

TELESTO

USER MANUAL – N.I.N.A.

STARTUP

IN THE DOME

0. If it's too dark, switch on the lights in the dome (at the left of the dome entrance)

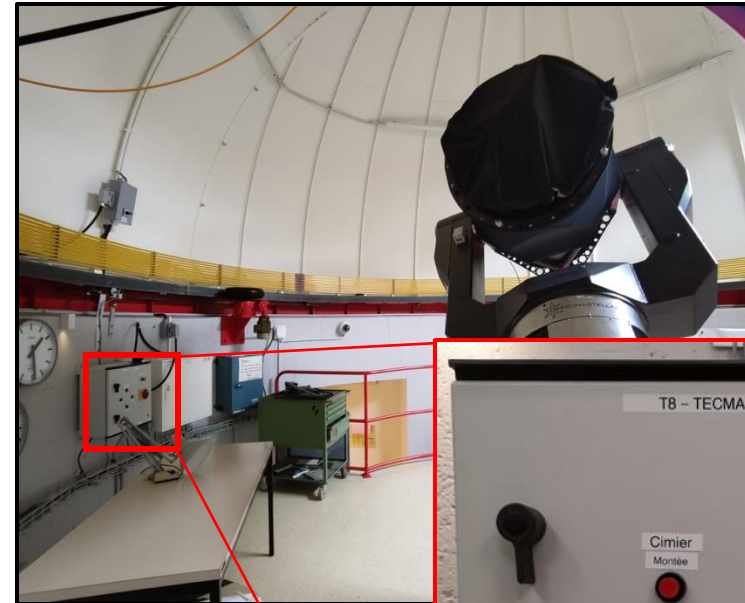


1. Press this button to switch on the lights in the dome



3. Switch off the dome lights and close the door of the dome

2. Make sure that the dome is on 'Auto' and not "Manual". This allows to move the dome directly from the software in the control room.

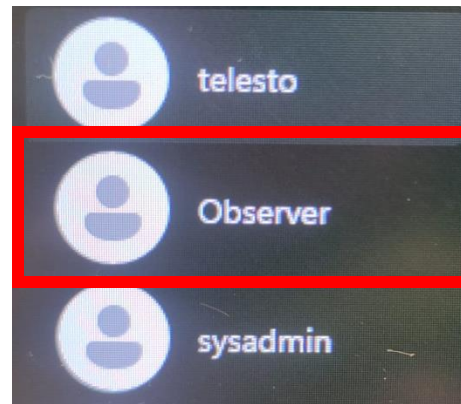


IN THE CONTROL ROOM

4. As the computer should be always ON, if you **move the mouse**, the monitor should automatically switch on and you can go to step 5. If the computer is off, you can switch it on like this:



5. Select the **Observer** account and log in, the password is **observer1290**



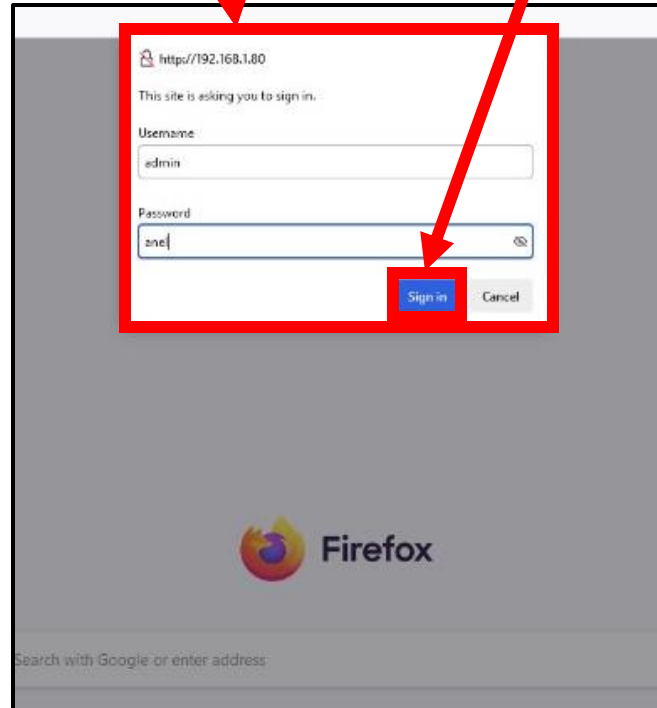
With this account you can not install any software on the computer, so do not try It 😊

6. Switch on the telescope power

1. Open the Power control
(on the top right of the Desktop)



2. A Firefox page will open. The username (edmin) and password (anel) should already be inserted

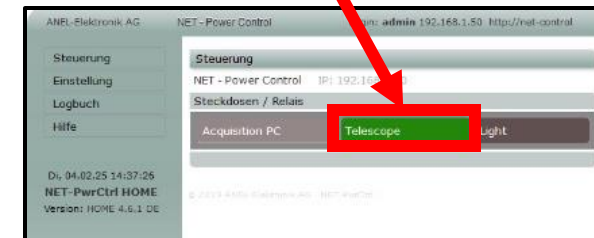


3. Click on 'Sign in'

4. Click on 'Telescope'



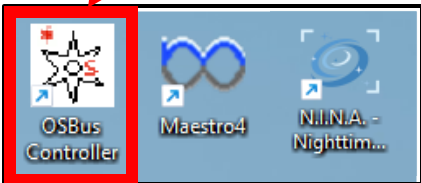
5. All good !



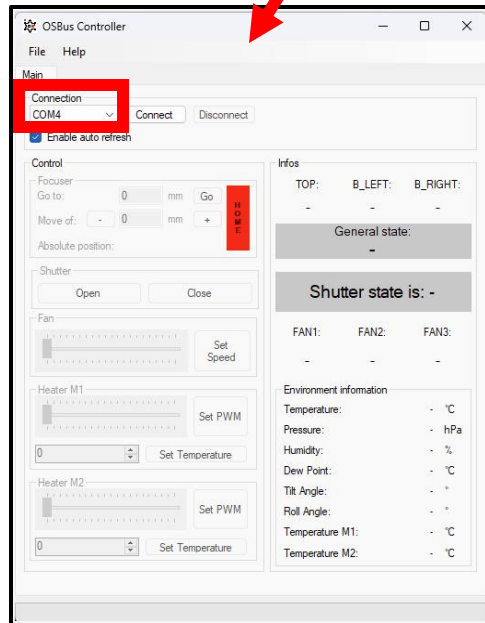
7. Launch the OSBus Controller software and connect it

If 'COM4' is not in the list, close and reopen the program a few times or reboot the computer

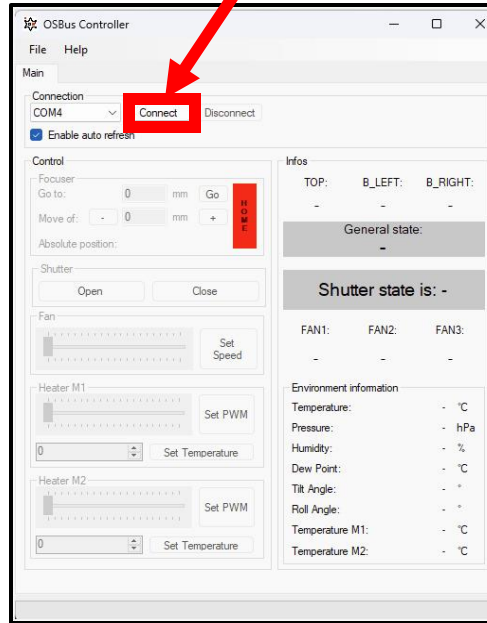
1. Open OSBus Controller program (on the top right of the Desktop)



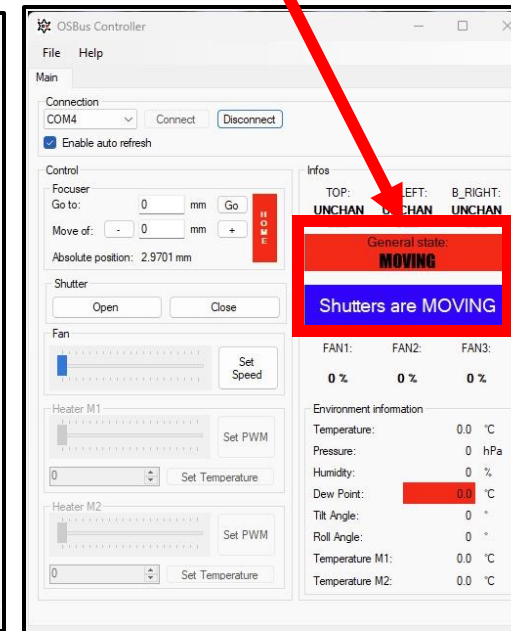
2. Check that the connection is 'COM4'



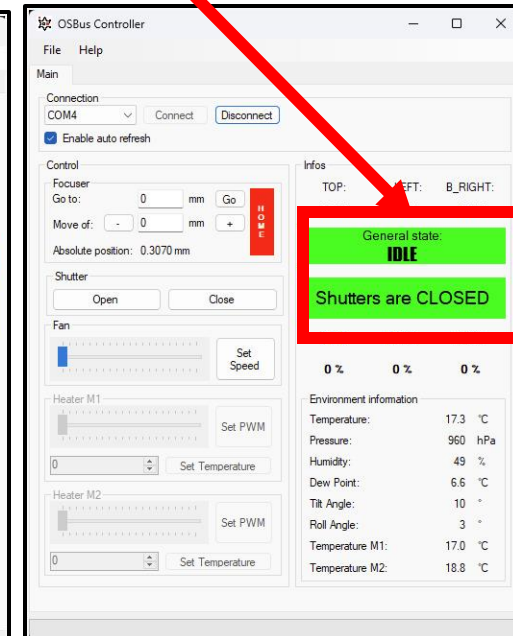
3. Click 'Connect'



4. Wait



5. All good



8. Home the focuser and close OSBus

1. Click 'HOME'

2. Wait

3. Click 'Yes'

2. Wait

4. Everything is good!

5. Close OSBus

The screenshots show the OSBus Controller interface. In the first screenshot, the 'HOME' button is highlighted. In the second, the 'General state' is 'MOVING'. In the third, the 'Yes' button in the 'Homing complete' dialog is highlighted. In the fourth, the 'General state' is 'MOVING'. In the fifth, the 'General state' is 'IDLE' and the 'X' button in the top right corner is highlighted.

OSBus Controller

File Help

Main

Connection COM5 Connect Disconnect

Enable auto refresh

Control

Focuser Go to: 0 mm Go

Move of: - 0 mm +

Absolute position: 2.4954 mm

Shutter Open Close

Fan Set Speed

Heater M1 Set PWM

Heater M2 Set PWM

Infos

TOP: B_LEFT: B_RIGHT: RUNNING RUNNING RUNNING

General state: MOVING

Shutters are CLOSED

FAN1: FAN2: FAN3: 0 % 0 % 0 %

Environment information

Temperature: 9.0 °C

Pressure: 941 hPa

Humidity: 83 %

Dew Point: 6.3 °C

Tilt Angle: 9 °

Roll Angle: 1 °

Temperature M1: 9.9 °C

Temperature M2: 9.7 °C

Homing complete

Go to Home position?

Yes No

OSBus Controller

File Help

Main

Connection COM5 Connect Disconnect

Enable auto refresh

Control

Focuser Go to: 0 mm Go

Move of: - 0 mm +

Absolute position: 2.9702 mm

Shutter Open Close

Fan Set Speed

Heater M1 Set PWM

Heater M2 Set PWM

Infos

TOP: B_LEFT: B_RIGHT: IDLE IDLE IDLE

General state: IDLE

Shutters are CLOSED

FAN1: FAN2: FAN3: 0 % 0 % 0 %

Environment information

Temperature: 9.0 °C

Pressure: 941 hPa

Humidity: 83 %

Dew Point: 6.3 °C

Tilt Angle: 10 °

Roll Angle: 3 °

Temperature M1: 9.9 °C

Temperature M2: 9.7 °C

9. Open Maestro4 and set date and time

1. Open Maestro4

2. Click on 'Settings'

3. Click on 'For Telescope'

4. Click on 'Site, Time & Date...'

5. Click on 'Set Time & Date from PC'

6. All good!

The first screenshot shows a desktop with three icons: OSBus Controller, Maestro4, and N.I.N.A. - Nighttime. The Maestro4 icon is highlighted with a red box. The second screenshot shows the Maestro4 application window with the 'Settings' menu open. The 'For Telescope' option is highlighted. The third screenshot shows the 'For Telescope' submenu with 'Site, Time & Date...' highlighted. The fourth screenshot shows the 'Telescope Site, Time & Date' dialog box with the 'Set Time & Date from PC' button highlighted. The fifth screenshot shows the main Maestro4 interface with the status bar at the bottom indicating that the local standard time and date have been set.

Maestro4 - Version 0.09.008

File View Settings

Stop All

PrimeTCS4: Connected

Show Sky Map...

VVel4: 45.00000amin/sec

Q-Key: Nothing

Alignment Calibration Tracking GoTo Objects

Status: NotAligned

Align From

Last (Unpark)

Home Seek

Star(s)...

Absolute Encoders

RA: 12:00:00

Dec: +45:00:00

Use RA/Dec

Alt/Az

From RA/Dec

Celestial Coordinates

RA (Jnow): N/A

Dec (Jnow): N/A

Hour Angle: N/A

Scope Orient: N/A

Horizontal Coordinates

Azimuth: N/A

Altitude: N/A

Airmass: N/A

Controller

Move Mode: Track/Drift

Top Fault/Limit: None

Manage Faults & Limits

Time

UTC: 12:33:15

Sidereal Time: 19:33:17

Time/Date: 12:33:15 29/12/24

Recent Messages (most recent on bottom)

View All Message

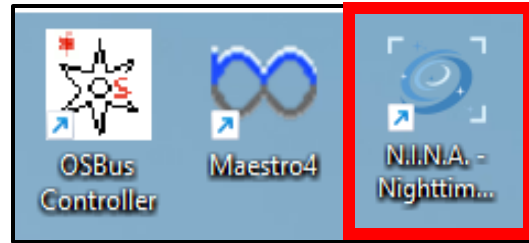
Maestro Status: Program version 0.09.008 starting

Maestro Status: Telescope communications established. Waiting for status u

Telescope Status: Status: Local standard time has been set.

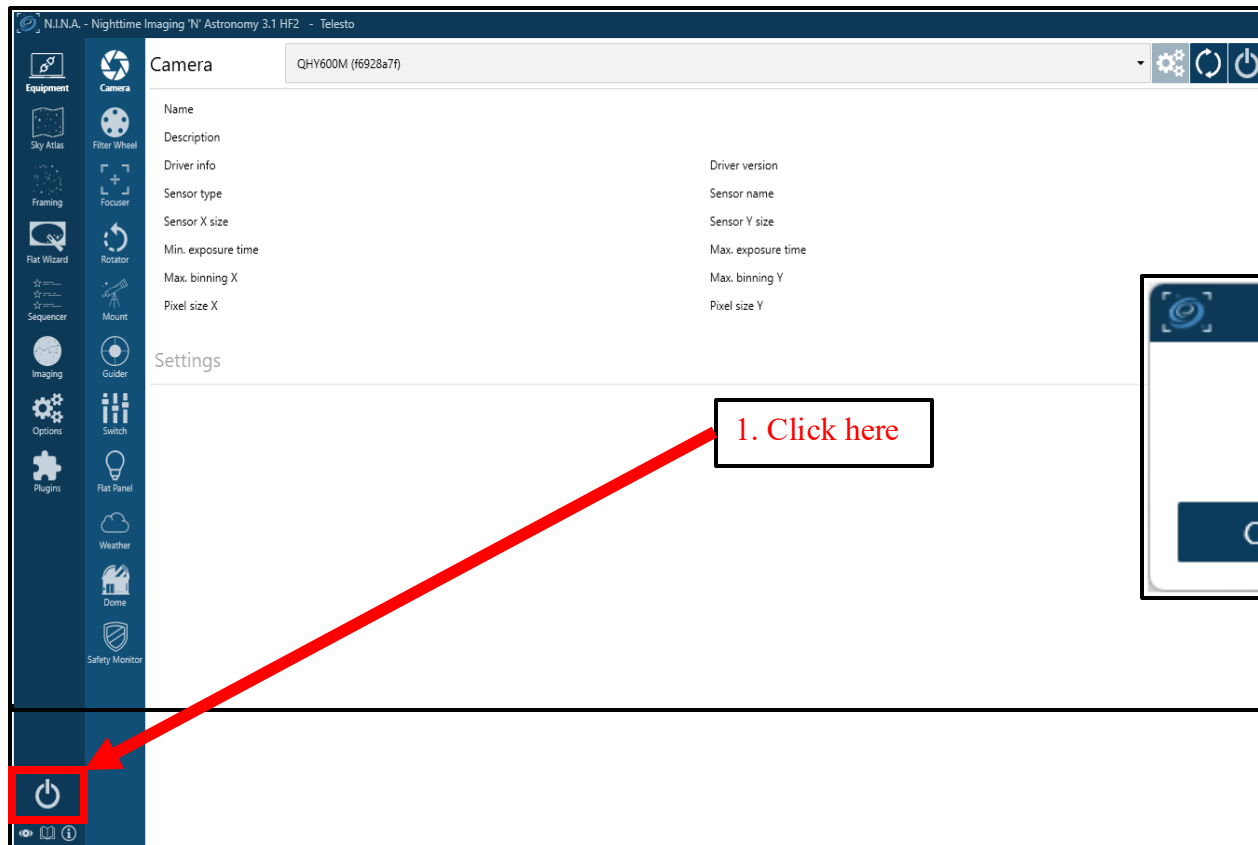
Telescope Status: Status: Local standard date has been set.

11. Open NINA

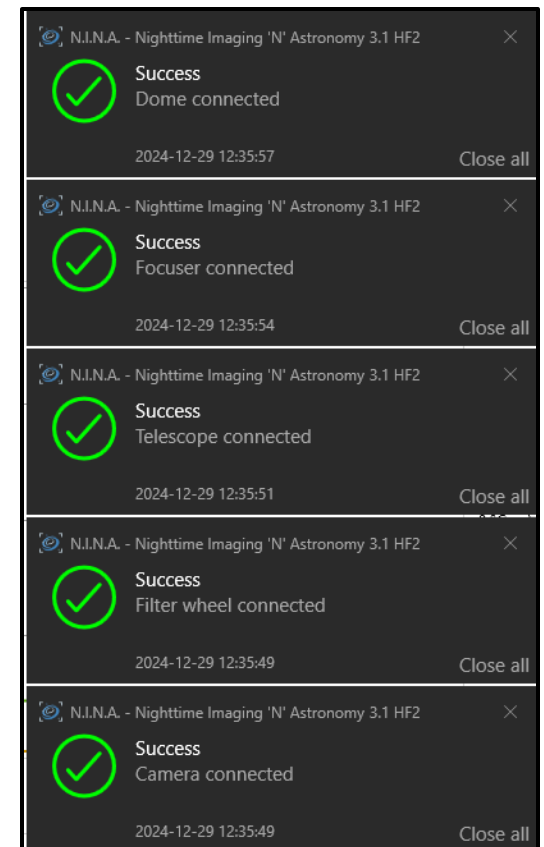
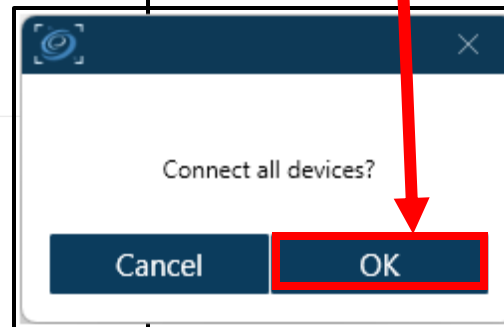


12. Connect all devices

3. Wait until all the tabs appear...All good!



2. Click 'OK'



13. Disconnect and reconnect the focuser

1. Click on 'Equipment'

2. Click on 'Focuser'

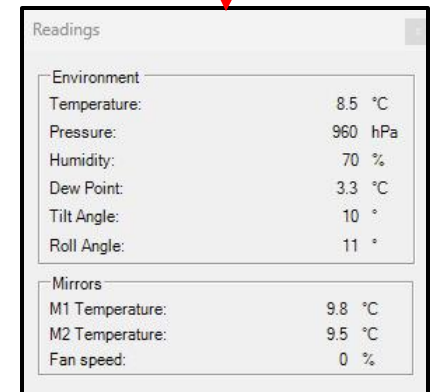
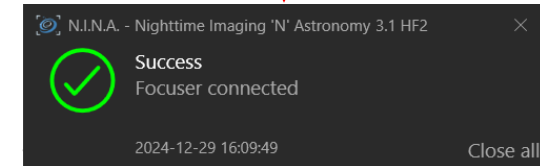
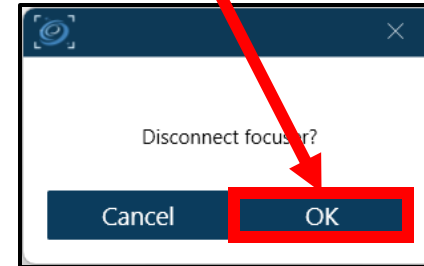
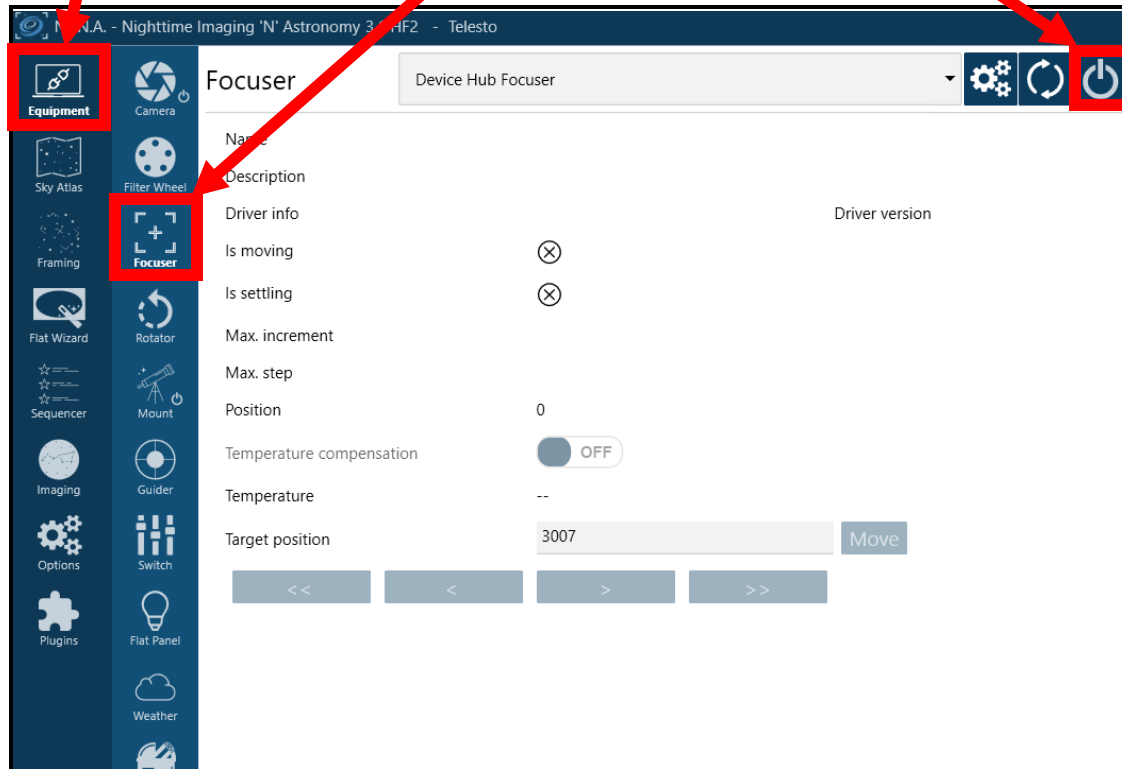
3. Click here to disconnect

4. Click 'OK'

5. Click again to connect

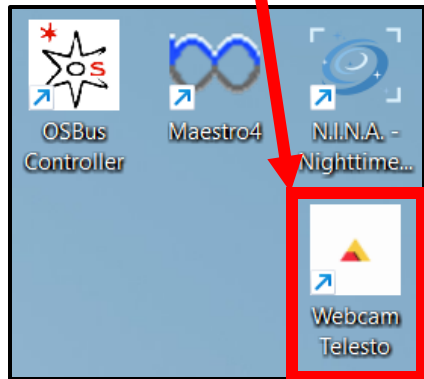
6. All good!

7. This window appears.
These are the physical
values of the CCD.



14. Find home position and open the dome

1. You can check that the dome and the telescope positions by clicking here to open the live camera inside the dome



2. Click on 'Equipment'

2. Click on 'Dome'

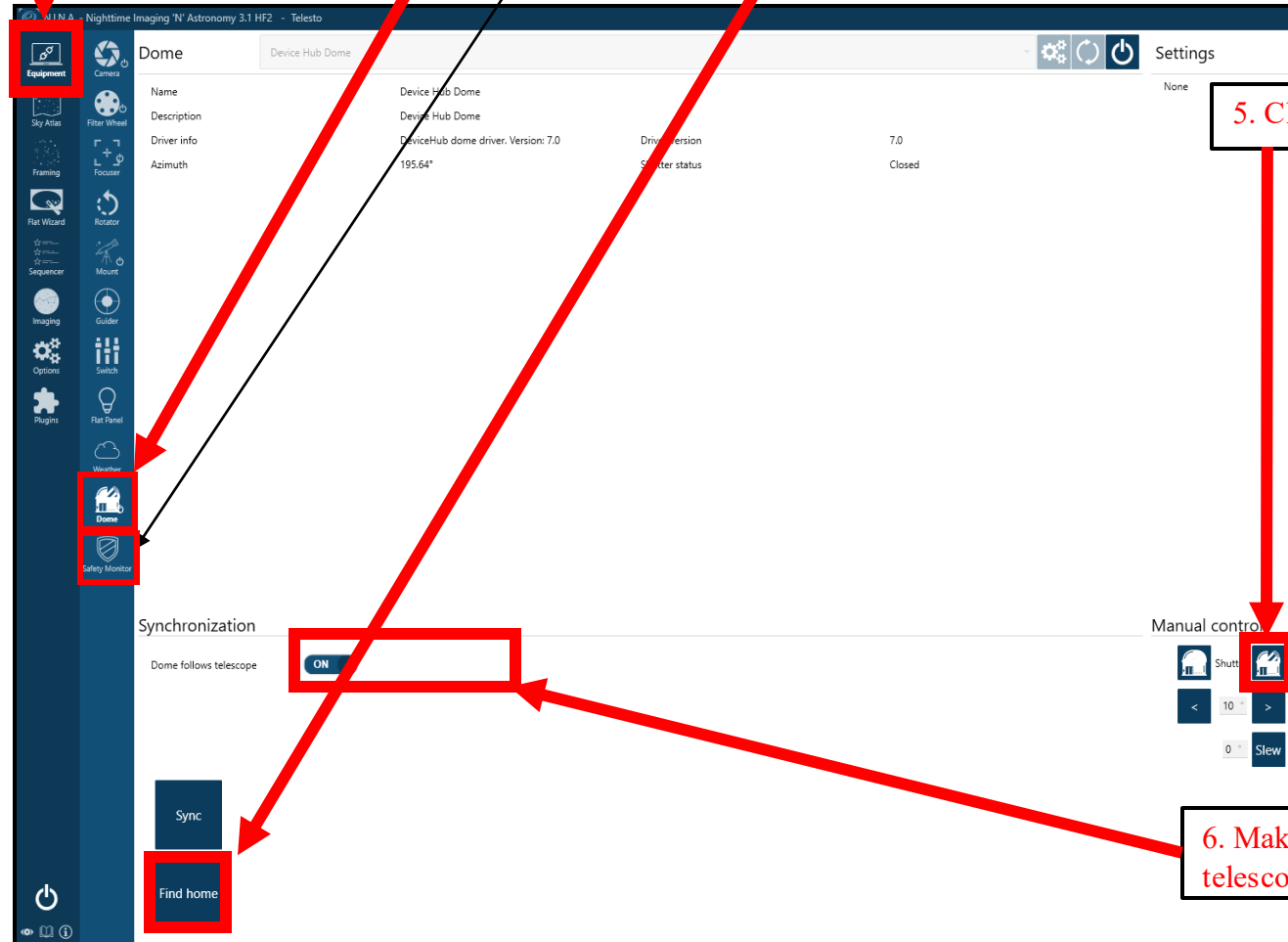
3. Click on 'Find Home'

4. When you click on 'Find Home', the Dome will make one full turn to calibrate the spatial coordinates

5. Click here to open the dome

6. Make sure that 'Dome follows telescope' is ON

If the dome does not move, disconnect the Safety Monitor (the same as you disconnected the focuser), do NOT connect it again and go on with the manual



END STARTUP

OBSERVATIONS

For more information on how to use N.I.N.A., please refer to this [documentation](#)

CHOOSING A TARGET

1. Select the the Sky Atlas tab

N.I.N.A. Nighttime Imaging 'N' Astronomy 3.1 HF2 - Telesto

Object name (e.g. M 31)

▼ Observation

Date 2024-12-29

Altitude Any

▼ Apparent size

↔ From 5 arcsec

↔ Through 30 arcsec

▶ Moon

▶ Object type

▶ Constellation

▶ Coordinates

▶ Surface brightness

▶ Apparent magnitude

Order by Size

Descending

Items per page 50

Search

2. Choose all the parameters of the targets you might be interested in

- **ALTITUDE**: minimum altitude in a given time range (we suggest minimum of 20° , which is the tree level)
- **APPARENT SIZE**: apparent size of the object. Our camera has a field of view of about 30 arcmin
- **OBJECT TYPE**: select the type of objects you are interested in (stars, clusters, galaxies etc.)

ETC (play around)

3. Click on 'Search'

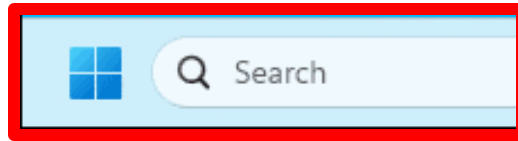
A list of possible targets will appear on the right

1. Here you see the altitude of the objects during the night (we suggest to observe targets when they are above 20°)

2. Click on 'Set for framing assistant' to have more information about that target and to point it

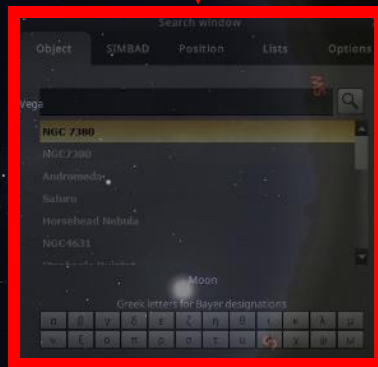
Name	Details	Altitude	
NGC 4042	<div><div>RA 12:02:47</div><div>Dec 20° 09' 48"</div><div>Type GALXY</div><div>Constellation COM</div><div>096°</div><div>16.4</div><div>99.9</div><div>6.00"</div></div>		<div>Add target to sequence</div> <div><div>Set for framing assistant</div></div> <div>Slew</div>
NGC 2686-2 NGC 2686B	<div><div>RA 08:55:01</div><div>Dec 49° 08' 33"</div><div>Type GALXY</div><div>Constellation UMA</div><div>139°</div><div>16</div><div>99.9</div><div>6.00"</div></div>		<div>Add target to sequence</div> <div>Set for framing assistant</div> <div>Slew</div>
IC 3469	<div><div>RA 12:32:11</div><div>Dec 25° 48' 10"</div><div>Type GALXY</div><div>Constellation COM</div><div>093°</div><div>99.9</div><div>99.9</div><div>6.78"</div></div>		<div>Add target to sequence</div> <div>Set for framing assistant</div> <div>Slew</div>
IC 503	<div><div>RA 08:22:11</div><div>Dec 03° 16' 05"</div><div>Type GALXY</div><div>Constellation HYA</div><div>135°</div><div>13.66</div><div>99.9</div><div>7.98"</div></div>		<div>Add target to sequence</div> <div>Set for framing assistant</div> <div>Slew</div>

CHOOSING A TARGET ON STELLARIUM (e.g. Moon, Sun, planets)



1. In the search tab at the bottom of the screen tap 'stellarium' and open the application

2. Press CTRL + F on the keyboard and in the window that appears search and select the target that you wish to observe (e.g. 'moon')



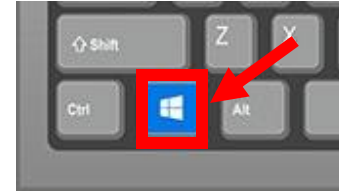
3. The selected target information will appear on the left

The Wizard Nebula (Harry Potter and the Golden Snitch)
NGC 7380 - SH 2-142 - LBN 511 - Cr 452 - Ced 206

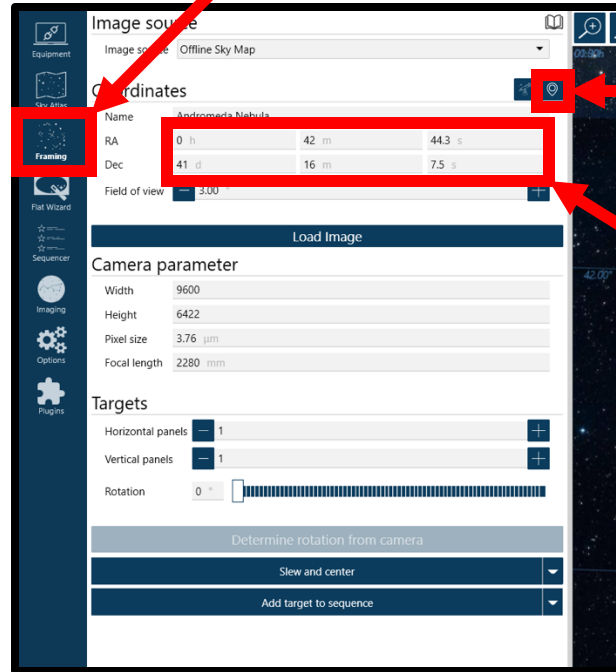
Type: cluster associated with nebulosity (3, 3, 3)
Magnitude: 7.20 (reduced to 7.34 by 1.06 Airmasses)
Color Index (B-V): 0.42
Surface brightness: 13.69 mag/arc.min² (after extinction: 13.82 mag/arc.min²)
Contrast index: -0.21
RA/Dec (J2000.0): 22h47m22.95s/+58°08'07.3"
RA/Dec (on date): 22h48m24.17s/+58°16'16.4"
HA/Dec: 22h13m51.89s/+58°16'07.0" (apparent)
Az./Alt.: +43°19'09.4"/+69°58'23.3" (apparent)
Gal. long./lat.: +107°08'46.9"/-0°52'57.6"
Supergal. long./lat.: +355°19'14.5"/+29°54'17.7"
Ecl. long./lat. (J2000.0): +20°26'10.5"/+52°38'01.9"
Ecl. long./lat. (on date): +20°47'31.7"/+57°38'07.1"
Ecliptic obliquity (on date): +23°26'18.8"
Mean Sidereal Time: 21h02m13.4s
Apparent Sidereal Time: 21h02m13.6s
Rise: —
Transit: 23h36m
Set: —
Circumpolar (never sets)
Max. E. Disposition: Az.=+49°26'27.8", HA=20h40m33.33s
Max. W. Disposition: Az.=+310°33'32.2", HA=3h19m26.67s
Parallactic Angle: -115°27'00.3"
IAU Constellation: Cep
Size: +0°25'00.00" x +0°20'00.00"
Distance: 1,700 kpc (5545.4 ly)
Redshift: -0.000114±0.000020
Parallax: 0.600 mas
Morphological description: irregular form, filamentary structure, brightest
Solar Az./Alt.: +295°23'54"/-27°22'44"
Lunar Az./Alt.: +179°09'30"/+23°08'36"

3. Go to NINA window

If you have difficulties switching to the NINA window, press the Windows key on the keyboard and select the NINA icon at the bottom of the screen.



4. Go in the 'Framing' tab



5. Click on this button to import the coordinates of your selected target from Stellarium

6. The new imported coordinates should appear here

When you observe the Sun or the Moon, the picture you take might not be centered in the camera. You can here slightly adjust the object's coordinates manually and retake the picture to see if it is better centered. We suggest to start by changing the Dec by ± 5 m. Then do not forget to click on 'slew' (in 2 slides) to move the telescope to the new coordinates.

SELECTING FOCUS & FILTER

The screenshot shows a software interface with a sidebar on the left containing icons for Equipment, Sky Atlas, Framing, Flat Wizard, Sequencer, **Imaging**, Options, and Plugins. The main window is divided into two panels. The top panel, titled 'Focuser', contains the following fields: 'Is moving' (with a circled X), 'Is settling' (with a circled X), 'Position' (displaying 5300), 'Temperature' (displaying 2.40 °C), 'Temperature comp.' (a toggle switch set to OFF), and 'Target position' (displaying 5300). Below these fields is a 'Move' button and four navigation arrows (<<, <, >, >>). The bottom panel contains 'Camera' (set to Focuser), 'Filter Wheel', 'Active filter' (displaying B), and a 'Change' button. Red arrows and numbered boxes provide instructions: 1. Go in the 'Imaging' tab (points to the Imaging icon in the sidebar); 2. Click on 'Focuser' (points to the Focuser tab in the bottom panel); 3. This is the current position of the focus (points to the 'Position' field showing 5300); 4. Choose the focus (we suggest 5300) (points to the 'Target position' field showing 5300); 5. Click on 'Move' to move the focus (points to the Move button); 2. Choose the filter (points to the 'Active filter' dropdown showing B); 3. Click on 'Change' to change the filter (points to the Change button). A large text box on the right states: 'SET THE FOCUS TO 5300 BEFORE POINTING TO THE FIRST TARGET OR PERFORMING THE FIRST AUTOFOCUS'.

1. Go in the 'Imaging' tab

2. Click on 'Focuser'

3. This is the current position of the focus

4. Choose the focus (we suggest 5300)

5. Click on 'Move' to move the focus

2. Choose the filter

3. Click on 'Change' to change the filter

SET THE FOCUS TO 5300 BEFORE POINTING TO THE FIRST TARGET OR PERFORMING THE FIRST AUTOFOCUS

POINTING THE TELESCOPE ON YOUR TARGET

If centering does not work (plate solve failed), you may be out of focus (see previous slide) or weather conditions may be bad. If neither of these is the issue, we suggest using 'Slew' instead of 'Slew and Center'.

1. Go in the 'Framing' tab

2. Click on 'Slew and center'

3. A window like this will appear. It will take few pictures to center the target

The screenshot displays the software interface for telescope pointing. On the left, the 'Framing' tab is selected in the sidebar. The main panel shows the 'Coordinates' section with the target 'Andromeda Nebula' and its RA (0 h, 41 m, 44.3 s) and Dec (41 d, 16 m, 7.5 s). Below this, the 'Camera parameter' section lists Width (9600), Height (6422), Pixel size (3.76 µm), and Focal length (2280 mm). The 'Targets' section shows horizontal and vertical panels set to 1. At the bottom of the left panel, the 'Slew and center' button is highlighted with a red box. A red arrow points from this button to the 'Slew and center' dialog box on the right. The dialog box contains fields for Center RA, Center RA HMS, Center Dec, Center Dec DMS, Radius, Pixel scale, Rotation, Epoch, Error distance, RA error, RA error (px), Dec error, and Dec error (px). At the bottom of the dialog, there are tabs for Time, Succ, RA, Dec, Error distance, RA error, Dec error, RA errorDec, and Rotation. The main window shows a star field with the Andromeda Nebula highlighted. A red arrow points from the 'Slew and center' dialog box to the main window.

Image source: Offline Sky Map

Coordinates

Name: Andromeda Nebula

RA: 0 h 41 m 44.3 s

Dec: 41 d 16 m 7.5 s

Field of view: 3.00°

Load Image

Camera parameter

Width: 9600

Height: 6422

Pixel size: 3.76 µm

Focal length: 2280 mm

Targets

Horizontal panels: 1

Vertical panels: 1

Rotation: 0°

Determine rotation from camera

Slew and center

Add target to sequence

Toggle Catalogue Display

Slew and center dialog box:

Center RA: --

Center RA HMS: --

Center Dec: --

Center Dec DMS: --

Radius: --

Pixel scale: --

Rotation: --

Epoch: --

Error distance: --

RA error: --

RA error (px): --

Dec error: --

Dec error (px): --

Slew

Time Succ RA Dec Error distance RA error Dec error RA errorDec errRotation

AUTOFOCUS

If autofocus fails, you are probably too far from the recommended initial value (5300), or the outside conditions may be poor (e.g., clouds).

1. Go in the 'Imaging' tab

2. Click on 'Autofocus'

3. Click on 'Start autofocus'

4. It will take few images to adjust the focus

The screenshot displays the N.I.N.A. - Nighttime Imaging software interface. The 'Imaging' tab is selected in the left sidebar. The main window shows a live image of a star field. The 'Autofocus' window is open, displaying a graph of focus error over time. The 'Start autofocus' button is highlighted. The 'Statistics' window shows various camera parameters. The 'Image History' window shows a list of captured images. The 'Sequence' window shows the current sequence details.

Imaging Tab:

- Gain: 25
- Offset: 10
- Cooling: 15.29%
- Sensor temp.: -10.00 °C / -10.00 °C
- Target temperature: -10 °C
- Min. Duration: 0 min
- Warming: 0 min

Camera/Focuser:

- Active filter: V
- Change

Mount:

- Tracking: Sidereal
- Sidereal time: 02:50:19
- Meridian in: 09:53:46
- Right Ascension: 00:44:05
- Declination: 41° 24' 37"
- Altitude: 66° 54' 46"
- Azimuth: 269° 14' 33"
- Side of pier:

Weather:

- Connected

Image History:

Duration	Time	Mean	HFR	Filter
60.00s	19:18:52	171	6.25	R
60.00s	19:19:53	168	6.09	R
60.00s	19:20:54	171	5.34	R
60.00s	19:21:55	180	7.12	V
60.00s	19:22:56	176	6.47	V
60.00s	19:23:57	181	5.65	V
60.00s	19:24:58	176	7.37	V
60.00s	19:25:59	172	5.98	V
60.00s	19:27:00	172	6.43	V
60.00s	19:28:01	171	7.22	V
60.00s	19:31:24	165	6.05	V
60.00s	19:35:28	172	5.98	V
60.00s	19:36:29	172	6.43	V
60.00s	19:37:30	171	7.22	V
60.00s	19:38:31	165	6.05	V

Autofocus Window:

- Time: 2025-01-01 19:30:22
- Position: 5220.00
- HFR: 5.09
- Temperature: 1.60 °C
- Filter: V
- Hyperbolic R²: 0.98
- Duration: 02:20.01

Statistics:

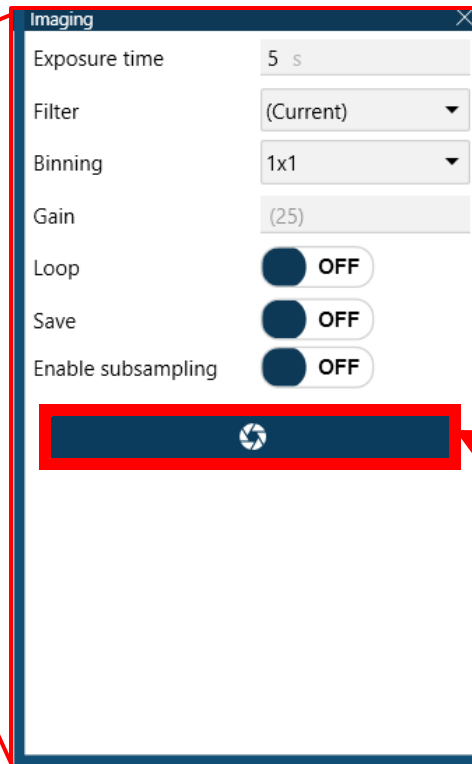
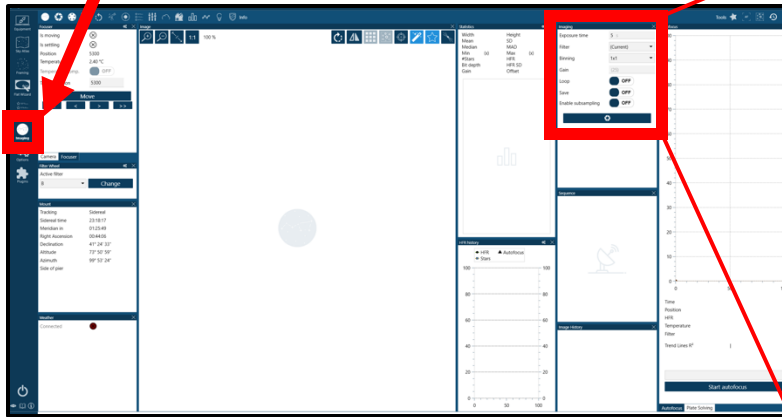
Width	Height
9576	6388
Mean	165.34
Median	164.00
Min	0 (44x)
#Stars	77
Bit depth	16
Gain	25
SD	80.61
MAD	17.00
Max	65535 (13x)
HFR	6.05
HFR SD	0.33
Offset	10

Sequence:

- Estimated finish time: 19:51:00
- Active sequence details: 8 / 10
- Target: Andromeda Nebula
- Mode: One after another
- Exposure time: 60 s
- Type: LIGHT
- Filter: V
- Binning: 1x1
- Gain: (25)
- Offset: (10)

TACKLING A PICTURE

1. Go in the 'Imaging' tab



2. Choose all the properties that you want:

- **EXPOSURE TIME**: time of the frame exposure in seconds
- **FILTER**: filter to be used for the capture
- **BINNING**: type of binning when pixels are read (lower binning is more precise, but takes longer time).
- **GAIN**: the conversion between the number of electrons ("e-") recorded by the camera and the number of digital units
- **LOOP**: if you want to take images in loop
- **SAVE**: if you want to save the taken images
- **ENABLE SUBSAMPLING**: if you want the camera's image to be downsampled (reduced in resolution). We suggest to leave it OFF

3. Click here to take a picture

TAKING A SEQUENCE OF TARGETS AND PICTURES

There is the option to take multiple consecutive pictures

1. In the Sky Atlas tab choose the target you want to observe

2. To add a target in a sequence of observations click on 'Add target to sequence' and then 'Legacy Sequencer'

The screenshot shows the N.I.N.A. - Nighttime Imaging 'N' Astronomy 3.1 HF2 software interface. The left sidebar contains icons for Sky Atlas, Framing, Flat Wizard, Sequencer, Imaging, Options, and Plugins. The main panel displays a list of astronomical targets with their details and transit graphs. The targets listed are IC 2184, NGC 81 (NPM1G +22 016), Abell 76 (PK 50-36.1), MCG 7-31-44 (NGC 5896), and NGC 5867. Each target has a small image, its coordinates, and a graph showing its altitude over time. A red arrow points from the first instruction box to the 'Sky Atlas' icon. Another red arrow points from the second instruction box to the 'Add target to sequence' button in the right-hand panel. Below this button, the 'Legacy Sequencer' button is also highlighted with a red box.

Name	Details	Altitude
IC 2184	RA: 07:29:27 Dec: 72° 07' 51" Type: GALCL Constellation: CAM 13.82 13.82 99.9 7.98"	Transit north 64°
NGC 81 NPM1G +22 016	RA: 00:21:13 Dec: 22° 22' 58" Type: GALXY Constellation: AND 16.4 16.4 99.9 12.00"	Transit south 66°
Abell 76 PK 50-36.1	RA: 21:30:04 Dec: -02° 48' 29" Type: GALXY Constellation: AQR 15.6 15.6 99.9 12.00"	Transit south 41°
MCG 7-31-44 NGC 5896	RA: 15:13:51 Dec: 42° 01' 27" Type: GALXY Constellation: BOO 19.5 19.5 99.9 12.00"	Transit south 86°
NGC 5867	RA: 15:06:24 Dec: 55° 43' 54" Type: GALXY Constellation: DRA 16.5 16.5 99.9 12.00"	Transit north 81°

1. Go in the 'Sequencer' tab

2. Here is the list of the targets in your sequence

The screenshot displays the N.I.A. - Nighttime Imaging 'N' Astronomy 3.1 HF2 - Telesio software interface. The 'Sequencer' tab is selected in the left sidebar. The main window shows target sequence settings for M 31 and M 45. Yellow rectangles highlight specific settings: 'Cool Camera' and 'Unpark Mount' under 'Target Set Start Options'; 'Warm Camera' and 'Park Mount' under 'Target Set End Options'; 'Slew to target' and 'Center target' under 'Target Options'; 'On start' and 'On filter change' under 'Autofocus'; and the 'Enabled' toggle for the target list. A graph on the right shows the transit path of M 31.

Name	RA	Dec	Rotation
M 31	0 h 42 m 44.3 s	41 d 16 m 7.5 s	0 °

Enabled	Progress	Total #	Time	Type	Filter	Binning	Dither	Dither every #	Gain	Offset
ON	0 / 10	10	180 s	LIGHT	B	1x1	ON	1	(25)	(10)
ON	0 / 10	10	180 s	LIGHT	V	1x1	ON	1	(25)	(10)
ON	0 / 10	10	180 s	LIGHT	R	1x1	ON	1	(25)	(10)

3. We suggest you to set ON all the parameters in the yellow rectangles:

- **Cool camera:** allow the camera to cool down before starting a target
- **Unpark Mount:** unpark the mount before starting a target
- **Warm Camera:** allow the camera to warm up at the end of a target
- **Slew to target:** slew the telescope + dome to the target
- **Center target:** take few pictures to better center the target in the field of view
- **Autofocus on start:** autofocus the camera before starting a target
- **Autofocus on filter change:** autofocus the camera when a filter is changed
- **Enabled:** enable that list of exposures to be taken

List of options for a set of pictures (click two times at a value to change it)

- **Progress:** number of picture that have been taken out of the total #
- **Total #:** number of pictures to be taken with the chosen options
- **Time:** exposure time (we suggest not to go above 180s)
- **Type:** type of picture (BIAS, DARK, FLAT, LIGHT = chosen target)
- **Filter:** filter to use
- **Binning:** binning of the pixels (lower binning is slower, but has higher resolution)
- **Dither:** slightly shift the camera between one picture and another (it helps to remove bad pixels of systematic pattern during postprocessing)
- **Dither every #:** after how many images the camera is slightly shifted
- **Gain:** conversion between electrons and digital units (25 is the unitary value)
- **Offset:** offset to apply to every pixel (useful to avoid negative values of the read-out-noise)



Enabled	Progress	Total #	Time	Type	Filter	Binning	Dither	Dither every #	Gain	Offset
<input type="checkbox"/>	0 / 10	10	180 s	LIGHT	B	1x1	<input checked="" type="checkbox"/>	1	(25)	(10)
<input type="checkbox"/>	0 / 10	10	180 s	LIGHT	V	1x1	<input checked="" type="checkbox"/>	1	(25)	(10)
<input type="checkbox"/>	0 / 10	10	180 s	LIGHT	R	1x1	<input checked="" type="checkbox"/>	1	(25)	(10)

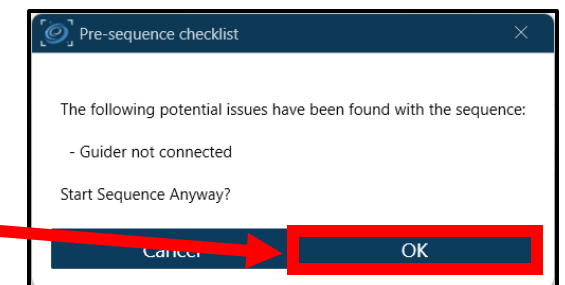
Toolbar icons: Power, Home, Info, Previous, Add (+), Delete (-), Refresh, Up, Down, Save, Print, Zoom, Start Sequence (Play), Stop Sequence (Square).

Click here if you want to add a set of pictures for that specific target

Click here to delete that set of pictures

Click here to start the sequence

A window like this will appear, click 'OK'



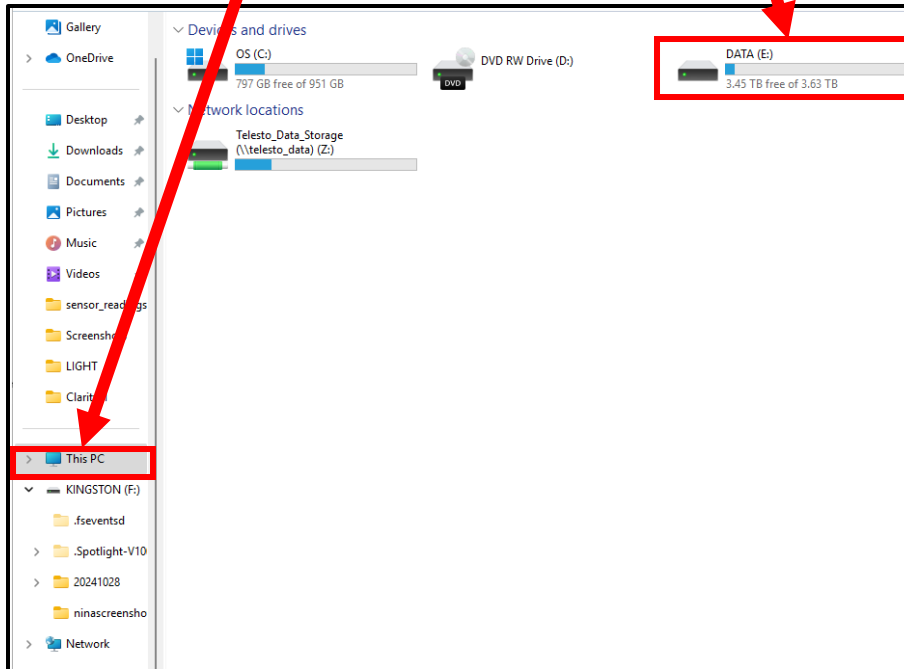
DATA STORAGE

Data (pictures) are automatically saved in as fits files. They are stored in the following path:

1. Select the folder icon in the bottom bar of the screen

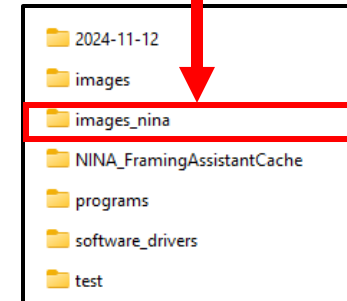


2. Click on 'This PC'



3. Select 'DATA (E:)'

4. Select 'images_nina'



3. Your data are stored in the folder of your observing date.

For example, the folder 2024-12-04 will contain images taken on the 4th of December 2024



2024-12-04	04/12/2024 18:41	File folder
2024-12-26	26/12/2024 20:38	File folder

END OF THE NIGHT

IN THE CONTROL ROOM

1. Park the telescope

1. Go in the 'Equipment' tab

2. Click on 'Mount'

3. Click on 'Park'

The screenshot shows the 'Telescope Control Room' interface. The left sidebar contains a vertical menu with icons for various functions. The main area is divided into several sections: 'Mount' (telescope information), 'Manual Coordinates' (target coordinates), 'Manual control' (directional buttons), and 'Settings'.

Mount Section:

Astrometric telescope control via Maestro			
Name	Astrometric telescope control via Maestro		
Description	Astrometric telescope control via Maestro		
Driver info	ASCOM driver for Astrometric telescope control via Maestro - v.1.0.2. Copyright Astrometric Instruments, Inc.		
Driver version	1.0.2		
Site latitude	46° 18' 30"	Site longitude	06° 08' 06"
Site elevation	0.0 m	Epoch	JNOW
Right Ascension	00:32:29	Meridian in	03:17:16
Altitude	56° 59' 39"	Declination	68° 18' 50"
Side of pier		Azimuth	30° 55' 39"
		Tracking	Sidereal

Manual Coordinates Section:

Target RA	Target Dec	Target Alt	Target Az	Action
0 h 0 m 0.0 s	0 d 0 m 0.0 s	0 d 0 m 0 s	0 d 0 m 0 s	Slew

Manual control Section:

Set tracking rate: [dropdown menu]

Directional buttons: N, W, Stop, E, S

Park Button: A red box highlights the 'Park' button in the bottom right corner of the interface, with a red arrow pointing to it from the instruction box above.

Settings Section:

None

Primary reversed: OFF Secondary reversed: OFF

2. Park the dome

1. Go in the 'Equipment' tab

2. Click on 'Dome'

3. Click on 'Park' (it will both park and close the dome)

The screenshot shows the NINA software interface. The left sidebar contains various equipment icons. The 'Equipment' tab is selected, and the 'Dome' icon is highlighted. The main panel displays the 'Dome' configuration page, which includes a table of dome parameters and a 'Manual control' section. The 'Park' button is highlighted in the bottom right corner.

Name	Device Hub Dome
Description	Device Hub Dome
Driver info	Device Hub dome driver, Version: 7.0
Driver version	7.0
Shutter status	Closed
Azimuth	180.00°

Manual control

Shutter

< 10 >

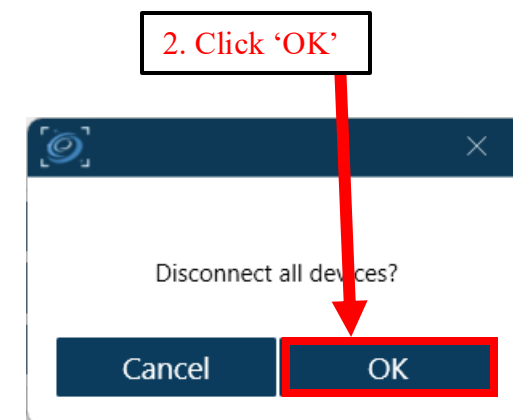
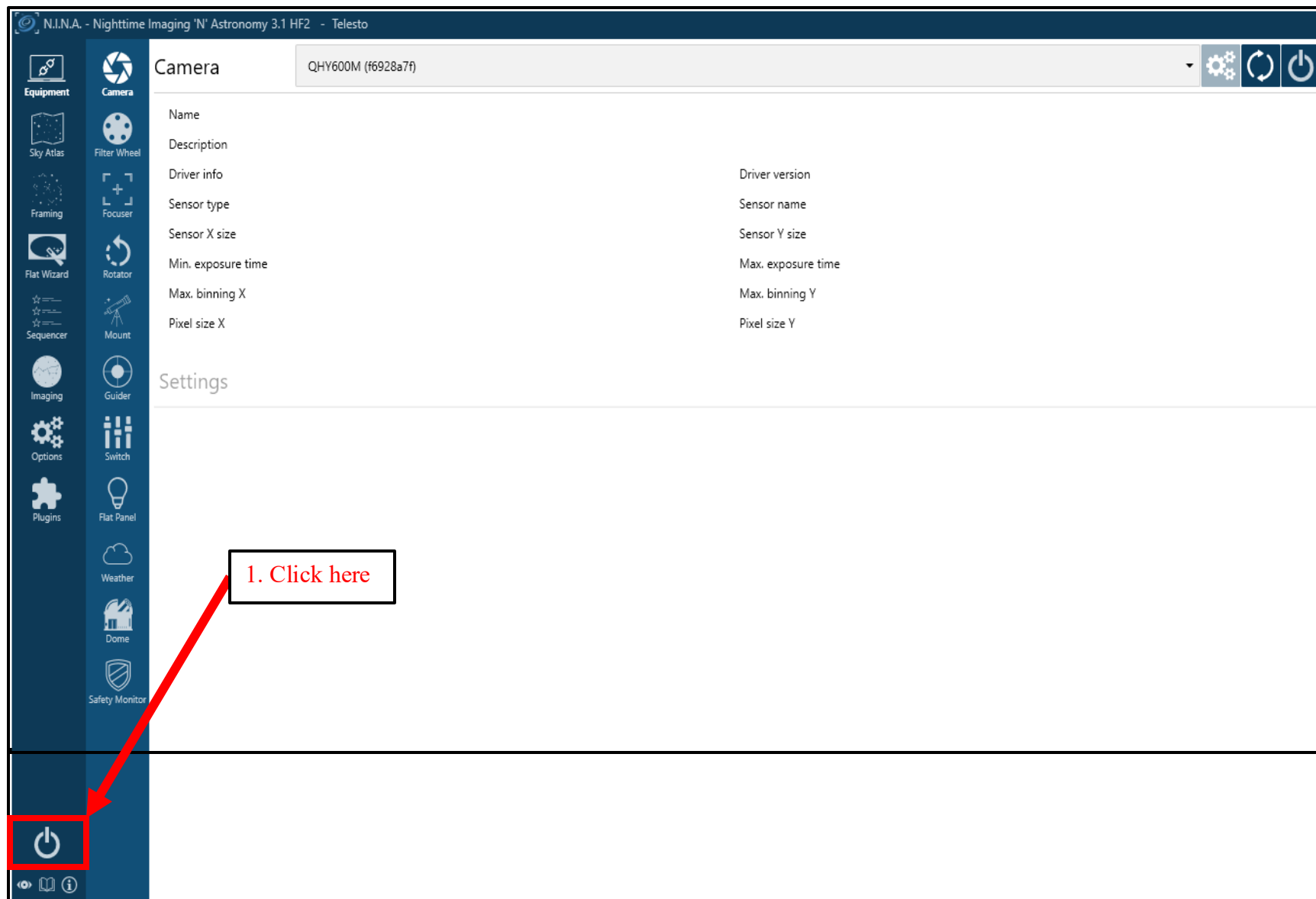
0 Slew

Stop

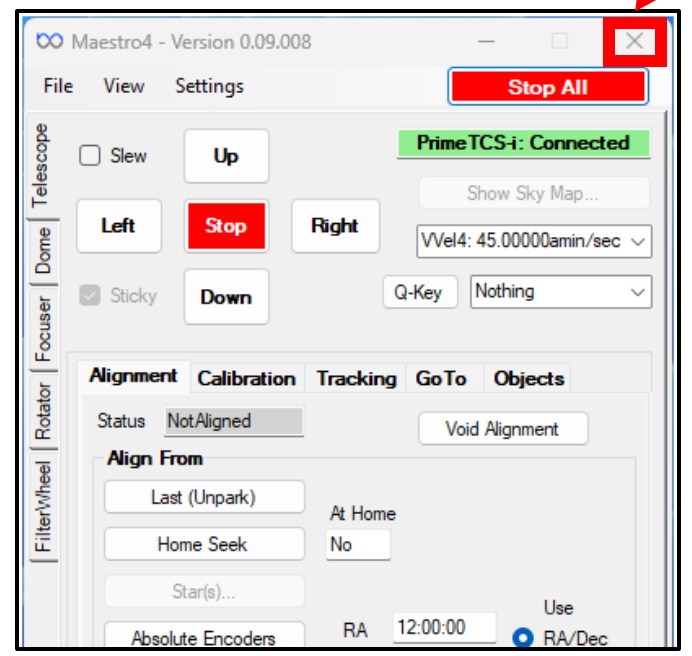
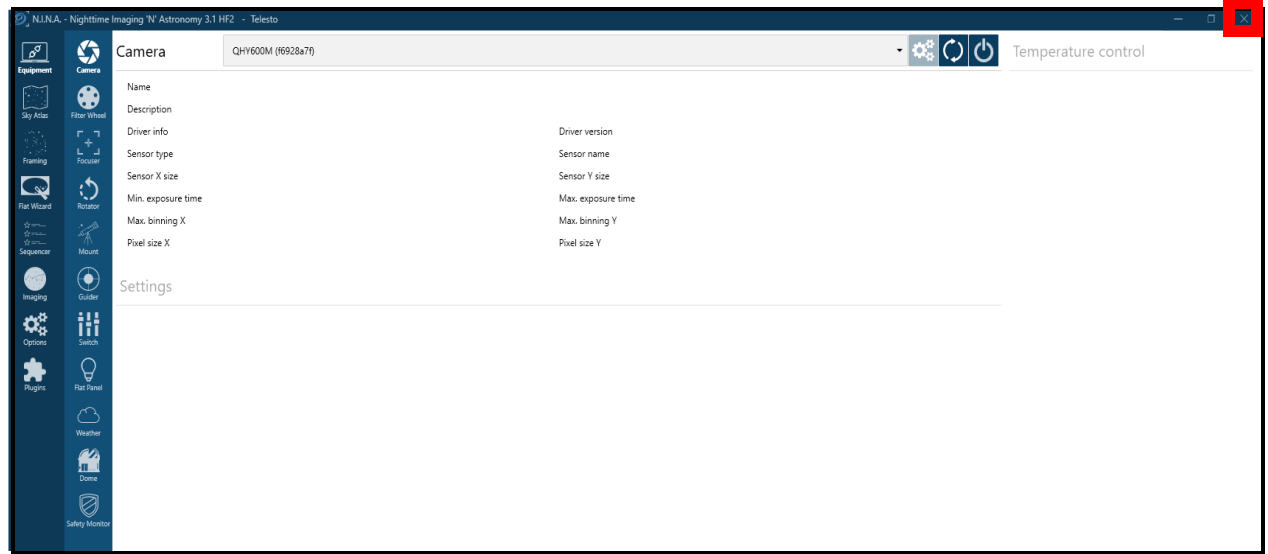
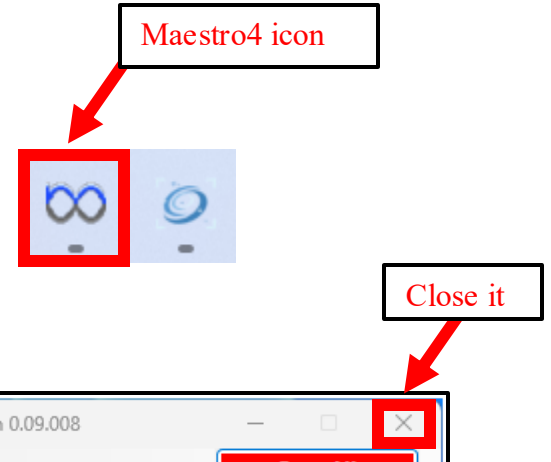
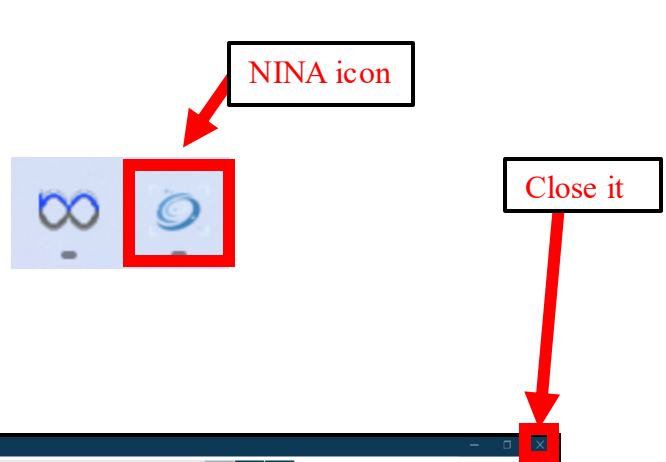
Park

Set as park

3. Disconnect all devices in NINA



4. Close NINA and Maestro

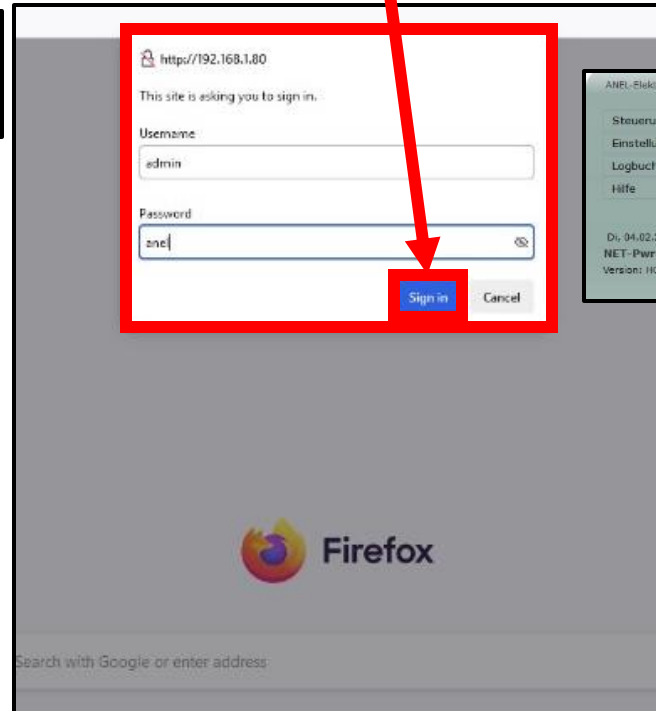


5. Shut down the telescope power

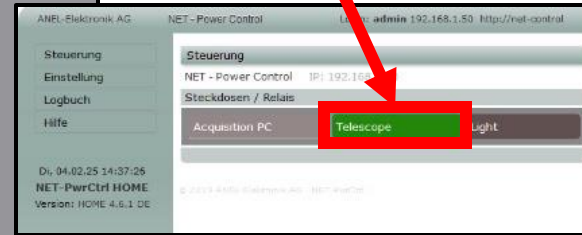
1. Open the Power control
(on the top right of the
Desktop)



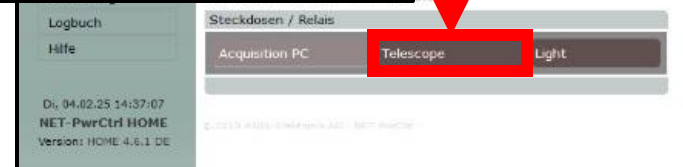
2. Click on 'Sign in'



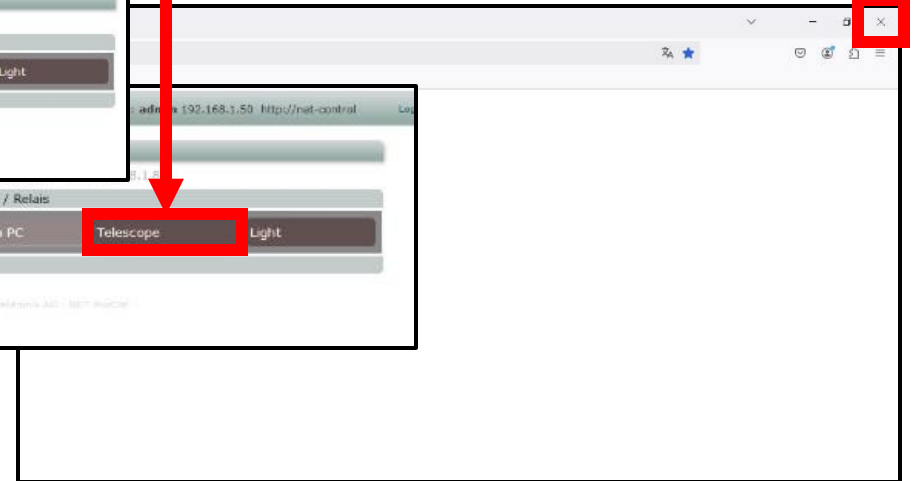
3. Click on 'Telescope'



4. All good !

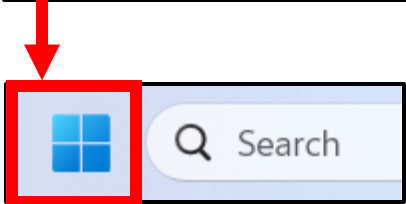


5. Close Firefox

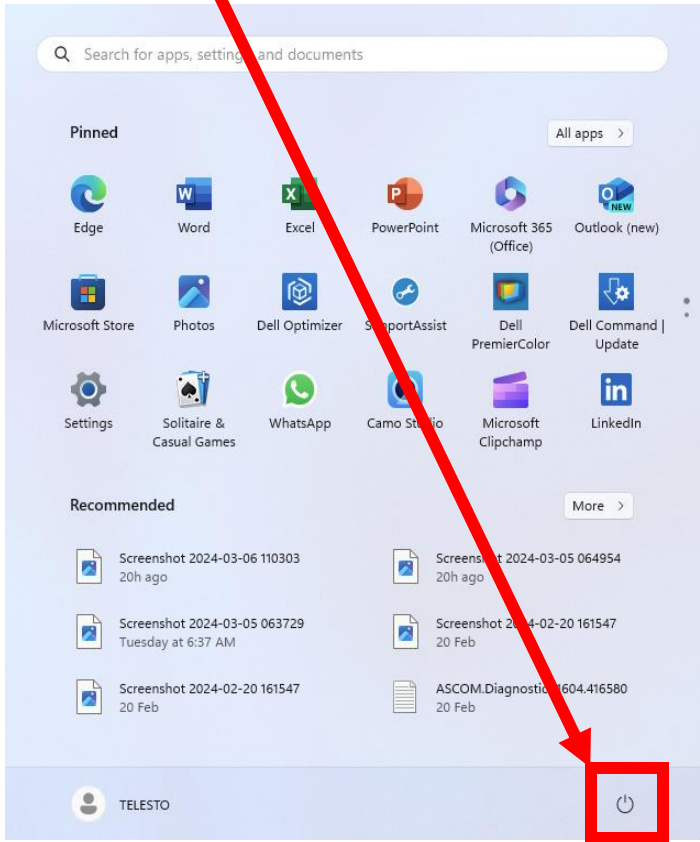


6. Snooze the computer (do not shut down!)

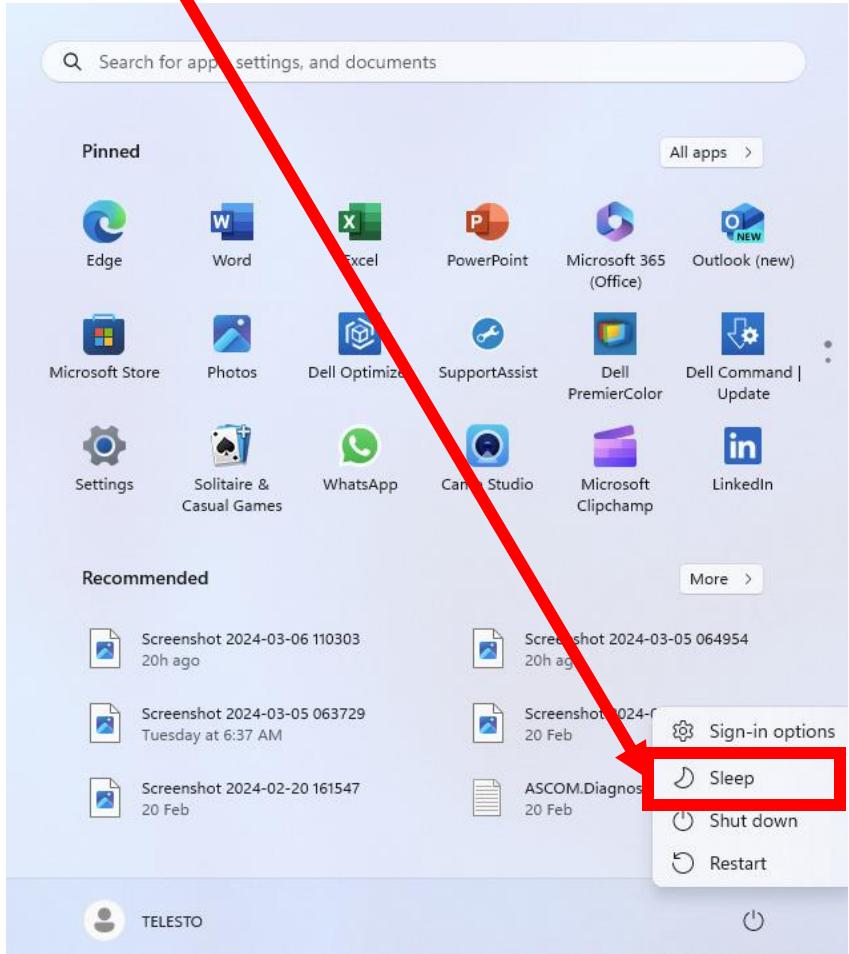
Select the Windows icon in the bottom bar of the screen



Click on the switching off button



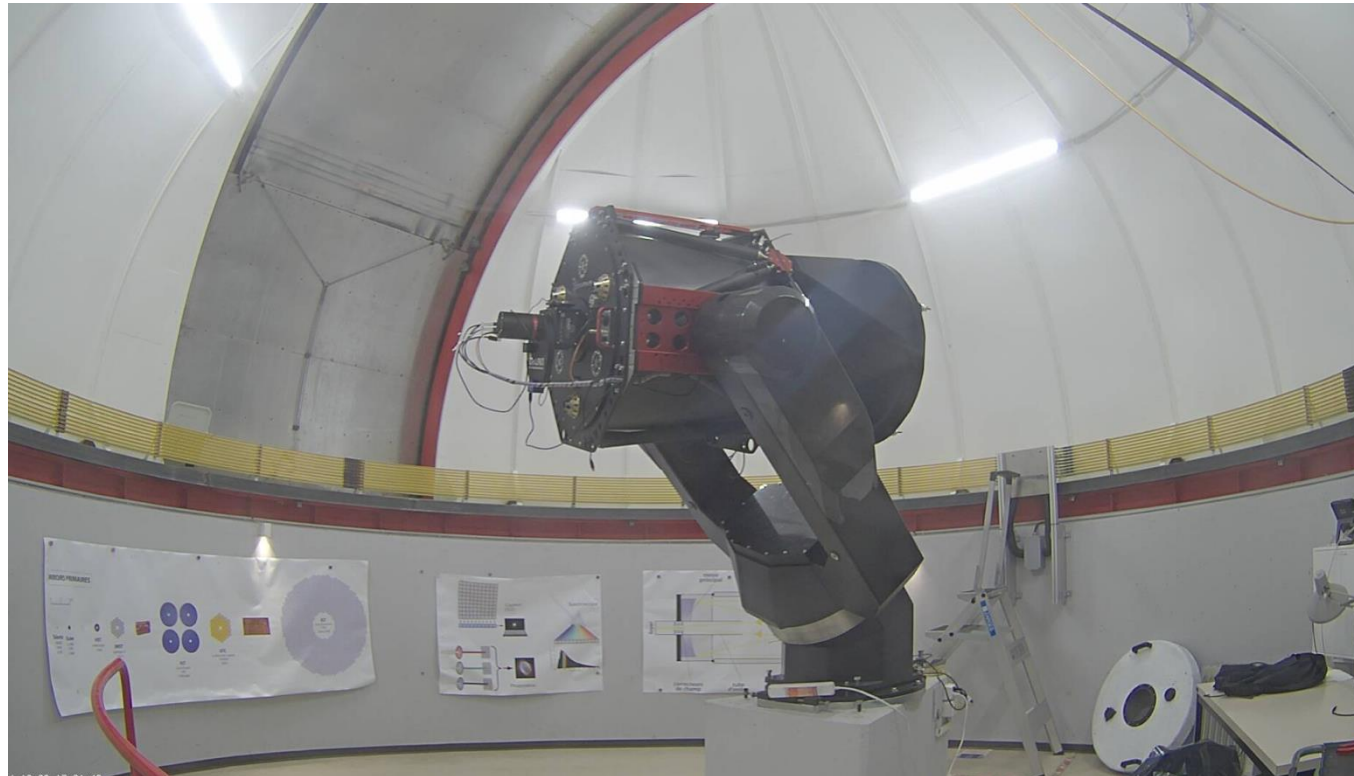
Click on 'Sleep'



IN THE DOME

1. Verify by eye that everything is fine:

- Check that the dome is closed
- Check that the telescope and the dome are parked. A corrected parking position is shown in the picture below (from the live camera). The dome aperture is above the ELT poster. The telescope is facing the ladder.



Be sure all lights in the building are switched off (Dome, Telesto control room, and stairs)

**HAVE SWEET
DREAMS**