

Using Nexus with ServoCAT

This document describes how to setup your Nexus for using it with ServoCAT.

Requirements:

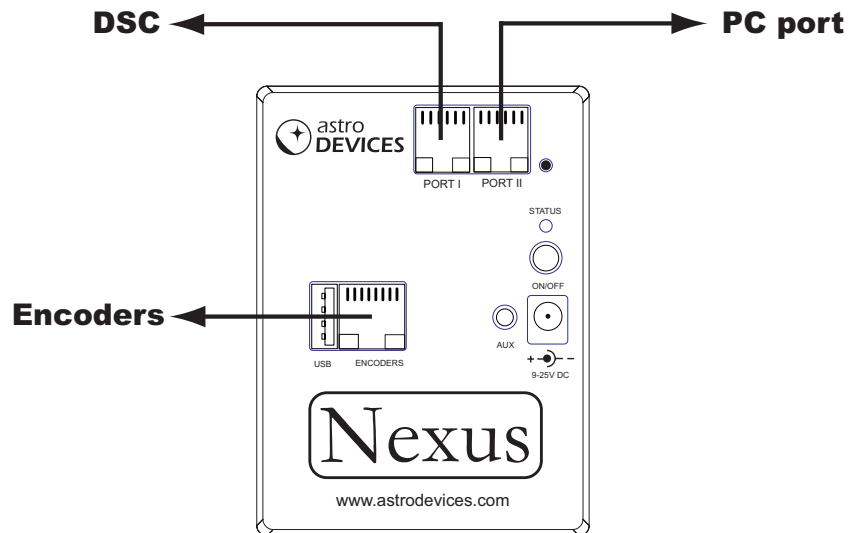
1. Nexus.
2. ServoCAT – both USB and non-USB versions are supported.
3. iPhone/iPad/iPod touch with Deep Sky Browser/Deep Sky Browser Lite and optionally SkySafari Plus/Pro installed.

Electrical Connections

Non-USB ServoCAT (Gen 1 & 2)

The following diagram shows how Nexus should be connected when used together with ServoCAT:

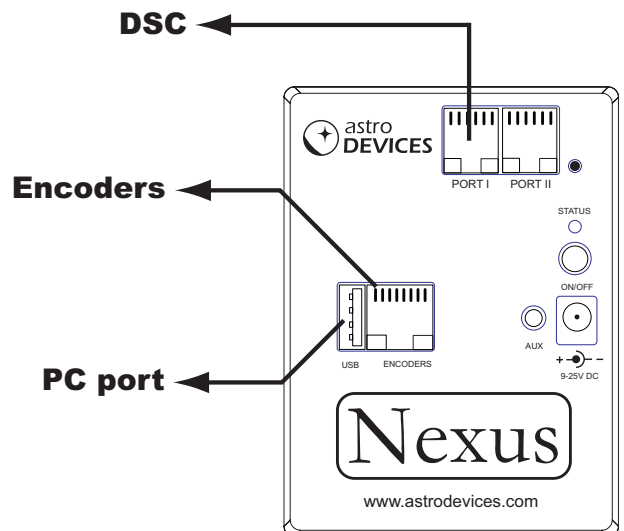
Where 'DSC' and 'PC Port' are the names of the ports on ServoCAT.



USB ServoCAT (Gen 3)

The following diagram shows how Nexus should be connected when used together with a USB version of ServoCAT:

Where 'DSC' and 'PC Port' are the names of the ports on ServoCAT.

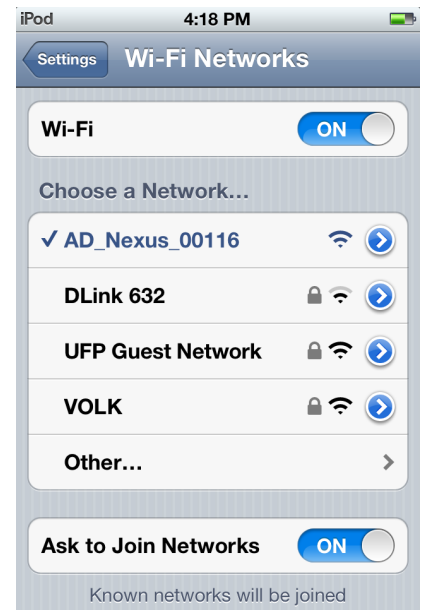


WARNING:

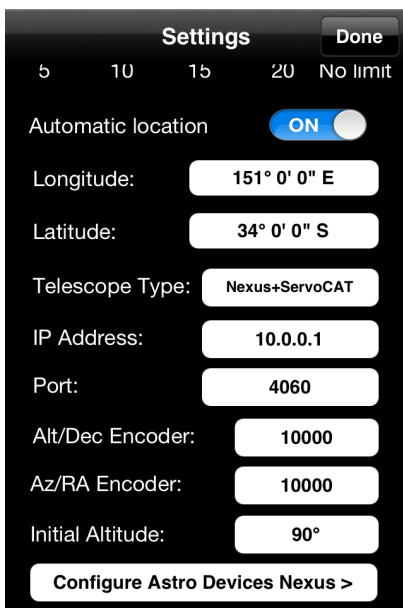
ServoCAT must be configured for Argo Navis mode of operation.
Please turn Nexus ON first when powering it from the same battery as ServoCAT

Nexus configuration

1. Please go to 'Setting' then 'Wi-Fi' on your iPhone/iPad/iPod touch. You will see 'AD_Nexus_XXXXX' there (where XXXXX is the serial number of your Nexus found on the back of Nexus), select it. Nexus will be connected in a few moments.



2. Run Deep Sky Browser and go to 'Settings' by touching .



Please select the 'Nexus+ServoCAT' telescope type by touching the button on the right from 'Telescope Type'. Set the 'IP address' to 10.0.0.1, 'Port' to 4060. Set 'Alt/Dec Encoder' to the number of steps per revolution of the altitude/declination encoder (10000 in this case). Set 'Az/RA Encoder' to the number of steps per revolution of the azimuth/right ascension encoder (10000 in this case). Set 'Initial Altitude' to either 90 degrees or 0 degrees. It is also advisable to set 'Automatic Location' to 'ON'. Touch 'Done'.

3. Make sure that configuration parameters are set correctly for using Nexus with ServoCAT. Please touch 'Configure Astro Devices Nexus' button and make sure all the parameters (except SSID) are set as follows:

Back Nexus Configuration

Firmware Version 2.1.0

DSC Parameters

RA/AZ Encoder cpr	10000
Dec/Alt Encoder cpr	10000
RA/AZ Drive Sign	1
Dec/Alt Drive Sign	1
Mount Type	Alt/Az
Errors Z1,Z2,Z3	0.000 0.000 0.000

WiFi Settings

Back Nexus Configuration

WiFi Settings

SSID	AD_Nexus_00116
Password	Password
IP address	10.0.0.1
IP mask	255.255.255.0
DHCP	AP DHCP
WiFi channel	3
Network type	AP mode
Transmission power	0

Port Parameters

Back Nexus Configuration

Port I baudrate	19200
Port I data bits	8
Port I stopbits	1
Port I parity	0
Port I protocol	SkyCommander
Port II baudrate	9600
Port II data bits	8
Port II stopbits	1
Port II parity	0
Port II protocol	ServoCAT

Back Nexus Configuration

Port II baudrate	9600
Port II data bits	8
Port II stopbits	1
Port II parity	0
Port II protocol	ServoCAT
USB baudrate	9600
USB data bits	8
USB stopbits	1
USB parity	0
USB protocol	ServoCAT

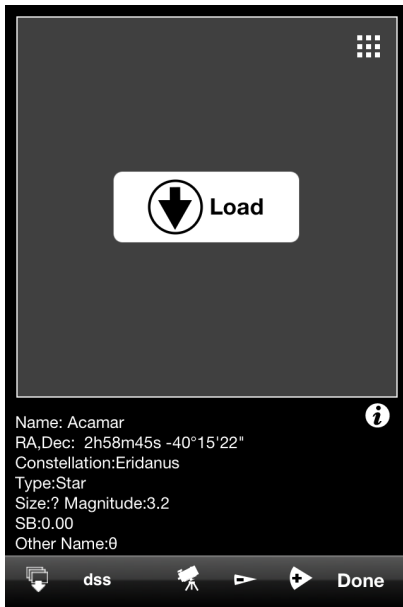
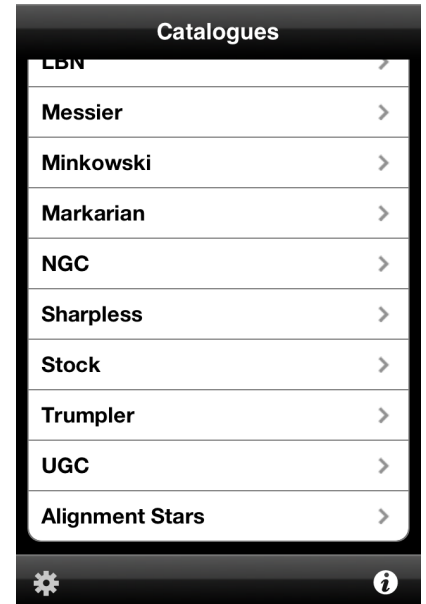
Back Nexus Configuration

Ports' Routing

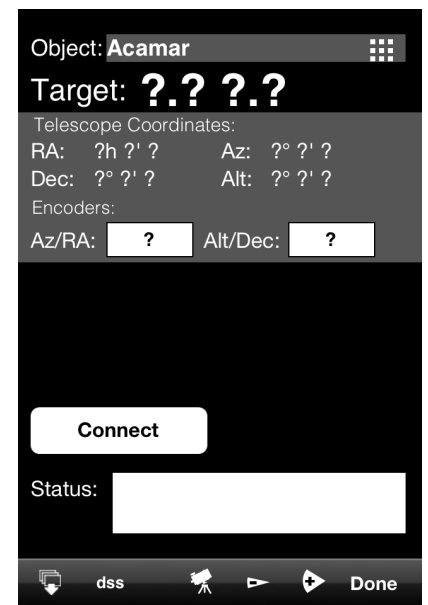
Port 0	Astro Devices
TCP/IP port	4060
Port 1	SkyCommander
TCP/IP port	4061
Port 2	ServoCAT
TCP/IP port	4062
Port 3	USB
TCP/IP port	4063
Port 4	NO connection

Two Star Alignment procedure

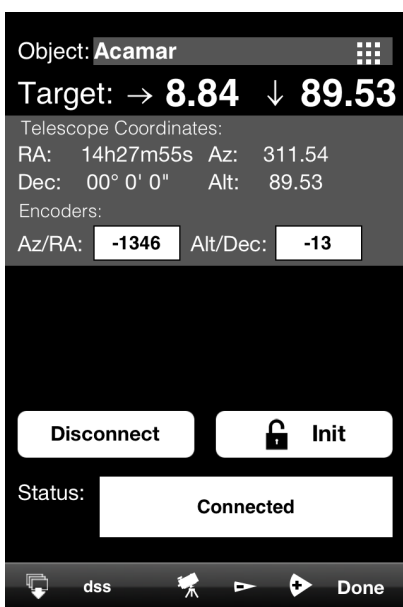
1. Select 'Alignment Stars' from the catalogues list. The list will show only the stars that are currently above the horizon.



2. Select a star from the list and activate the telescope control panel by touching the telescope icon.



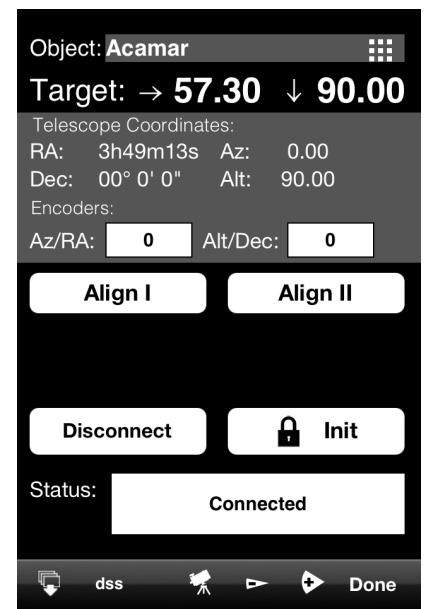
3. Touch 'Connect'. The screen will now show the current encoders' position and coordinates. The telescope coordinates will only be valid once the two star alignment is performed.



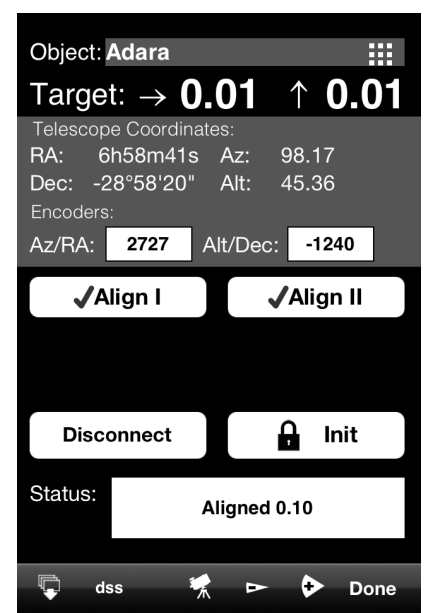
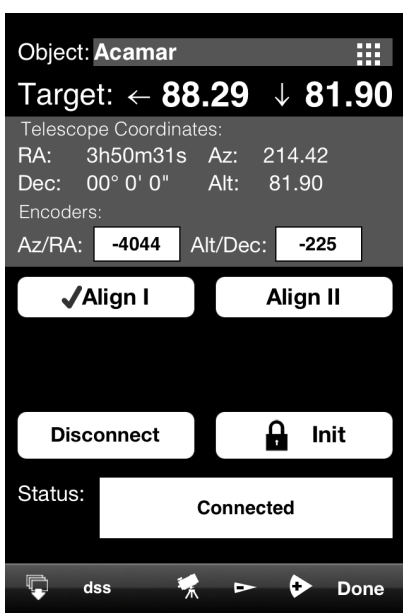
Note: Please make sure that Az coordinate is increasing when rotating the telescope clockwise and Alt coordinate is increasing when the telescope is moved up. Change the sign for the corresponding encoder steps to opposite in the settings if the coordinate is changing incorrectly.

4. Now point telescope vertically (if 'Initial Altitude' is set to 90 degrees) or horizontally (if 'Initial Altitude' is set to 0 degrees). Please note that the angle is relative to the telescope base and not the ground. The angle does not have to be very precise - +/- 5 degrees is enough.

Now touch the 'Init' button. You will notice that Az,Alt will go to 0, 90. Two buttons will be displayed now – 'Align I' and 'Align II'. The 'Init' button will be locked. 'Long touch' (2 seconds) will unlock the button if required.



5. Now point the telescope at the selected star (Acamar in this case) and touch 'Align I'. A tick mark will appear on the button. Now select a second alignment star (Adara in this case), point the telescope at the star and touch 'Align II'. A tick mark will appear on the 'Align II' button. The alignment error will be reported in the status window (0.10 here) – the smaller error the better pointing accuracy will be achieved.



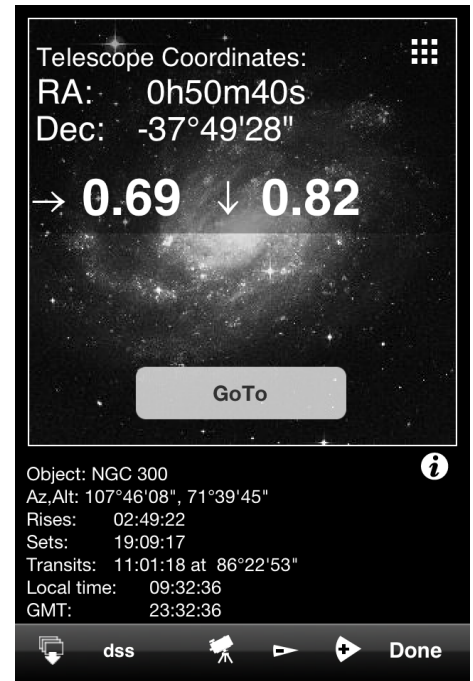
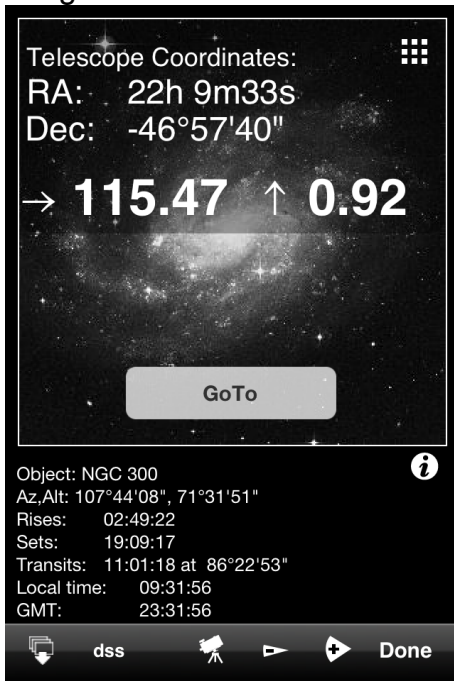
Note:

The two star alignment needs to be performed every time Nexus is power cycled.

The alignment stars should be between 45 and 70 degrees in altitude and be separated by at least 90 degrees in the azimuth in order to get best pointing results.

The Alignment is now complete.

Now you can touch the telescope icon again to display a small telescope control pane that shows only the direction arrows with deltas and current telescope coordinate. There will be also additional 'GoTo' button displayed if the telescope type was set to 'Nexus+ServoCAT'. You can now select an object from one of the catalogues and Deep Sky Browser will show where to move the telescope to point at the object (NGC300 in this case). The deltas will approach near zero values once the telescope is close to the object. Or you can touch the 'GoTo' button if using ServoCAT.



Using SkySafari Plus/Pro

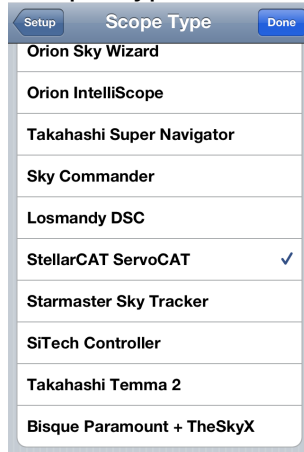
After performing the two star alignment with Deep Sky Browser Nexus becomes fully independent and calculates current telescope coordinates by itself. Nexus can now be used with SkySafari Plus or SkySafari Pro.

Please make sure that the following settings are used in 'Telescope' settings in SkySafari Plus/Pro:

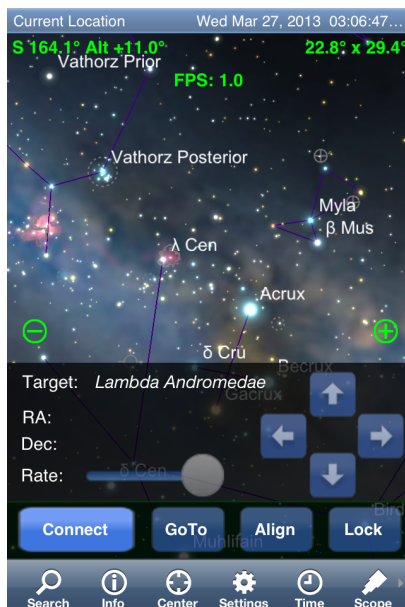
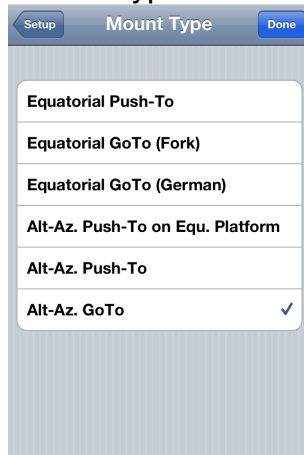


- Auto-Detect' SkyFi set to OFF
- 'IP Address' set to 10.0.0.1
- 'Port Number' set to 4062
- 'Set Time & Location' set to OFF
- 'Readout Rate' set to 10 per second

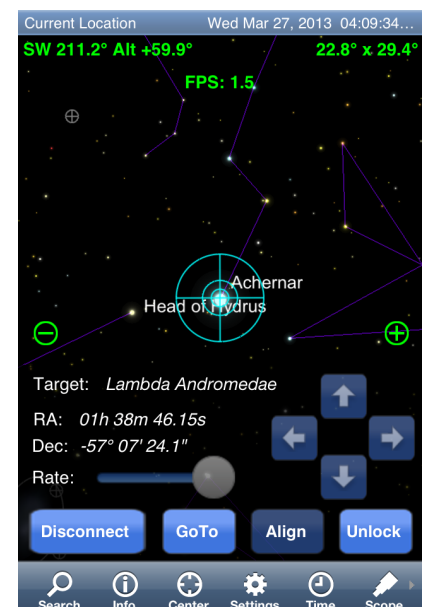
- 'Scope Type' set to 'StellarCAT ServoCAT':



- 'Mount Type' set to 'Alt-Azimuth' GoTo

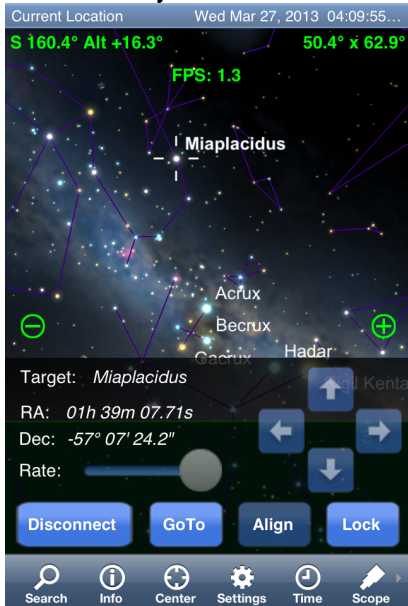


Now the telescope control panel can be activated:



By pressing the 'Connect' button SkySafari Plus/Pro establishes a communication with Nexus/ServoCAT. The telescope cursor will show the current telescope position:

Now an object can be selected in SkySafari Plus/Pro by touching that object:



By pressing the 'GoTo' button ServoCAT will slew to the object:

