

Specifications of SX Polar axis scope

Name	SX Polar axis scope
Finderscope	6x30mm (8 degrees real field of view)
Polar align method	Date & Time graduation circles with meridian offset scale
Polar alignment reticule	Polaris alignment scale in the northern hemisphere and Octantis' four stars alignment in the southern hemisphere
Accuracy of alignment	Within 3 arc minutes
Illuminator	Red LED light, pre-installed in the mount
Water level	Built-in water level

Preface

Thank you for your purchase of the SX Polar axis scope for Vixen SX (SPHINX) equatorial mount series astronomical telescopes. This manual describes how to install and use the SX Polar axis scope. Also, please read the instruction manual for SX (SPHINX) Equatorial mount for getting further information on using the mount and SX Polar axis scope.

WARNING! Never look directly at the sun with the naked eye or with a telescope. Permanent and irreversible eye damage may result.

CAUTION Never touch the equatorial mount body while it is in operation. Never put a finger into the hole through the Polar axis body for the Polar axis scope. It may hurt the finger due to a pinch.

About Polar axis scopes

Polar axis scopes are used for pointing the equatorial mount at the celestial pole precisely -- this process is called "Polar alignment". When taking long exposure astrophotography of nebulae or star clusters you will have to set the telescope's axis of rotation parallel with the Earth's axis of rotation exactly.

CAUTION

1. If Polar alignment is not done properly, stars will rotate around an axis in the center of the picture or stars will trail off and you won't be able to get tight stars images.
2. Polar alignment is not possible both in the northern latitude and in the southern latitude of over 70° .

Check latitude and longitude of your observation site on a map of the area before you setup the telescope for Polar alignment.

Name of each part on the Polar axis scope

- Time Graduation Circle (10 minutes increment)
- Date Graduation Circle (2-day increment)
- Meridian Offset Scale (Adjustable between E20° and W20° at 5° increment)
- Long Setscrew
- Water level on Time Graduation Circle
- Time Meridian Indicator mark
- Eyepiece of the SX Polar axis scope with knurled reticle focus knob.
- Reticle in the Polar axis scope (Small Polar alignment scale on the straight line correspond to positions of Polaris from 2003 throughout 2025.)

Installing the SX Polar Axis Scope

[1] Take off the plastic Polar axis cap by turning it counterclockwise.



Polar axis cap

[2] Attach the SX Polar axis scope to the Polar axis of the mount by turning it clockwise.
Note: Insert the SX Polar axis scope straight to avoid thread damage.



SX Polar axis scope

- [3] Screw the SX Polar axis scope into the Polar axis of the mount by putting your thumb on the long setscrew as a holding aid.



- [4] Take off the setscrew after you attach the SX Polar axis scope into the Polar axis of the mount. Keep the setscrew for maintenance of the Polar axis scope later on.



Using the Polar axis scope in the northern hemisphere

- [1] Set up the telescope on flat and hard ground where you can see Polaris in the sky. Point the Polar axis of the mount in the direction of north by using a compass if available. Adjust the tripod legs so that you place the tripod as level as possible.
- [2] Take off the Decl. cap and Polar axis cap. These caps can be removed readily by twisting counter-clockwise.
- [3] Adjust the mount in altitude until the latitude indicator (the edge part in front of the altitude scale) points to your latitude. (Refer to the manual for the SX equatorial mount.) The mount is set at an altitude around 35° at our factory. Be sure to adjust the mount in altitude when your observing site is different from the initial setting of a latitude 35° . Release the altitude adjustment clamp and turn the altitude adjustment knob for adjustment.

NOTE1: When the mount is used outside Japan or an area out from the initial setting of a latitude 35°, correct the range of the latitude adjustment to suite your observing latitude. (Please refer to page 29 of the manual for the SX equatorial mount)

NOTE 2: The altitude of the mount can be altered by simply turning the altitude adjustment knob. Release the altitude adjustment clamp before you turn the altitude adjustment knob so as to turn it easier. The altitude adjustment clamp is to prevent the mount from rattling during operation also. Lock the altitude adjustment clamp again right after you finish the altitude adjustment. (Please note that the altitude adjustment knob does not become tightened completely even if you lock the altitude adjustment clamp tightly.)

[4] Connect Star Book to the Sphinx and power it up. Advance through the initial steps to get to the current star map on the screen. Refer to the section “Aligning the telescope” in the instruction manual of the SX equatorial mount.

[5] Rotate the Decl. axis by operating the keys **DC+** or **DC-** while looking inside the Polar axis in front of the Polar axis body. Move until you see the Polar axis scope through the hole on the Decl. axis.

Note: You must use the controller to rotate the dec. axis in order to use the polar axis scope.



[6] Focus on the reticle of the Polar axis scope by turning the knurled eyepiece end while looking through the Polar axis scope.



Turn the knurled eyepiece end by holding the eyepiece.

[7] Adjust the brightness of the illuminator for the Polar axis scope. Press the key that is assigned for Menu to display the System Menu. Choose *Polar Axis Light Brightness* by moving the cursor with the arrow keys and press the key *Select*. The dialog box opens and you can adjust the brightness of the illuminated reticle in the Polar axis by operating the arrow keys as you look through the Polar axis scope.

[8] Turn the time graduation circle by holding the water level on its both sides so that you bring the bubble to the middle of the water level.



Check the difference between the standard time meridian of your region and your observing site on a map of the area. [See [Time-Zone and Meridian Offset Reference Information](#) document on [VixenAmerica.com](#) for examples.] If the observing site is in the east of the standard time meridian, rotate the time meridian indicator in the direction as indicated E on the meridian offset scale. If the observing site is in the west of the standard time meridian, rotate the time meridian indicator in the direction as indicated W on meridian offset scale.

You can move the time meridian indicator by rotating the eyepiece of the Polar axis scope (clockwise) while you hold the date graduation circle by a finger as shown in the Figure.



Example: If you are observing from Tokyo, which has a longitude of 139° and central time-zone meridian of 135° , you need to offset the standard time meridian indicator by 4° in the direction of E after you set the time meridian indicator to 0 degree on the meridian offset scale.



Time Meridian Indicator mark zeroed to Meridian Offset Scale.

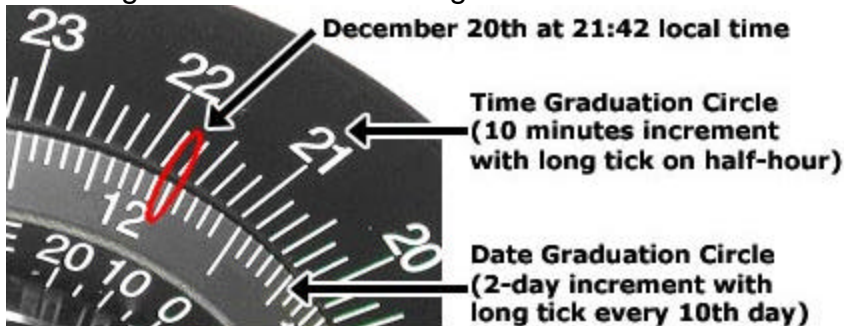


Offset of 4° East.

[9] Match the date graduation circle with your observing time by turning the eyepiece of the Polar axis scope (clockwise).



In the Figure the time and date graduation circles reads 21:42 on December 20th.



Look through the Polar axis scope at the reticle marking. The position of the north celestial pole moves gradually year after year due to precession. According to this, the position of Polaris shifts every year as shown on the reticle. You will now place Polaris on the reticle at a position on the alignment scale that matches the current year (between 2003 and 2025).

Looking through the Polar axis scope, adjust the mount in azimuth by turning either of the azimuth adjustment knobs until the Polar axis points in the right direction. Then, tighten the opposing azimuth adjustment screws to hold the mount in place. Turn the altitude adjustment knob to finish centering Polaris on the reticle.

Using the Polar axis scope in the southern hemisphere

- [1] Set up the telescope in a flat and hard ground where you can see Octantis in the sky. Point the Polar axis of the mount in the direction of south by using a compass if available. Adjust the tripod legs so that you place the tripod as level as possible.
- [2] Refer to set up procedures from [2] throughout [7] that are described for the use in the Northern hemisphere.
- [3] Rotate the reticle in the Polar axis scope by turning the eyepiece of the Polar axis scope until the orientation of the four small circles matches the orientation of the four stars of Octantis while looking through the Polar axis scope.
- [4] Place Octantis at set position in the reticle as shown in the Figure by adjusting the mount in altitude and azimuth by using the altitude adjustment knob and azimuth adjustment knobs while looking through the Polar axis scope.

Field of view of the Polar axis scope

Four stars of Octantis	Brightness (Magnitude)
Sigma	5.5
Chi	5.2
Tau	5.6
Nu	5.7

End.