access the telescope control.

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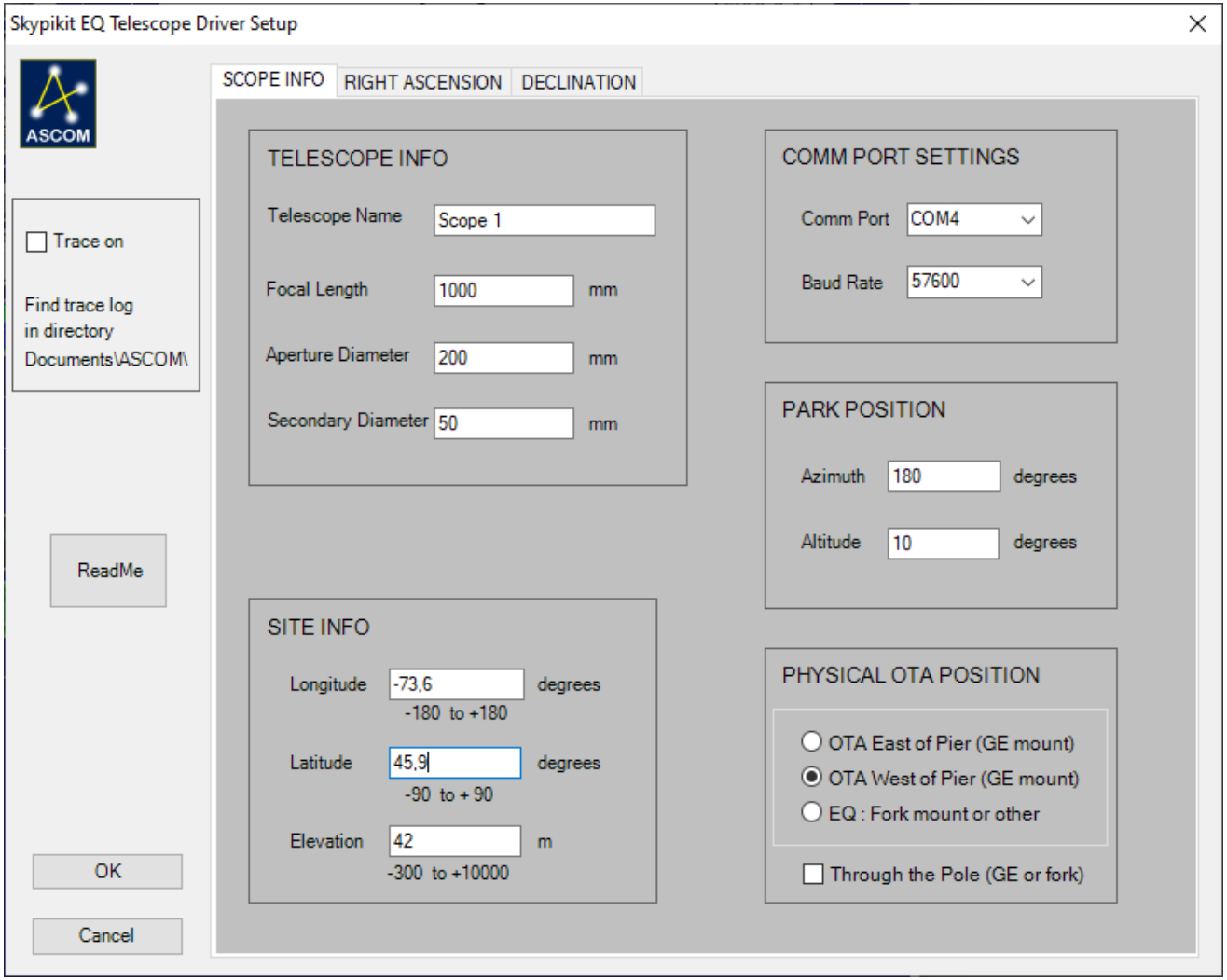

SKYPIKIT ASCOM DRIVER for telescope with equatorial mount

TRACE ON

Select only if you want a report (log) in the Documents\ASCOM\ folder.

COMM PORT SETTINGS

Comm Port

The ARDUINO USB port.

Baud Rate

The one inscribed in the Arduino sketch.

README BUTTON

Provides access to this help document for this driver. Internet must be accessible.

PARK POSITION

Azimuth and Altitude

This is the only place where you can fill in the parking position, since the SetPark method is not supported.

TELESCOPE INFO

Telescope Name

Give a name to your telescope.

PHYSICAL OTA POSITION

Position of the optical tube relative to the mount:

Optical tube on German equatorial mount:

- *Optical tube on the west side of the pillar, aiming towards the east;*
- *Optical tube on the east side of the pillar, aiming west;*
- *Optical tube on equatorial mount (fork or other);*

Through the Pole aiming at an object below the celestial pole.

SITE INFO

Longitude

Positive east of Greenwich and negative west of Greenwich.

Latitude

Positive north and negative south of the equator.

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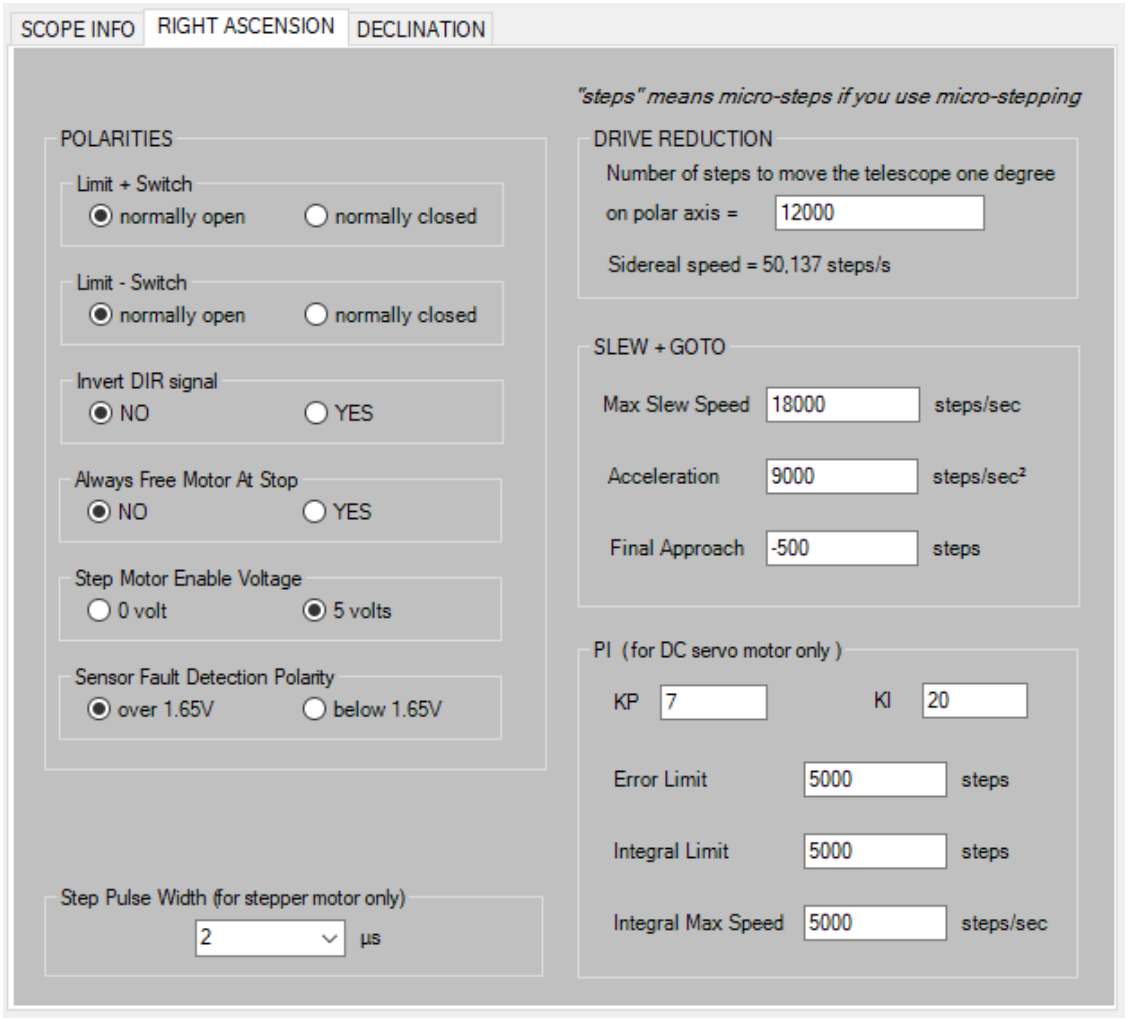


SKYPIKIT ASCOM DRIVER for telescope with equatorial mount

Most of the parameters are those found with the Skypikit Motor Tester Tuner (SMTTA) application during circuit and motor testing. See the document on this application.

DRIVE REDUCTION

Number of Steps…

Enter the number of micro-steps calculated with the SMTTA application to move the telescope one degree. The corresponding sidereal speed is indicated.

SLEW + GOTO

Max Slew Speed

Acceleration

Final Approach

Write the values found with SMTTA.

POLARITIES

Select the polarities you found with Skypikit Motor Tester Tuner app.

Case forInvert Dir Signal:

In declination, select the polarity so that the movement in declination is always in the right direction, whatever the position of the optical tube in relation to the pillar.

In right ascension, you need to change the polarity only when you travel and change hemisphere (north or south).

Step Pulse Width (*stepper motors*)

PI (*DC motors with encoders*)

Write the values found with SMTTA.

SKYPIKIT ASCOM DRIVER for telescope with equatorial mount

Propriété	get	set	Notes
UTCDate	*		UTC time in date/time format calculated according to computer time.
SiderealTime	*		Telescope sidereal time calculated based on computer time and site longitude.
SiteElevation SiteLatitude SiteLongitude	*	*	Site coordinates. Initialized in Setup Dialog but can be changed by client software.
EquatorialSystem	*		Returns equTopocentric. This driver is only for equatorial mounts.
FocalLength ApertureDiameter ApertureArea	*		Initialized in Setup Dialog. Aperture Area takes secondary mirror into account.
Tracking	*	*	Tracking state: ON or OFF.
RightAscensionRate	*	*	Offset which is added to the continuous tracking rate in A.D. (value of 1 = sidereal speed).
DeclinationRate	*	*	Offset which is added to the continuous tracking rate in decl. (value 1 = 1 arcsec/sec).
TrackingRate	*	*	Selected tracking speed: driveSidereal, driveLunar, driveSolar.
TrackingRates	*		Information on supported tracking speeds.
GuideRateRightAscension GuideRateDeclination	*	*	Corrections that is added to the tracking rate in R.A. and Dec.during autoguiding (max 4X sid.).
IsPulseGuiding	*		Returns true when an autoguiding pulse is in progress.
Slewing	*		Returns true while the telescope is moving: GOTO, SLEW...
TargetRightAscension TargetDeclination	*	*	Coordinates of the target object for a GOTO or a SYNC. (0 to 24h for A.D., -90° to +90° for decl.).

SKYPIKIT ASCOM DRIVER for telescope with equatorial mount

Propriété	get	set	Notes
AxisRates	*		Returns information on the GOTO and SLEW speeds allowed for each axis (minimum and maximum).
AtPark	*		True when telescopeis parked.
IsConnected	*		True when telescope is connected (hardware and software).
RightAscension Declination	*		Current equatorial coordinates of the telescope.
Azimuth Altitude	*		Current azimuthal coordinates of the telescope.
AlignmentMode	*		Returns equatorial mount (fork or other) or German equatorial mount
Description DriverInfo DriverVersion InterfaceVersion Name	*		Info on this Ascom driver: Description = "Skypikit EQ Telescope Driver" Name = "Skypikit_EQ_V3"

Méthode	Notes
PulseGuide	Sends an autoguiding pulse of a given duration and in a given direction. The autoguide speed depends on the GuideRateRightAscension and GuideRateDeclination properties.
SlewToCoordinates	Do a GOTO to given equatorial coordinates. Does not allow to do anything else until the GOTO is completed.
SlewToCoordinatesAsync	Like the previous one but allows other functions while the GOTO is in progress, for example using the RightAscension and Declination properties to see the crosshair moving on a view of the sky.
SlewToTarget	Do a GOTO to the coordinates of the TargetRightAscension and TargetDeclination properties. Does not allow to do anything else until the GOTO is completed.
SlewToTargetAsync	Like the previous one but allows other functions while the GOTO is in progress, for example using the RightAscension and Declination properties to see the crosshair moving on a view of the sky.
SlewToAltAz	GOTO to given azimuth coordinates. Does not allow to do anything else until the GOTO is completed.
SlewToAltazAsync	Like the previous one but allows other functions while the GOTO is in progress, for example using the RightAscension and Declination properties to see the crosshair moving on a view of the sky.
AbortSlew	Immediately stops a movement of a GOTO or a SLEW of the previous methods.
SyncToCoordinates	Do a SYNC on given equatorial coordinates.
SyncToTarget	Do a SYNC on the coordinates of the TargetRightAscension and TargetDeclination properties.
SyncToAltAz	Do a SYNC on given azimuth coordinates.
MoveAxis	Starts the movement of the telescope along a given axis and at a given speed. The movement stops if the speed of the MoveAxis is 0 or with the AbortSlew method.
Park	Moves the telescope to its parked position and stops tracking.
UnPark	Gets out of parked state. Tracking and movements become possible.

UNSUPPORTED PROPERTIES

SideOfPier
DestinationSideOfPier
DoesRefraction
SlewSettleTime
AtHome

UNSUPPORTED METHODS

SetPark
FindHome
CommandBlind
CommandBool
CommandString

SKYPIKIT ASCOM DRIVER for telescope with equatorial mount

PHYSICAL OTA POSITION

- ○ OTA East of Pier (GE mount)
- ◉ OTA West of Pier (GE mount)
- ○ EQ : Fork mount or other

☐ Through the Pole (GE or fork)

OTA west of pier aiming east

Normal position of the optical tube at the start of an observing session targeting an object east of the meridian before it passes the meridian.

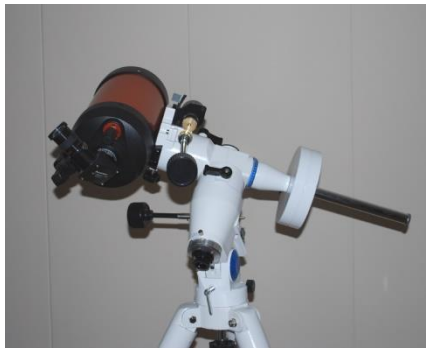
PHYSICAL OTA POSITION

- ◉ OTA East of Pier (GE mount)
- ○ OTA West of Pier (GE mount)
- ○ EQ : Fork mount or other

☐ Through the Pole (GE or fork)

OTA east of pier aiming west

Normal position of the optical tube aiming at an object west of the meridian after passing the meridian.



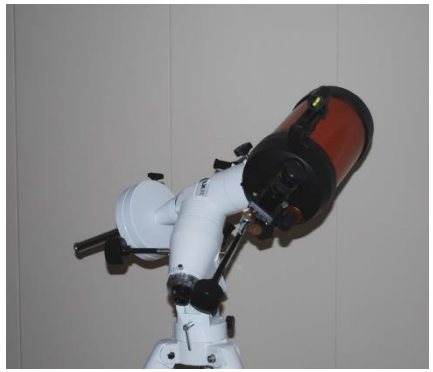
PHYSICAL OTA POSITION

- ○ OTA East of Pier (GE mount)
- ◉ OTA West of Pier (GE mount)
- ○ EQ : Fork mount or other

☑ Through the Pole (GE or fork)

OTA west of the pier aiming under the pole

Position of the optical tube aiming at an object located lower than the celestial pole.



PHYSICAL OTA POSITION

- ◉ OTA East of Pier (GE mount)
- ○ OTA West of Pier (GE mount)
- ○ EQ : Fork mount or other

☑ Through the Pole (GE or fork)

OTA east of the pier aiming under the pole

Position of the optical tube aiming at an object located lower than the celestial pole.

SKYPIKIT ASCOM DRIVER for telescope with equatorial mount

PHYSICAL OTA POSITION

- ○ OTA East of Pier (GE mount)
- ○ OTA West of Pier (GE mount)
- ◉ EQ : Fork mount or other

☐ Through the Pole (GE or fork)

PHYSICAL OTA POSITION

- ○ OTA East of Pier (GE mount)
- ○ OTA West of Pier (GE mount)
- ◉ EQ : Fork mount or other

☑ Through the Pole (GE or fork)

OTA in normal position

Normal position of the optical tube during an entire observing session aiming at an object before and after its passage through the meridian.

OTA aiming under the pole

Position of the optical tube aiming at an object lower than the celestial pole, only if it was necessary to pass the back of the tube between the arms of the fork (including the camera or the eyepiece).

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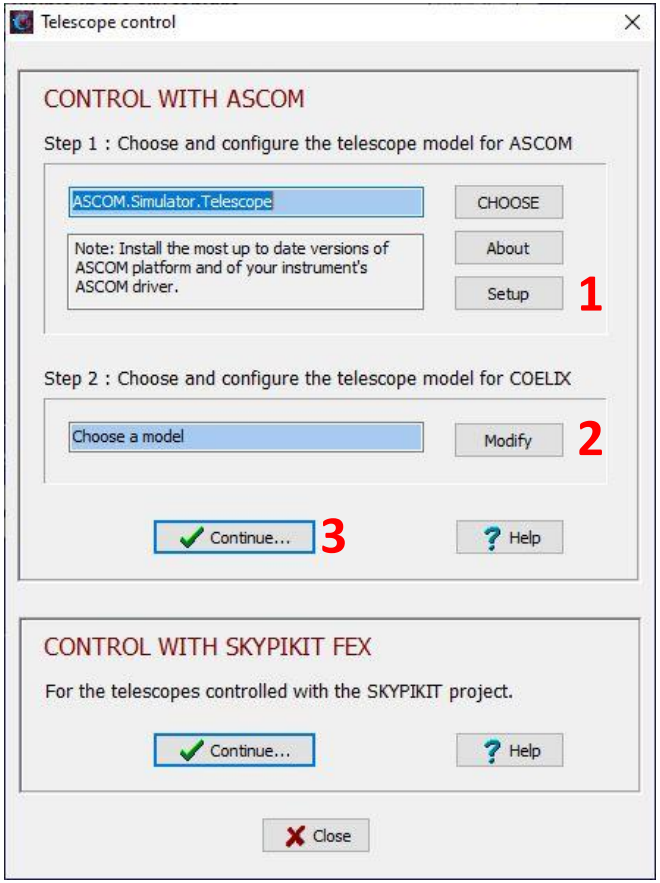

Using this ASCOM driver with COELIX

1 – Choose and configure the ASCOM driver according to the properties of your mount found with the Skypikit Motor Tester Tuner application (see pages 3 to 7 of this document).

2 – Choose and configure the telescope model for COELIX. See next page for the right settings.

3 – Click on Continue to open the telescope control panel whose operation is explained in the COELIX help.

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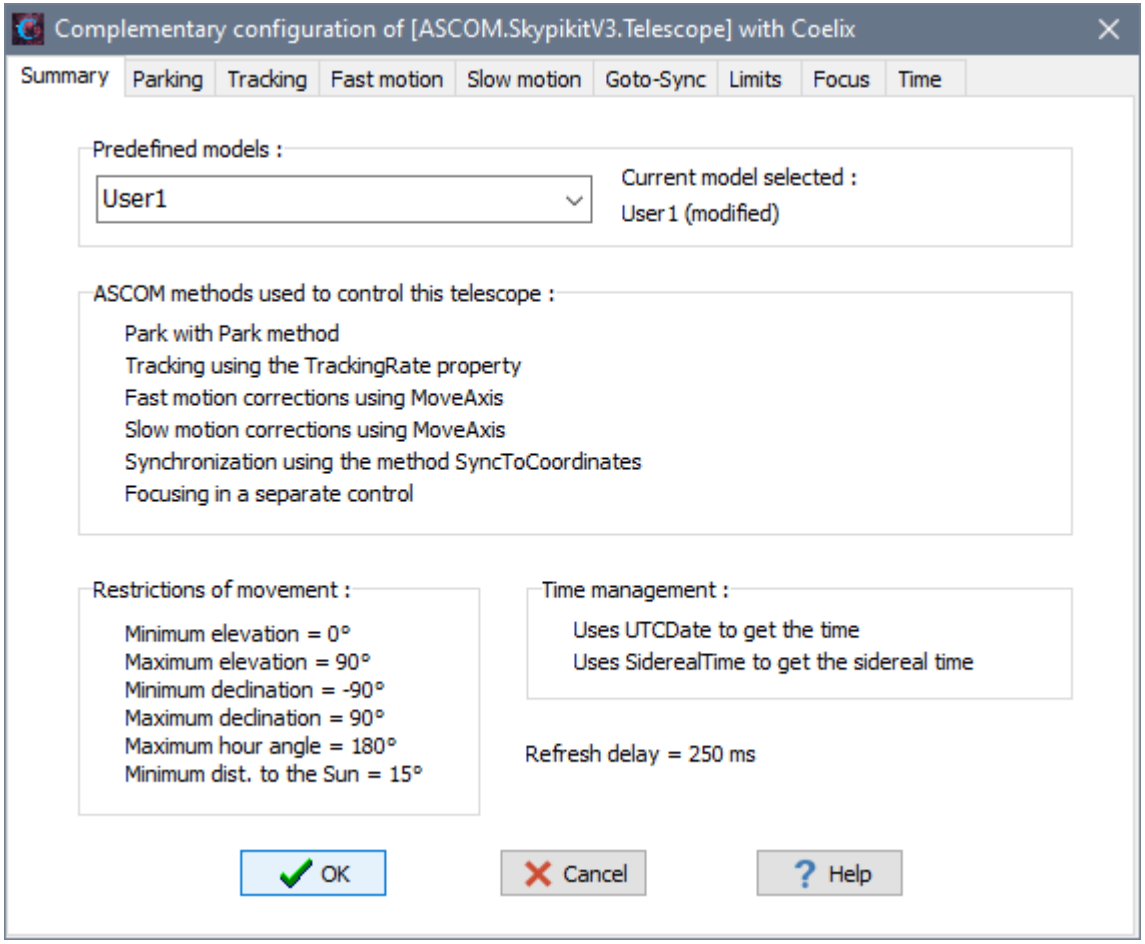

Choose the ASCOM methods indicated by going to the different pages of this dialog box.

SKYPIKIT ASCOM DRIVER for telescope with equatorial mount

Using this ASCOM driver with N.I.N.A.

1 – Select the driver « Skypikit EQ Telescope Driver ».
2 – Access the Setup Dialog and change settings as needed.
3 – Connect the telescope and wait for N.I.N.A. indicates that the telescope is connected.
4 – Do an UNPARK if necessary and wait for N.I.N.A. indicates that the telescope is no longer parked.
5 – Build a sequence.

END