

Vixen®



Polarie Star Tracker Product Guide 2012



"Starscape" taken with Polarie. Photo courtesy of Kouji Ohnishi.

POLARIE



POLARIE

Star Tracker



75505 Polarie Star Tracker

| Specifications | Polarie Star Tracker |
|--------------------------|--|
| Tracking mode | Celestial tracking rate. 1/2 of celestial tracking rate. Solar tracking rate (mean solar time). Lunar tracking rate (mean lunar time) : Usable in both northern and southern hemispheres |
| Wheel gear | 57.6mm dia. aluminium alloy axis with full-circle 144-tooth |
| Worm gear | 9mm dia. high tension brass |
| Power source | 2 AA-size alkaline batteries (2.4-3.0V) |
| External power supply | USB mini-B connection (4.4-5.25V) |
| Tilt meter | Angles between 0° and 70° (5° increments) |
| Compass | A margin of error is subject to magnetic declination at your location |
| Polar sight hole | About 8.9° field of view |
| Drive | Pulse motor (Stepper motor) |
| Tracking mode selector | Sidereal, 1/2 sidereal (star-scape), solar and lunar, usable in both hemispheres |
| Tripod socket | 1/4" -20 |
| Maximum payload capacity | 2kg (4.4lb) |
| Operating temperature | 0° to 40° C (104F) |
| Electricity consumption | DC3V.0.4A at loading weight of 2.0kg (4.4lb) |
| Duration of operation | About 2 hours at 20°C (68F), a 2.0kg (4.4lb) loading weight using Alkaline batteries |
| Optional accessory | Dedicated polar axis scope |
| Dimensions | 137 x 95 x 58mm |
| Weight | 740g (26.1oz) without batteries |

What is the Polarie Star Tracker?

The Vixen Polarie is a specialist photographic accessory that allows you to take pin-sharp photos of stars and constellations. It is designed to follow the apparent motion of the stars caused by the earth's rotation, eliminating star trails.

Using the Polarie to take wide field images of constellations, shooting stars as well the Milky Way is surprisingly straightforward.

Polarie also enables you to photograph "starscapes" by adding a darkened landscape or silhouetted figure in the foreground of your frame.

Product features

- The Polarie can be set up in a few minutes even by those not familiar with the exact position of the celestial pole. Simply turn the Polarie in the direction of the pole star using the supplied compass as a guide, then use the built-in latitude meter and polar sight hole to align the mount.
- The Polarie is designed to work with camera lenses that take wide-angle images.
- The Polarie can operate for more than 2 hours on two AA-size batteries.
- It's compact size and minimal weight means you can take the Polarie anywhere to photograph the night sky.

How to use the Polarie

Preparation

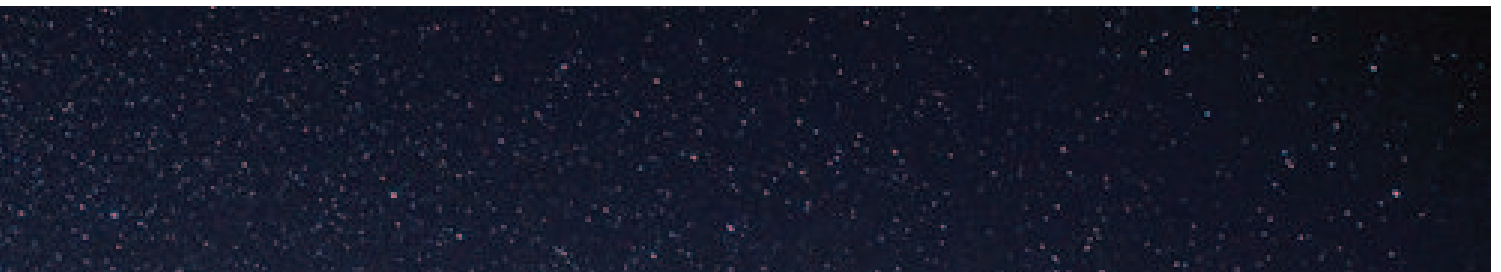
Once the AA-size batteries are installed, set the tracking direction using the northern/southern hemisphere selection switch.

Set Up and Polar Alignment

- (1) Attach the Polarie to a solid camera tripod using the 1/4" threaded screw socket on the base of the unit.
- (2) Remove the camera mounting block on the front of the Polarie by loosening the two thumb screws on its side.
- (3) Attach the optional ball & socket panhead to the camera mounting block and then attach the camera.
- (4) Set up the Polarie-mounted tripod on level ground where you can see the pole star and the area of sky you want to photograph.
- (5) Use the compass to locate north and point the Polarie in that direction.
- (6) Now set the mode dial to 'Preparation' and use the latitude meter to adjust the angle of the mount to match the latitude of the chosen area of sky you want to photograph.
- (7) Use the polar sight hole to locate the pole star and place it in the centre of the field of view.
- (8) Now attach the camera mounting block and camera to the front of the Polarie. Set the mode dial to either starscape photography mode or wide-field astrophotography and Polarie is ready to track your chosen target.



Polarie shown with optional tripod and camera (sold separately).



M42 Widefield. Photo courtesy of John Slinn.
47x 20 sec at ISO 800.
Canon 550D with Miniborg 45ED scope mounted on a Manfrotto 055XV tripod with 410 geared head plus 496RC2 ball head.



Pleiades M45 Cluster. Photo courtesy of John Slinn.
22x 2 min at ISO 800.
Canon 550D with Miniborg 45ED scope mounted on a Manfrotto 055XV tripod with 410 geared head plus 496RC2 ball head.

FAQ

Q1: What digital cameras are suitable for use with the Polarie?

A1: It is essential that the camera has the ability to open its shutter for a long period of time and can set focus at infinity.

Q2: What equipment is required besides the Polarie?

A2: A stable camera tripod and a ball & socket panhead on which to attach the camera. A shutter release cable is recommended to reduce vibration.

Q3: What type of lens is suitable to use with the Polarie?

A3: Generally it is advisable to use a wide-angle lens as these will allow you to take photos of whole constellations and the Milky Way. The longer the focal length of the lens, the shorter the exposure time available to ensure that stars are pin-sharp.

Q4: What should I consider to determine the maximum shutter exposure times?

A4: Generally you need to take into account the brightness of the sky background (the amount of light pollution), ISO speed setting and the aperture stop setting of the camera.

When using the Polarie in urban areas, acceptable exposure times will be shorter. When using the Polarie at a remote rural site, longer exposure times will be possible. The faster the ISO speed you set, the higher the light sensitivity of your camera for a given exposure time. This allows you take photos of faint stars that cannot necessarily be seen with the naked eye but the trade-off is an increase in electronic noise on captured images. Very wide angle lenses will allow for shorter exposure times but can result in distorted stars in the corners of the frame.

The table below shows recommended maximum exposure times to deliver pin-sharp star images using three lenses of different focal lengths from wide-angle to standard. The information in the table assumes that the Polarie is aligned at a tolerance of 2 degrees from the celestial pole. This is about the level of accuracy for polar alignment when using the polar sight hole of the Polarie.

| Focal Length (Regardless of CCD imaging size.) | Stars on the Celestial Equator | Stars on Declination at $\pm 60^\circ$ |
|---|--------------------------------|--|
| 15mm | 6 minutes 52 seconds | 13 minutes 45 seconds |
| 24mm | 4 minutes 17 seconds | 8 minutes 35 seconds |
| 35mm | 2 minutes 56 seconds | 5 minutes 53 seconds |

Note: The above exposure times are calculated on the assumption that the pixel size of the imaging device is 0.001mm.

Q5: What is 1/2 sidereal tracking mode on the Polarie?

A5: It is used to take "star scape" photos in which you add a foreground image such as a nightscape or silhouette of the landscape to your photo.

In celestial tracking mode, the camera follows the motion of stars so the stars are recoded as tiny dots with any landscape or silhouettes 'trailed', whereas using a fixed camera set-up will generate streaks of stars and a fixed landscape. The celestial tracking mode allows you to extend exposure times in order to keep the stars pinpoint while minimizing the motion of the nightscape or silhouette of landscape in the frame.

Optional Accessories for Polarie



75508 Polarie Polar Axis Scope

Allows for precise polar alignment for long exposure astrophotography.



40316 Ball & Socket Panhead

For use with VS-443D tripod. Universal 1/4" thread fitting.



36984 Velbon VS-443D Tripod

Folded Length: 58cm
Maximum Extended Height: 1161cm
Number of Leg sections: 4
Maximum Suggested Load: 5kg
Weight: 1.85kg
Supplied with Ball Head QHD-53D



Polaris Star Tracker is available exclusively from:
The Widescreen Centre 020 7935 2580 www.widescreen-centre.co.uk
Astronomia 01306 640714 www.astronomia.co.uk

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