

Vixen



Astronomical Telescopes



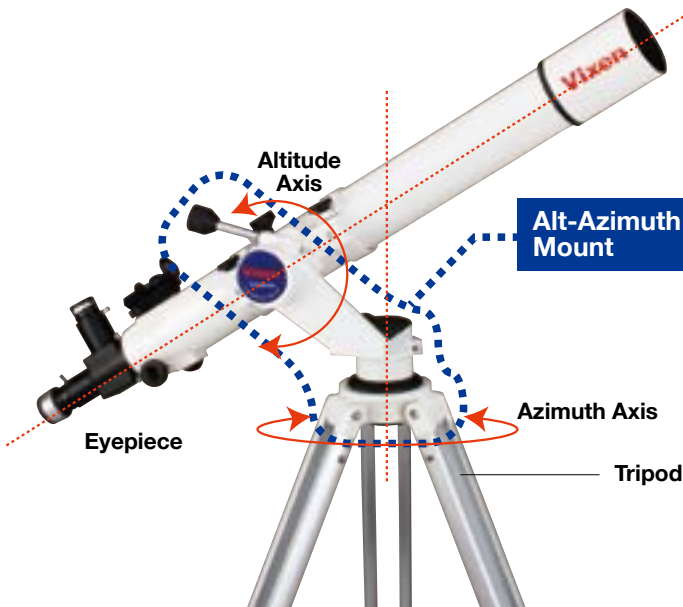
Tips on Selecting a Mount for a Telescope

Your Vixen telescopes are made up of various combinations of mounts and telescope optical tubes.

Alt-Azimuth Mounts

Enjoy star-watching anytime with ease.

The alt-azimuth mounts are easy to set up and do handling and are best suited for stargazers of entry-level. Features simple vertical and horizontal motion controls designed to easily point a telescope to the object you want to view.



PORTA II

The PORTA series of alt-azimuth mounts are an easy-to-use grab-and-go mount for astronomers of all levels. ▶6



MOBILE PORTA

A compact and lightweight altazimuth mount for beginners with features found in the popular PORTA II mount. ▶10



APZ

A simple alt-azimuth mount that is comprised of parts of the AP equatorial mount. It can be upgraded to an equatorial mount with additional components. ▶12



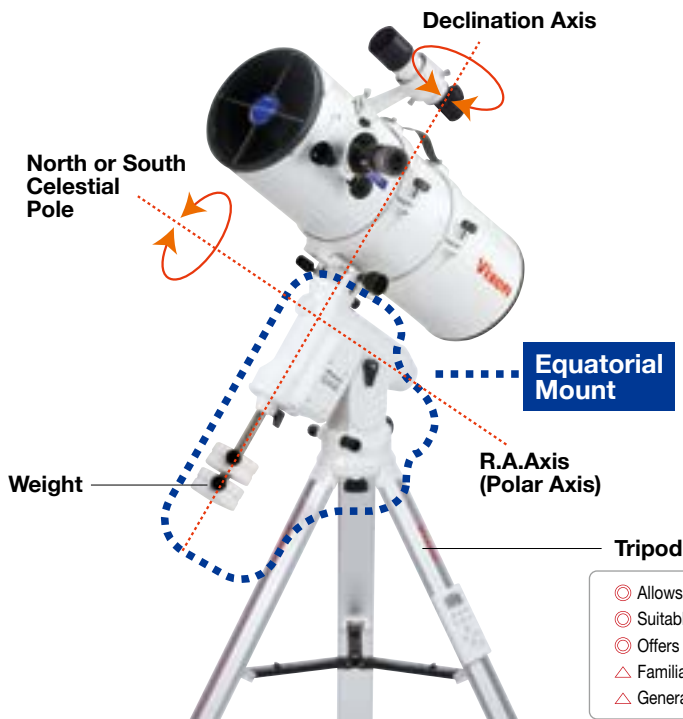
HF2 Fork Mount

A solid alt-azimuth fork mount designed to carry large aperture astronomical binoculars such as the BT series of binocular telescopes. ▶14

- ⊙ Can be assembled and handled easily due to its simple structure.
- ⊙ Lightweight and highly portable.
- ⊙ Can also be used to mount a spotting scope (field scope) for terrestrial viewing.
- △ Unsuitable for long observation at magnifications higher than 150X.
- △ Not designed for long-exposure astrophotography.

Equatorial Mounts

Best for serious astronomers who desire an equatorial platform of high accuracy for long observing and astrophotography. Features the ability to track an object following the diurnal motion (rotation) of the earth.



AP

A standard and versatile equatorial mount that provides a variety of optional accessories for adapting to your observing needs. The AP mount is ideally suited for beginners who want to become familiar with equatorial mounts, or observers who want a simple yet sturdy mount. ▶16



SX2WL

A sophisticated and user-friendly equatorial mount equipped with Wireless Unit for precision tracking and controls via a smartphone. It incorporates pulse motors by micro-step motion control that makes the movements of the mount extremely smooth and accurate. ▶20



SXD2WL

The next step up from the SX2WL featuring the Wireless Unit that enables you to control the mount via a smartphone. The solid mount body is designed for long observing sessions and astrophotography. ▶24



SXP2

The summit of the "Sphinx" series of equatorial mounts with STAR BOOK TEN controller. It offers you ultimate precision and unrivaled performance that excel in the class. ▶28



AXJ

The sturdy and precision-made AXJ mount, which is almost rival to Vixen's flagship AXD2, has a lightweight body that is usable with the SXG-HAL130 tripod. Best suited for the demanding astrophotographer as a comfortable and secure imaging platform. ▶31



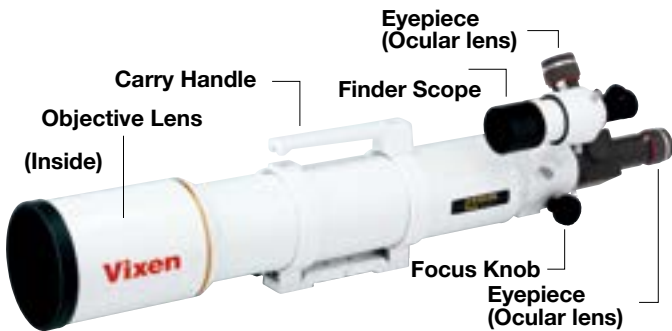
AXD2

It is Vixen's flagship equatorial mount designed for both superior performance and ease of use. Best for serious astrophotographers demand a perfect imaging platform. ▶34

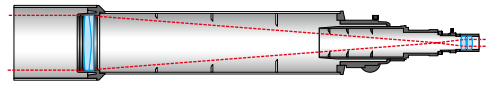
- ⊙ Allows accurate tracking of an object over an extended period.
- ⊙ Suitable for long observation at high magnifications, or for astrophotography.
- ⊙ Offers a wide selection from a mount with simple two axes drive to a mount with visual Go-To navigation.
- △ Familiarity with the movements of an equatorial mount is important.
- △ Generally heavier than alt-azimuth mounts.

Optical Tubes

Telescope optical tubes come in many different sizes and shapes. Choose one of the three distinct designs according to your needs. Any type of telescope tube; refractor, reflector, or Catadioptric, can be used for both visual and astrophotography. Choose an optical tube that suits your usage.



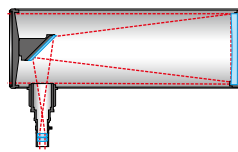
Refractor - Light is collected through an objective lens.



- ⊙ Constantly stable field of view with excellent contrast, suitable for observation of any celestial objects.
- ⊙ Features easy handling, storage, and maintenance.
- ⊙ Good thermal stability against outside temperature (Except triplet objective).
- △ Relatively expensive among other types of optical tubes with the same aperture size.
- △ Heavier than the other types of optical tubes due to multiple lens elements made of glass.

Newtonian Reflector

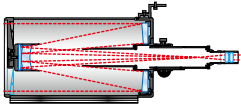
- Light is collected with a concave (parabolic) primary mirror.



- ⊙ Sharp central images with no chromatic aberration (No false color around images).
- ⊙ An optical tube even with a large aperture is obtainable at a moderate price.
- △ Tube currents are conspicuous and affect images if there is a difference in temperature between the inside of the tube and the environment. Wait an hour or more to cool down the optical tube.
- × It is not suitable for observation of the sun.

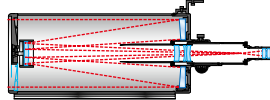
Catadioptric Reflector - It is an advanced combination of refractor and reflector.

VMC
(Vixen original Maksutov Cassegrain)



- ⊙ Both the primary and secondary mirrors are made of high-precision spherical mirrors.
- ⊙ The short and compact optical tube design makes it convenient to transport to the observation site and store.
- ⊙ Spherical aberration, chromatic aberration, and field curvature are well-corrected.
- △ Tube currents can be an issue, and they affect images if there is a difference in temperature between the inside of the tube and the environment. A good thing is relatively quick cool-down time due to the open tube design.
- × It is not suitable for observation of the sun.

VISAC (VC)
(Vixen Sixth-order Aspherical Catadioptric reflector)



- ⊙ Spherical aberration, coma aberration, chromatic aberration, and field curvature are corrected accurately.
- ⊙ The compact tube is convenient for carrying and is handy for observing/imaging.
- △ Tube currents can be an issue and affect images if there is a difference in temperature between the inside of the tube and the environment. The optical tube should cool down for an hour before use.
- × It is not suitable for observation of the sun.

Telescope Controllers

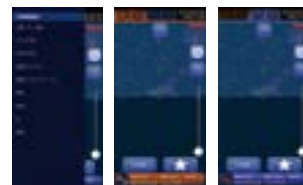
With observatory-quality motor controls and the star chart mode that makes you know where you are and where you want to go, you will catch a target object in your telescope's field of view effortlessly. Zooming in and out of the star chart is interlocked with motor speed.



Wireless Unit

(Automatic Tracking and GO-TO Slewing)

Allows for automatic GO-TO slewing and tracking on an SX series of Vixen equatorial mounts using a smartphone.



STAR BOOK ONE
(Automatic Tracking)

Works as a single or dual-axis controller on a Vixen equatorial mount.



STAR BOOK TEN

High Definition Color LCD

The wide 5-inch TFT color LCD of the STAR BOOK TEN displays stars and constellations of the night sky like those seen in a planetarium.

Slewing to an Object quickly with Command Keys

The STAR BOOK TEN has command keys to allow direct access to each list of celestial objects in the database.



Telescope Basics

We all have different ways of enjoying the starry night. The road to success in comfortable star watching is to choose an astronomical instrument that matches you.

1 Understanding the basics of Astronomical Telescopes

What do you want to see through the astronomical telescope? Are you interested in using it for taking astrophotography? Do you need to travel somewhere to do astrophotography? It will be necessary for you to choose the astronomical telescope according to your purposes. However, the best telescope for you is the one you will use the most. We systemize Vixen astronomical telescopes to work for upgrades according to an increase in the knowledge and experience of the users.

Effective Aperture of Objective Lens

The larger the effective aperture, the bigger the telescope tube.



The Workings of an Astronomical Telescope

Finderscope

A small sub-telescope for aiming at a target celestial object in a wide field of view at first.

Optical Tube

The tube part of a telescope.

Mount

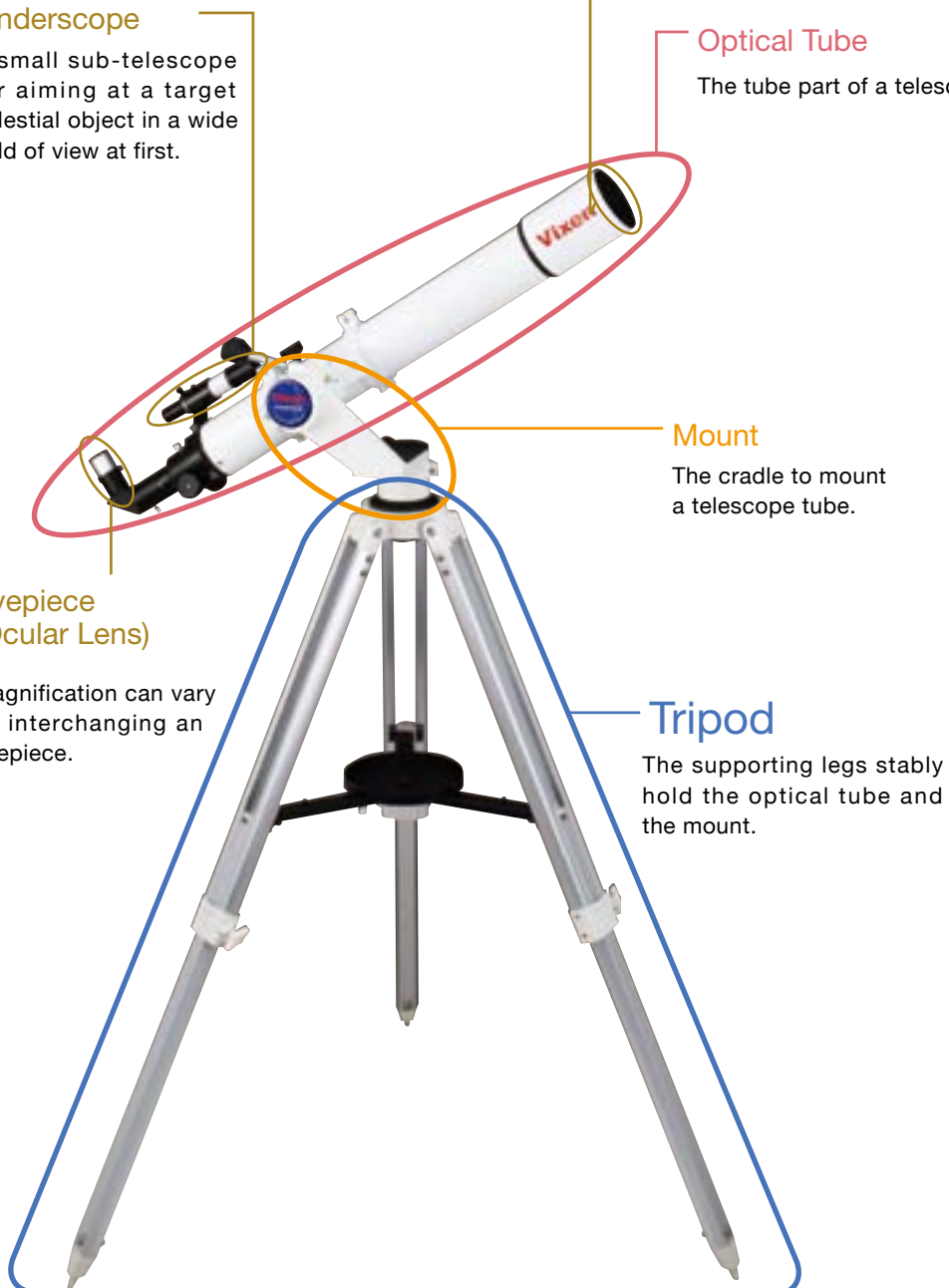
The cradle to mount a telescope tube.

Eyepiece (Ocular Lens)

Magnification can vary by interchanging an eyepiece.

Tripod

The supporting legs stably hold the optical tube and the mount.



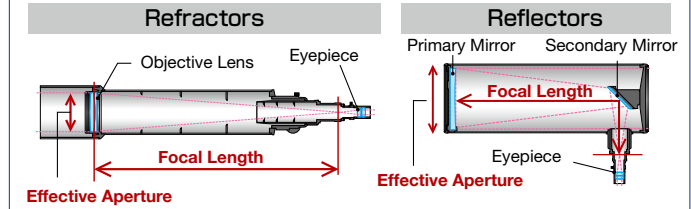
2 Aperture and Focal Length

The heart of an astronomical telescope is an optical tube that is composed of a lens or mirror for collecting light and an eyepiece for viewing with an eye. There are three main categories of astronomical telescopes; refractors, reflectors, and catadioptrics, and used for purposes and celestial objects suitable for each.

One of the criteria for choosing an astronomical telescope is its aperture (effective diameter of an objective lens or primary mirror). The principal purpose of astronomical telescopes is to collect as much as light from faint celestial objects. The larger the telescope's aperture, the more it gathers light, and the brighter images will result. It is an advantage in visual observation and astrophotography.

A diameter of an objective lens or primary mirror is called an effective aperture (aperture).

A focal length is the distance from the center of an objective lens or primary mirror to the point (focal point) where refracted or reflected light converges.



$$\text{Focal Ratio} = \text{Focal Length divided by Aperture}$$

Brightness with a focal ratio is expressed by an F value. The smaller the value, the brighter the image delivered by an astronomical telescope.

3 Understanding Magnification

A telescope's focal length and a focal length of an eyepiece are factors of magnification. Dividing the focal length of the telescope by the focal length of the eyepiece yields magnification. You can change the magnification by interchanging the eyepiece with that of a different focal length.

$$\text{Magnification} = \frac{\text{Focal Length of Telescope in millimeter}}{\text{Focal Length of Eyepiece in millimeter}}$$

Typically, a focal length of the eyepiece is on the side of the eyepiece barrel. Example: The eyepiece of 20mm in focal length

Example: The eyepiece of 20mm in focal length



Eyepieces



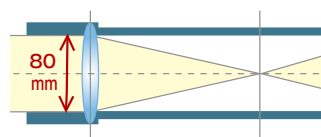
SLV series

For viewing widely scattered star clusters or nebulae, lower magnifications between 20x and 50x are suitable. For double stars and surfaces of the moon, middle magnifications from 50x to 100x would work well. To get a good look at planets, higher magnifications will be required.

4 Magnification appropriate to your Telescope

Although it is possible to increase magnification excessively, it results in a dim image and narrow field of view. You need to set up magnification appropriate to your astronomical telescope, and the aperture of the telescope will determine it. How much magnification is too much, and how much is just right? Multiplying the telescope aperture millimeters by 2 will get a maximum effective magnification.

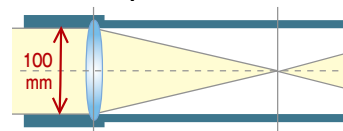
80mm in aperture



$$80 \times 2 = 160$$

An 80mm telescope can operate at a maximum of 160x theoretically.

100mm in aperture





$$100 \times 2 = 200$$


A 100mm telescope can operate at a maximum of 200x theoretically.


Aperture and Magnification :Watching with different magnifications.


The following table shows examples of what may be viewed for the given magnification and aperture. It depends on sky conditions also.




	Moon The easiest object to observe, suitable for beginners. It fills the whole field of view at 50x.	Magnification Aperture	Low (30x to 70x)	Middle (70x to 140x)	High (over 140x)
		~60mm	Entire moon can be seen in the field of view.	Lunar craters and seas can be seen.	Can be used only when seeing is good.
		80mm	Entire moon can be seen with distinct features.	Craters and mountains can be seen distinctly.	Half of the moon fills the field of view.
		100mm	Same as above.	Small craters can be observed.	Many valleys and mountains can be observed.
		150mm~	Same as above.	Details of small craters can be observed.	Small hills and details of valleys can be observed.

	Saturn Saturn's rings can be seen at about 100x. To see the rings in more detail, raise the magnification to 200x and over.	Magnification Aperture	Low (30x to 70x)	Middle (70x to 140x)	High (over 140x)
		~60mm	Saturn can be seen small in the field of view.	Rings and satellite Titan are easily seen.	Saturn's bands may be visible.
		80mm	Mainly used for centering the planet in the field of view.	Saturn's bands, shading of rings, and Cassini's division can be seen.	Magnification over 150x is recommended when making a sketch.
		100mm	Same as above.	Same as above and two satellites are visible.	Saturn's bands and three separated rings can be seen.
		150mm~	Same as above.	Same as above and three satellites are visible.	Saturn's bands can be seen, and the outermost ring can be observed distinctively.

	Jupiter At about 80x, a few cloud bands can be seen. As Jupiter is a bright object, it is possible to observe at high magnification if seeing is excellent.	Magnification Aperture	Low (30x to 70x)	Middle (70x to 140x)	High (over 140x)
		~60mm	Suitable for observing the four largest satellites.	It is easy to see a satellite crossing the planet and two or three cloud belts.	High magnification can be used only when seeing is good.
		80mm	Same as above.	Rough structure of cloud bands can be detected.	Magnification over 150x is recommended when making a sketch.
		100mm	Same as above.	Detailed structure of cloud bands can be detected.	Magnification higher than 200x is recommended when making a sketch.
		150mm~	Too bright to observe.	Suitable for observing the four largest satellites.	Detailed structure and changing of cloud bands can be observed.

	Venus and Mercury Suitable objects for beginners with the telescope. These planets are observable only in the west at dusk or in the east just before dawn.	Magnification Aperture	Low (30x to 70x)	Middle (70x to 140x)	High (over 140x)
		~60mm	Mainly used for centering the planet in the field of view.	Cycle of phases on Venus is observable. At the greatest elongation from the Sun, it appears like a half moon.	Easier to view Venus when seeing is good. Too high to view Mercury.
		80mm	Same as above.	Same as above.	Easier to view when the planets are high in the sky.
		100mm	Same as above.	Should be used when seeing is poor.	Brightness of edge, white spot, and tint of Venus are visible. Mercury's cycle of phases is observable.
		150mm~	Same as above.	Same as above.	Brightness of edge, white spot, and tint of Venus are visible. Faint pattern on Mercury may be visible.

	Mars Mars' appearance changes over time. The best observing seasons occur every 26 months at opposition when it is closest to Earth. Surface patterns and polar ice caps are visible at that time even through small telescopes at high magnification.	Magnification Aperture	Low (30x to 70x)	Middle (70x to 140x)	High (over 140x)
		~60mm	Mainly used for centering the planet in the field of view.	When Mars is at opposition, Syrtis Major and polar ice cap are visible.	Easier to view when seeing is good.
		80mm	Same as above.	Polar ice cap and a few contrasting surface patterns are visible.	Magnification over 150x is recommended when making a sketch.
		100mm	Same as above.	Should be used when seeing is good.	Various surface patterns can be identified when it comes close to Earth.
		150mm~	Same as above.	Same as above.	Various features can be identified at magnification over 200x.

	Nebulae and Star Clusters Most of these objects are suitable to view with magnification lower than 50x. For the Andromeda Galaxy and Orion Nebula, magnification of 20x to 30x is recommended.		Multiple Stars, Variable Stars, and Comets Many intriguing deep sky objects, variable stars, and comets can be observed with a small telescope if they are not too dim in the field of view of your telescope.		Sun Never look directly at the sun with the telescope. Use a refractor and a proper sun projection screen for observing the sun safely.

Magnification is not the only factor!

Telescope magnification can be increased to any high magnification theoretically, however, it does not necessarily make the image clear. It is essential to view at an appropriate magnification. An immoderately high magnification deteriorates image quality and will result in a blurred image. High Magnification Does Not Imply High Performance.

It is said that the allowable maximum magnification is 2.5 times the effective aperture of the telescope.

For example, if your telescope has 80mm in aperture, the usable maximum magnification is $80 \times 2.5 = 200$.



Appropriate magnification



Excessive magnification

Image quality in different apertures

The larger the effective aperture of the telescopes, the higher the light gathering power and resolving power of the telescopes. Even though the image quality is dominated by the optical performance of the objective lens or primary mirror, telescopes with large aperture yield a bright and high contrast image.



Large aperture at high magnification



Small aperture at high magnification

Apps that represent the fascination of the starry sky.



These apps for smartphones are available to download free of charge.



Planet Book

(available in Japanese only)

It shows you in which direction and time, the planets can be seen or located.

Screen: Choose Saturn in opposition

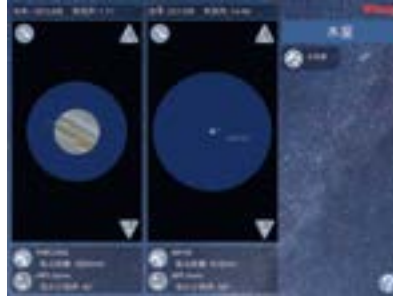


Eyepiece Book

(available in Japanese only)

It shows you how the moon or planets are seen in your telescope's field of view by choosing a telescope and an eyepiece.

Screen: Choose a view of Jupiter



Moon Book

It shows you in which direction and time, the moon eclipse is seen. The star charts and phases of the moon can be displayed on the screen in real-time.

Screen: Choose the Moon surface



Comet Book

It shows you in which direction and time, the comet is seen. You can register the orbital elements for a new comet to view by downloading the data.



Solar Book

(available in Japanese only)

It shows you in which direction and time, the solar eclipse is seen. Phases of the eclipsing sun can be indicated in the order of time scales.



Mars Book

It shows you the motions of Mars by simulated animations. The phenomenon of the Mars approach to the earth is indicated plainly.



Night Vision Light

(Light for Night Vision)

It allows you to change the screen of your smartphone (or tablet) to the red light for illumination to protect your night vision. The illumination is adjustable.

Assist in taking astrophotography.

These apps are convenient when shooting deep-sky objects, time-lapses of the starry night, or multiple exposures of the moon or the sun.



Nebula Book

(available in Japanese only)

It assists you in shooting deep-sky objects such as nebulae and star clusters. It is an introductory app useful for taking astrophotography.



TimeLapse Book

(available in Japanese only)

It assists you in shooting time-lapse movies by showing with simulations how constellations or the moon are seen in real-time.



Interval Book

(available in Japanese only)

It assists you in indicating how interval images are displayed with multiple exposures of the moon and the sun.



POLARIE U

It allows you to control the POLARIE U star tracker via your smartphone. The rotation speed and the shutter release can be adjusted for time-lapse photography.



PF-L Assist

It displays the sight in the field of view introduced by the polar alignment scope PF-L11 in real time to assist your settings of the polar alignment.



All the smartphone apps are available for free to download.▶ <https://www.vixen.co.jp/app/>



PORTA II PORTA II Alt-Azimuth Mount

Designed to easily point a telescope to the object you want to view.



Most amateurs who desire a stable and handy grab-and-go alt-azimuth mount will appreciate the great features of the PORTA II.

39951

PORTA II Alt-Azimuth Mount with tripod

If you already have a Vixen optical tube assembly, you may choose only the PORTA II mount with a tripod. The PORTA II mount accepts an optical tube of less than 160mm in outside diameter.

Specifications	PORTA II alt-azimuth mount
Mount type	Alt-azimuth, friction control
Vertical and horizontal slow motions	Worm and wheel gears with 120-tooth whole-circle micro movement, with slow motion handles
Optical tube set up	Dovetail-plate attachment system
Load capacity	5 kg
Tripod legs	2-section aluminum legs, adjustable from 900mm to 1300mm in length (705mm to 1200mm in height)
Total weight	5.7 kg (Incl. tripod)



Friction Stop Motion

An optical tube can be moved freely by hand and the friction holds its position anywhere you stop it. It allows you to manually point the telescope at target celestial objects you wish to view.



Compartment for Tools

Slow motion handle positions and the amount of friction on the axes are adjusted with tools located in the compartment under the rubber covering. You will always have your tools available.



Dovetail-plate Attachment

With Vixen's renowned dovetail-plate system, many optical tubes, up to 160mm in outer diameter, can easily be swapped on and off the mount.



Slow Motion Control Handles

The whole-circle slow motion movement of the PORTA II provides smooth telescope operation at every pointing angle. Handle positions of both vertical and horizontal slow-motion controls can be altered in 45-degree increments. This allows a comfortable posture while using the slow motion handles for various size optical tubes.



Fixing with a Single Bolt

Attaching or detaching the PORTA II mount to/from its tripod is simple with a single fixing bolt. The fixing bolt has a large gripping knob to tighten securely. It is a convenient feature for storage in a limited space.



Accessory Tray

The accessory tray holds small pieces such as a compact camera and eyepieces. Very useful when observing at night.

PORTA II Mount Packages



39952

PORTA II A80Mf

The A80Mf is a standard refractor telescope usable for observation of bright planets, nebulae, and star clusters. With the supplied erect-image diagonal, the telescope is useful for terrestrial viewing in the daytime.

PORTA II Mount Package

PORTA II, A80Mf optical tube assembly, 2x eyepieces, Tripod

Contents	Optical tube : 90mm dia. x 860mm long, 2.5 kg
	Finder scope : 6x30mm, field of view 7 degrees
	Eyepiece : PL20mm (46x), PL6.3mm (144x)
	Mount : PORTA II alt-azimuth mount
	Tripod : 2-section aluminum legs, adjustable from 900mm to 1300mm in length
Accessories : Round accessory tray, Erect-image diagonal	

Specifications	Objective lens : D=80mm F=910mm (f11.4) achromatic lens, multi-coated
	Light gathering power / Limiting magnitude : 31x unaided eye / 11.3
	Adapter threads : 43mm and 42mm for T-ring
	Visual back : 31.7mm push-fit
	Tripod legs : Adjustable from 705mm to 1200mm in height
Total weight : 9 kg (Excl. eyepieces)	

39956

PORTA II ED80Sf

A premium refractor that incorporates the extra-low dispersion ED glass for images free of chromatic aberration. Complete with an aluminum case for the ED80Sf optical tube.

PORTA II Mount Package

PORTA II, ED80Sf optical tube assembly, 2x eyepieces, Tripod

Contents	Optical tube : 100mm dia. x 570mm long, 3.4 kg
	Finder scope : 9x50mm, field of view 4.8 degrees
	Eyepiece : NPL20mm (30x), NPL6mm (100x)
	Mount : PORTA II alt-azimuth mount
	Tripod : 2-section aluminum legs, adjustable from 900mm to 1300mm in length
Accessories : Flip mirror diagonal, round accessory tray, Aluminum case for ED80Sf	

Specifications	Objective lens : D=80mm F=600mm (f7.5) SD apochromatic lens, multi-coated
	Light gathering power / Limiting magnitude : 131x unaided eye / 11.3
	Adapter threads : 42mm for T-ring
	Visual back : 50.8mm and 31.7mm (via flip mirror) push-fit
	Tripod legs : Adjustable from 705mm to 1200mm in height
Total weight : 10.5 kg (Excl. eyepieces)	

39954

PORTA II R130Sf

The Newtonian reflector, with its large 130mm parabolic mirror, gathers more amount of light than most scopes in this range. Great for viewing deep sky objects.

PORTA II Mount Package

PORTA II, R130Sf optical tube assembly, 2x eyepieces, Tripod

Contents	Optical tube : 160mm dia. x 575mm long, 4.0 kg
	Finder scope : 6x30mm, field of view 7 degrees
	Eyepiece : PL20mm (33x), PL6.3mm (103x)
	Mount : PORTA II alt-azimuth mount
	Tripod : 2-section aluminum legs, adjustable from 900mm to 1300mm in length
Accessories : Round accessory tray	

Specifications	Objective lens : D=130mm F=650mm (f5.0) Parabolic mirror, multi-coated
	Light gathering power / Limiting magnitude : 345x unaided eye / 12.3
	Adapter threads : 42mm for T-ring
	Visual back : 31.7mm push-fit
	Tripod legs : Adjustable from 705mm to 1200mm in height
Total weight : 11 kg (Excl. eyepieces)	



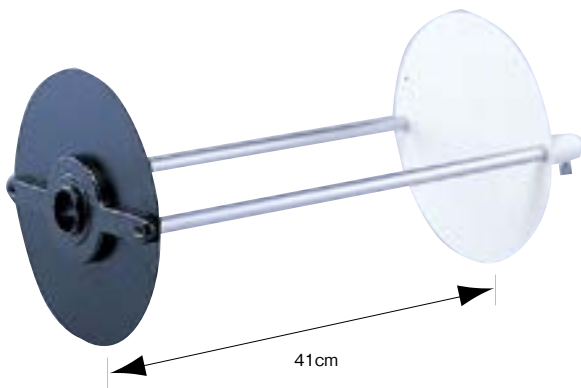
A handy tool for shooting the moon surfaces with a smartphone by attaching the visual back of a PORTA II telescope.

39919

Smartphone Camera Adapter

- Fits an eyepiece barrel of between 19mm and 53mm in diameter, over 20mm in length.
- Size: 149 x 90 x 56mm
- Weight: 178 g

Altazimuth Mount



37223

Sun Projection Screen Set A

- For use exclusively with PORTA II A80Mf telescope.
- Consisting of 24cm dia. Sun projection white screen and sunshade, 45mm DC ring and EA36.4 to 31.7mm adapter.
- Weight: 914 g



Example

8800

Flexible Handle 300mm

- A long flexible slow motion control handle enables you to operate the PORTA II comfortably.
- Recommended for children who may have difficulty reaching the standard handles.



35655

Tube & Tripod Bag 100

- Available for a telescope or a tripod less than 950mm long and less than 125mm in width.
- Usable with an A80Mf, A70Lf, SD103S, AX103S optical tube or others.
- Usable to store a Mobile PORTA alt-azimuth mount with tripod.



35659

Scope Carrier

- Available for a single VMC95L, VMC110L, ED80Sf, VSD100F3.8, SD81S optical tube or an APP-TL130 tripod.
- Made of waterproof material with soft texture, useful for backpacking.
- Size: 230mm x 140mm x 765mm
- Weight: 500 g



Example

39969

Carrying Case for PORTA II Mount with Tripod

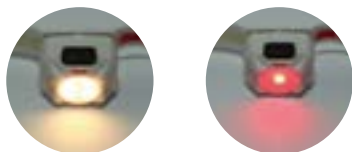
- Store a PORTA II or MINI PORTA mount and tripod along with slow motion handles and accessory tray.
- Size: 310mm x 240mm x 1050mm (PORTA II stored)
- Weight: 480 g

Observing Aids



An LED lamp, dedicated to astronomical observing that was contrived by a manufacturer of astronomical telescopes, comes equipped with a USB rechargeable function.

Generally, flashlights are designed mainly for brightness. If you use it in astronomical observing sessions, the bright light gives strong stimulation to the eye and this affects your night vision. As a result, stars become hard to see for a short while. Our first Astro LED lamp SG-L01, in which a red color lamp was incorporated, was a solution to this problem. But the range of the visible light in red is narrow and not necessarily good at visibility. With our Astro LED lamp SG-L02, we have adopted the LED lamps of light bulb color that make the visibility better. It allows for avoiding unwanted influence on the dark adaptation of the eyes.



71089

Astro LED Lamp SG-L02

LED Light:	Light bulb color x 4, red color x 1
Intensity of illumination / distance:	3 to 42 lumens / 4 to 11m (light bulb LED), 0.28 to 7.62 lumens / 4m or nearer (red LED)
Built-in battery:	Rechargeable lithium-ion polymer battery 600mA
Lighting duration:	Light bulb LED: About 4 hours at 100%, 14 hours at 1/10th illumination Red LED: About 6 hours at 100%, 120 hours at 1/10th illumination
Waterproofness:	IPX4 class
Size:	41 x 33 x 30mm (Excl. strap part)
Weight:	29 g
Accessories:	Long strap pre-set to the SG-L02, short strap S, pocket clip, battery rechargeable cord

Pushing the button on the side of the compass will light the red LED illuminating the dial and the pointer. The transparent dial makes the pointer visible from the underside.



43023 Green

43024 Blue

LED Compass

- Oil filled 44mm dial
- 1x CR2016 battery
- Size: 88x54x14mm
- Weight: 30 g



Telescope Packages for Kids and Novice Astronomers

SPACE EYE

The SPACE EYE 50M and 70M are simple to use and easy to carry. To set up, simply spread the tripod legs apart, place the telescope tube on the mount and tighten the thumbscrew.



5926

SPACE EYE 50M

Includes everything you need for fun observing the Moon.

Specifications SPACE EYE 50M

- Optical tube : D=50mm F=600mm achromatic refractor
- Finder scope : 5x20mm with compass
- Eyepiece : PL20mm (30x) and PL10mm (60x)
Use the mirror diagonal together
- Mount : Alt-azimuth with slow motion control
- Tripod : Legs adjustable from 70cm to 127cm in length
- Accessories : Accessory tray, Mirror diagonal
- Total weight : 2.8 kg / 6.17 lb



5927

SPACE EYE 70M

A complete backyard package for exploring space.

Specifications SPACE EYE 70M

- Optical tube : D=70mm F=700mm achromatic refractor
- Finder scope : 5x20mm
- Eyepiece : PL20mm (35x) and PL10mm (70x)
Use the mirror diagonal together
- Mount : Alt-azimuth with slow motion control
- Tripod : Legs adjustable from 70cm to 127cm in length
- Accessories : Accessory tray, Mirror diagonal
- Total weight : 3.1 kg / 6.8 lb

NATURE EYE

The first telescope for kids.



5928

NATURE EYE

Table-top "Sky and Land" telescope that is simple to use. Great gift for science-minded children.

Specifications NATURE EYE

- Telescope aperture : 50mm
- Focal length : 360mm
- Magnification : 36x, 72x with 2x Barlow lens
Use the mirror diagonal together
- Tripod : Tabletop, Legs 43cm long
- Accessories : 5x Finder scope, H10 Eyepiece, 2x Barlow lens
- Total weight : 1.26 kg / 2.8 lb

MOBILE PORTA

MOBILE PORTA Alt-Azimuth Mount

Enjoy the beauty of the night sky with a MOBILE PORTA! Highly compact and stable mount for grab-and-go observing.



The MOBILE PORTA includes all the functions of the award-winning PORTA II Mount and is more portable. The telescope can swing freely in both vertical and horizontal directions and remain in place through simple friction.

The functional “multi-arm” single fork arm folds in to make for easy transport and storage. Set up your telescope in minutes and start your observing session.

39901

MOBILE PORTA Mount with tripod

Mount type	Alt-azimuth, friction control
Vertical and horizontal slow motions	Worm and wheel gears with 90-tooth whole-circle micro movement, with slow motion handles
Optical tube set up	Dovetail-plate attachment system
Load capacity	3.5 kg
Tripod legsth	2-section aluminum legs, adjustable from 720mm to 1290mm in length (640mm to 1140mm in height)
Total weight	2.4 kg (Incl. tripod)

Altazimuth Mount

39904

MOBILE PORTA Mount Head only (without a tripod)

Mount type	Alt-azimuth, friction control
Vertical and horizontal slow motions	Worm and wheel gears with 90-tooth whole-circle micro movement, with slow motion handles
Optical tube set up	Dovetail-plate attachment system
Load capacity	3.5 kg
Weight	1.1 kg



The MOBILE PORTA is available without the standard aluminum tripod to increase its portability.

The separated mount head is usable in versatile situations as it is compatible with a commercially available camera tripod head with a 1/4" or 3/8" screw.



Friction Stop Motio

The friction stop allows you to move the optical tube by hand so that you can quickly point it at your target object and stop as you release it.



Accessory Tray

The accessory tray holds small pieces such as eyepieces. Very useful when observing at night.



Movable Multi-Arm

The direction of the multi-arm can be rotated in 15-degree intervals so that you can avoid interfering with the slow motion control handle or the optical tube. Besides, the vertical slow motion control handle can be moved outward, in the horizontal direction, to avoid interference with the horizontal slow motion control handle.



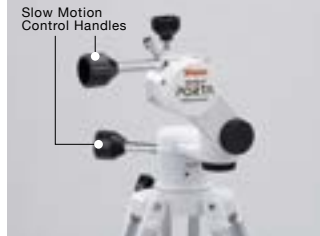
Foldable Mount Head

The mount head of the MOBILE PORTA can be folded for convenient storage or transport. The mount head is detachable from the tripod. The Tube and Tripod Bag 100, sold separately, is the perfect bag for the storage and transport of your MOBILE PORTA.



Dovetail-plate Attachment

With Vixen's renowned dovetail-plate system, different optical tubes can easily be attached. The mount holds optical tubes weighing up to 3.5 kg.



Slow Motion Control Handles

The slow motion control handles allow for operating the MOBILE PORTA in the whole circle of the vertical and horizontal movements. It is helpful as used together with the friction stop mechanism when observing at high magnification. The position of the slow motion control handles can be changed if needed.

MOBILE PORTA Mount Packages

39905

MOBILE PORTA II A70Lf

The A70Lf refractor is a basic all-around telescope that gives beginners intriguing views of lunar craters and Saturn's ring.

MOBILE PORTA Mount Package

MOBILE PORTA, A70Lf optical tube assembly, 2x eyepiece, tripod

Contents

Optical tube : 76mm dia. x 860mm long, 1.9 kg
 Finder scope : 6x30mm, field of view 7 degrees
 Eyepiece : PL20mm (45x), PL6.3mm (143x)
 Mount : MOBILE PORTA II alt-azimuth mount
 Tripod : 2-section aluminum legs, adjustable from 720mm to 1290mm in length
 Accessories : Eyepiece tray, Erect-image diagonal

Specifications

Objective lens : D=70mm F=900mm (f12.9) achromatic lens, multi-coated
 Light gathering power / Limiting magnitude : 100x unaided eye / 11.0
 Adapter threads : 42mm for T-ring
 Visual back : 31.7mm push-fit
 Tripod legs : Adjustable from 640mm to 1140mm in height
 Total weight : 4.9 kg (Excl. eyepieces)

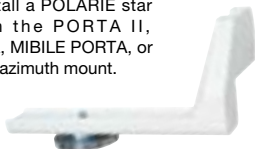


Optional Accessories for MOBILE PORTA

35512

POLARIE Cradle

• Used to install a POLARIE star tracker on the PORTA II, MINI-PORTA, MIBILE PORTA, or SKYPOD alt-azimuth mount.



Example

8800

Flexible Handle 300mm

• A long flexible slow motion control handle enables you to operate the MOBILE PORTA comfortably.
 • Recommended for children who may have difficulty reaching the standard handles.

35655

Tube & Tripod Bag 100

• Available for Mobile PORTA mount with tripod.



*The specifications are subject to change without notice.

A simple and easy-to-use alt-azimuth mount derived from the transformation of the AP Mount.

With the friction stop mechanism of the APZ mount, a telescope can be quickly moved by hand to your target object. You can change the APZ mount with ease into an equatorial mount with the exchange of components.



25841

APZ Mount

Specifications	APZ Mount
Mount type	Alt-azimuth mount, friction control
Vertical and horizontal slow motions	Worm and wheel gears with 144-tooth whole-circle micro movement, with slow motion handles
Optical tube set up	Dovetail-plate attachment system
Load capacity	8 kg
Weight	3.8 kg (Excl. AZ counterweight)



Optional Tripod, Sold Separately

25191

APP-TL130 Tripod

It is a highly compact and lightweight tripod combining durability and ease of use.



APZ Mount Packages



25843

APZ-A80Mf

Combining a simple-to-use refractor and the versatile APZ mount, the package is excellent for beginner astronomers.

APZ Mount Package

APZ alt-az mount, A80Mf optical tube assembly, 2x eyepieces, APP-TL130 tripod

Contents	Optical tube	: 90mm dia. x 860mm long, 2.5 kg
	Finder scope	: 6x30mm, field of view 7 degrees
	Eyepiece	: PL20mm (46x), PL6.3mm (144x)
	Mount	: APZ alt-azimuth mount
	Tripod	: 3-section aluminum pipe legs, adjustable from 570mm to 1296mm in length
	Accessories	: Erect-image diagonal for terrestrial viewing
Specifications	Objective lens	: D=80mm F=910mm (f11.4) achromatic lens, multi-coated
	Light gathering power / Limiting magnitude	: 131x unaided eye / 11.3
	Adapter threads	: 43mm and 42mm for T-ring
	Visual back	: 31.7mm push-fit
	Tripod legs	: Adjustable from 526mm to 1159mm in height
	Total weight	: 10.1 kg (Excl. eyepiece)



25844

APZ-R130Sf

With its large 130mm effective aperture, the R130Sf Newtonian telescope is suitable for observing nebulae and star clusters.

APZ Mount Package

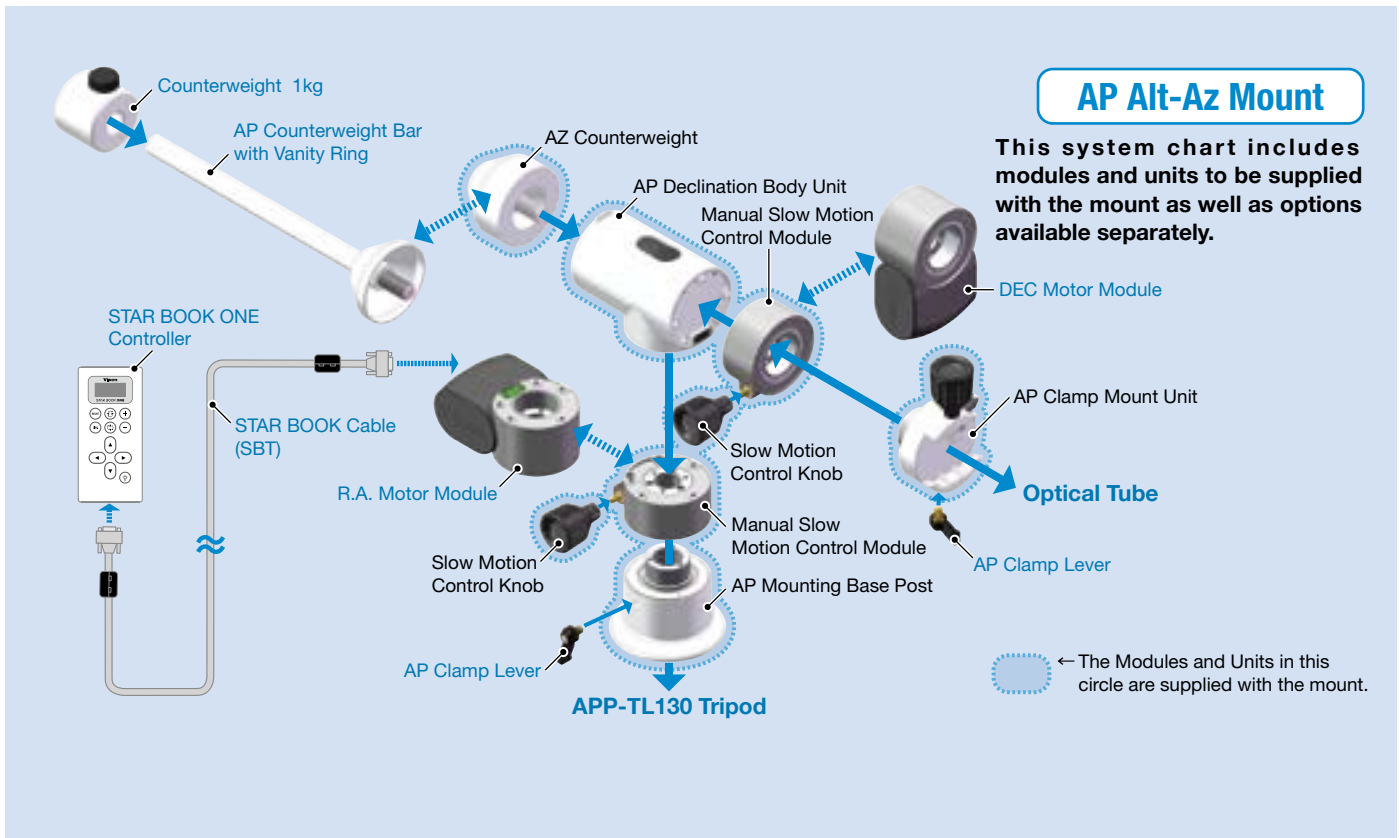
APZ alt-az mount, R130Sf optical tube assembly, 2x eyepieces, APP-TL130 tripod

Contents

Optical tube : 160mm dia. x 575mm long, 4.0 kg
 Finder scope : 6x30mm, field of view 7 degrees
 Eyepiece : PL20mm (33x), PL6.3mm (103x)
 Mount : PORTA II alt-azimuth mount
 Tripod : 3-section aluminum pipe legs, adjustable from 570mm to 1296mm in length

Specifications

Objective lens : D=130mm F=650mm (f5.0) Parabolic mirror, multi-coated
 Light gathering power / Limiting magnitude : 345x unaided eye / 12.3
 Adapter threads : 42mm for T-ring
 Visual back : 31.7mm push-fit
 Tripod legs : Adjustable from 526mm to 1159mm in height
 Total weight : 12.1 kg (Excl. eyepiece)



HF2 HF2 Alt-Azimuth Fork Mount

Binocular Telescopes for Great Deep Sky Views!



38062

HF2 Alt-azimuth Fork Mount

Usable with SXG-HAL130, SXG-AL130 or APP-TL130 tripod. (The APP-TL130 tripod is not available for BT126SS-A. Be sure to extend the tripod legs fully before installing the BT binoculars on it.)

Mount type	Alt-azimuth fork mount
Vertical and horizontal movements	Friction control with pressure clamps
Load capacity	13 kg
Weight	3.4 kg

The BT binocular telescopes are used in combination with the HF Alt-azimuth fork mount.

14304

BT81S-A



14306

BT126SS-A



The interchangeable eyepieces are set at an angle of 45 degrees for comfortable overhead viewing. It gives you actual image orientation as seen with unaided eyes.

BT81S-A Package

38066

HF2-BT81S-A

Invites you to the ultimate time to gaze at your favorite celestial objects eagerly.



BT126SS-A Package

38068

HF2-BT126SS-A

Demonstrates excellent performance for viewing faint celestial objects with overwhelming light-gathering power.



BT81S-A Package

BT81S-A, A pair of eyepieces, HF2 fork mount, Swing bracket, SXG-HAL130 tripod

Contents

BT type : BT81S-A
 Eyepiece*1 : SLV20mm x2 (Interchangeable)
 Finder scope*2 : Optional
 Mount : HF2 fork mount, Friction control
 Tripod : SXG-HAL130
 Accessories : Swing bracket (Cradle)

Specifications

Objective lens : D=81mm F=480mm Achromatic, single coating with MgF
 Limiting magnitude : 11.3
 Light gathering power : 134x unaided eye
 Magnification : 24x
 Interpupillary distance : Between 58mm and 102mm
 Tripod legs : Sturdy hex-shaped 2-section aluminum legs, adjustable from 730mm to 1156mm in height
 Total weight : 14.1 kg

BT126SS-A package

BT126SS-A, A pair of eyepieces, HF2 fork mount, SXG-HAL130 tripod

Contents

BT type : BT126SS-A
 Eyepiece*1 : SLV20mm x2 (Interchangeable)
 Finder scope*2 : Optional
 Mount : HF2 fork mount, Friction control
 Tripod : SXG-HAL130

Specifications

Objective lens : D=126mm F=625mm Achromatic, multi-coated
 Limiting magnitude : 12.3
 Light gathering power : 324x unaided eye
 Magnification : 31x
 Interpupillary distance : Between 58mm and 102mm
 Tripod legs : Sturdy hex-shaped 2-section aluminum legs, adjustable from 730mm to 1156mm in height
 Total weight : 19.4 kg

*1: Both the LV zoom and NPL eyepieces are not usable on the BT binocular telescopes. Be sure to use Vixen eyepieces with a focal length longer than 10mm (medium to low magnification) to prevent optical alignment errors at high magnification.
 *2: An optional XY red dot finder or 7x50mm finder with finder bracket is available.

Optional Accessories for the HF2

3798

Swing Bracket (Cradle)

- Span between trunnions: 251mm
- With UNC 1/4 inch screw with knob
- Weight: 1 kg



25161

SXG-HAL130 Aluminum Tripod

(For details, refer to page 63)

- Weight: 5.5 kg



89223

Aluminum Case for BT126SS-A

- With storage space for eyepieces and a finder scope (This case is used exclusively for a BT126SS-A. It is not usable for the previous models such as 20x125, 30x125, and 75VPx125.)
- Size: 820mmx 400mm x 310mm
- Weight: 8.2 kg



image

Vixen German Equatorial Mounts

AP
SX2WL
SXD2WL
SXP2
AXJ
AXD2

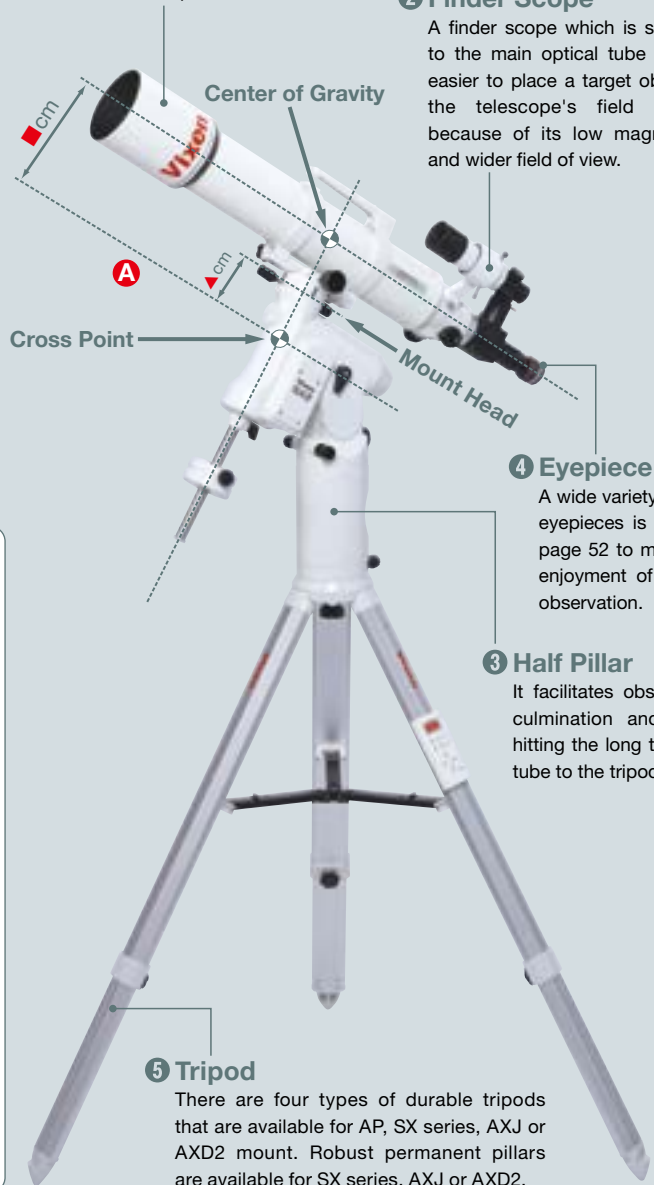
With Vixen equatorial mounts, you have a wide selection of Vixen telescopes and optical tubes, including refractors, reflectors and catadioptric systems, from which to choose. You are sure to find one to fit your specific observing needs. You can also start with a smaller telescope and upgrade later to a larger one as your interest and needs grow. All Vixen products are interchangeable. The Vixen equatorial mounts are an excellent choice for anyone who wants to start exploring the night sky with a truly reliable instrument.

① Optical Tube Assembly

There are three types of optical tubes; refractor, reflector and catadioptric which is an advanced combination of the refractor and reflector. The optical tube is attached to a Vixen mount with a dovetail plate system which simplified the attachment and removal of optical tubes.

② Finder Scope

A finder scope which is subsidiary to the main optical tube makes it easier to place a target object into the telescope's field of view because of its low magnification and wider field of view.



④ Eyepiece

A wide variety of Vixen eyepieces is listed on page 52 to make your enjoyment of celestial observation.

③ Half Pillar

It facilitates observing in culmination and avoids hitting the long telescope tube to the tripod leg.

⑤ Tripod

There are four types of durable tripods that are available for AP, SX series, AXJ or AXD2 mount. Robust permanent pillars are available for SX series, AXJ or AXD2.

A About Torque Load

Vixen uses terms of Torque Load as guidance for an allowable loading weight. The torque load can be calculated by the following formula.

Torque Load (kg-cm)

$$= \text{Weight of an instrument loaded (Kg)} \times \text{Distance from the place where the RA and Dec axes cross to the center of gravity of an instrument loaded (cm)} \blacksquare$$

[Example] When you install an AX103S optical tube assembly on the SX2 mount using the dovetail-plate mounting block, the torque load is calculated as follows:

- 1) You find the outside diameter of the AX103S is 115mm from the specifications on page 44. Supposed that the center of gravity of the AX103S is the center of the optical tube assembly, it would be a point of a half of the optical tube diameter. It is about 6cm here to make a calculation easier.
- 2) The space of the tube ring and dovetail-plate mounting block is about 4cm in breadth in total.
- 3) Distance from the RA and DEC axes cross point to the mount head of the SX2 is about 10cm. ▲

[Calculation] $6.4 \text{ kg} \times (6\text{cm} + 4\text{cm} + 9\text{cm}) = 121.6 \text{ kg-cm}$

Quick reference of the Vixen Equatorial Mounts

Mount	Controller equipped as standard	Star Chart Go-To Slewing	Distance to the mount head from the RA and DEC axes cross point	Maximum Torque load*	Photographic loading weight	Polar scope
AP	Wireless Unit (AP-SM)	No	10cm	150 kg-cm	6 kg / 13.2 lb	Optional
SX2WL	Wireless Unit	Possible (if SBT is used)	9cm	300 kg-cm	12 kg / 26.5 lb	Optional
SXD2WL	Wireless Unit	Yes	9cm	375kg-cm	15 kg / 33 lb	Standard
SXP2	Wireless Unit	Yes	10cm	425 kg-cm	17 kg / 37.4 lb	Standard
AXJ	Wireless Unit	Yes	13cm	550 kg-cm	22 kg / 48.4 lb	Standard
AXD2	Wireless Unit	Yes	11cm	750 kg-cm	30 kg / 66.1 lb	Standard

*At a point of 25cm above from the place where the RA and DEC axes cross.

*The specifications are subject to change without notice.



AP Equatorial Mount

Easy to Use Versatile Mount. Customize to Fit your Observing Style.

The AP mount is not only suited for beginners who want to become familiar with equatorial mounts, but also for experienced observers who want a simple grab-and-go mount. The AP mount consists of several modules that are joined to make a highly portable German equatorial mount of excellent quality. With the available R.A. motor module complete with the STAR BOOK ONE controller, you can achieve accurate tracking of celestial objects. The AP mount is a good choice for starting the first step to serious celestial observing.

There are two basic versions of the AP mount from which to choose.

AP: The basic AP comes equipped with the manual slow-motion control in both the R.A and DEC. With its friction control mechanism, you can point the AP mount quickly to your target object.

AP-SM: It employs the R.A. motor module and STAR BOOK ONE hand controller for tracking celestial objects automatically. The upgrading will be completed with an addition of an optionally available DEC motor module.



39972

AP Mount

39973

AP-SM Mount

Specifications	AP	AP-SM with STAR BOOK ONE
R.A. slow motion	Worm and wheel gears with 144-tooth whole circle micro movement	
DEC slow motion	Worm and wheel gears with 144-tooth whole circle micro movement	
R.A. axis	59mm in diameter, A5056 aluminum alloy	
DEC axis	59mm in diameter, A5056 aluminum alloy	
Worm gears	9.8mm in diameter, brass	R.A. 11mm, DEC9.8mm, brass
Number of bearings	7 pieces	
Counterweight bar	20mm in diameter, steel	
Polar alignment scope	Optional	
Altitude adjustment	Adjustable between 0 degree and 65 degrees by tangent screw with knob, 1.9 degrees per rotation	
Azimuth adjustment	Adjustable +/- 6.5 degrees by double screws with knob, 1.4 degrees per rotation	
Motor drive	Optional	Pules motor (R.A. only)
Tracking / Slewing	Manual operation	STAR BOOK ONE
Load capacity	6 kg (150kg-cm torque load at 25cm apart from the fulcrum)	
Power supply terminal		D-SUB9PIN male
Power source		4x AAA batteries or a USB mobile battery
External power port		USB Micro-B type (DC4.4 - 5.26V)
Electricity (Consumption)		DC5V 0.2 - 0.5A (1.0 - 2.5W)
Duration of continuous operation		About 4 hours with Alkaline batteries
Dimensions	263 x 302 x 96mm	274 x 310 x 96mm
Weight (Excl. Counterweight)	3.6 kg	3.9 kg
Counterweight	1 kg x1	1 kg x 1

STAR BOOK ONE

The AP-SM Mount comes with the STAR BOOK ONE controller and R.A. motor module.

The controller recognizes the Vixen Mount to which it is attached. Only functions or comments that are applicable to that mount will be displayed on the screen.

Optional Tripods for the AP Mount

25161

SXG-HAL130
Aluminum Tripod

25191

APP-TL130 Tripod
(For details, refer to page 19)

Optional Accessory

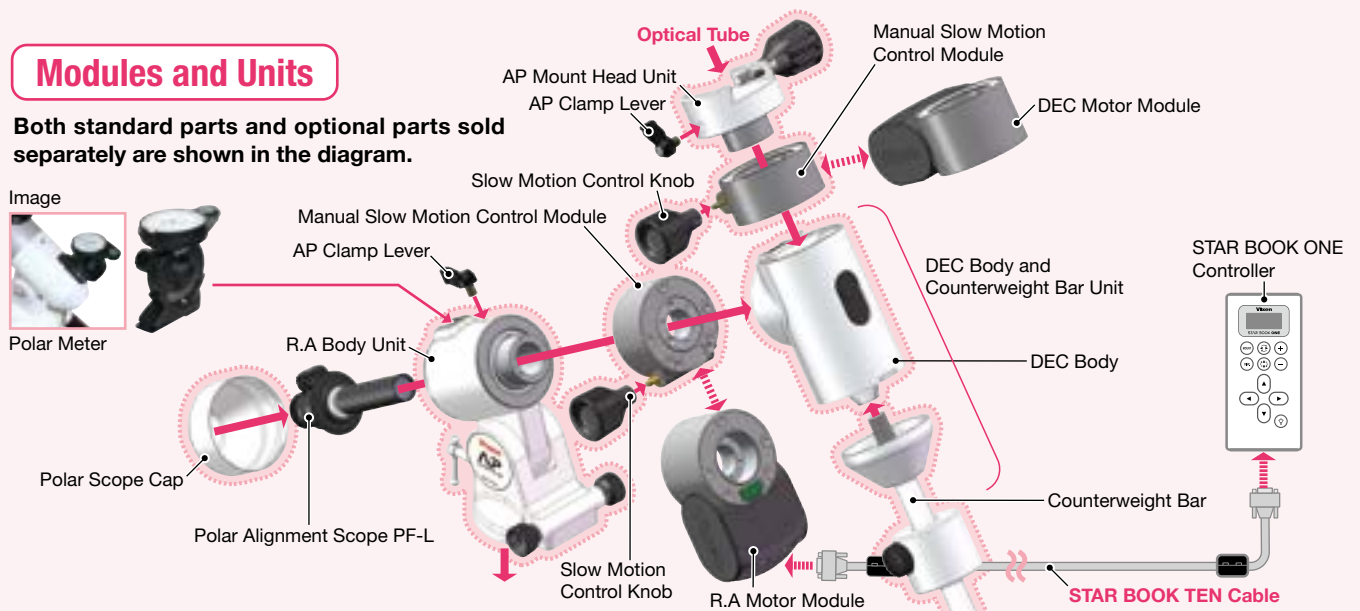


35658

AP Mount Case

Modules and Units

Both standard parts and optional parts sold separately are shown in the diagram.





The AP mount offers simple and easy operation of your telescope with a STAR BOOK ONE dual-axis handheld controller.

STAR BOOK ONE Dual-Axis Handheld Controller

- CPU: 32bit CISC Processor
 - Working voltage: 12V DC (Supplied from the mount side.)
 - Size: 137mm x 65mm x 21mm
 - Weight: 110 g
- STAR BOOK ONE is not sold separately.

Lightweight, Compact and Smart Handheld Controller

The four direction buttons on the STAR BOOK ONE dual-axis controller move the SX2 mount electrically in X and Y dual axis (R.A. and DEC directions) either quickly or slowly. The command buttons are laid out neatly so that they are accessible with wearing gloves on a cold night.

Night Vision LCD Screen

A-2line 8-character STN type LCD screen furnishes the adjustable LED backlight which is adaptive to your eyes in a dark observation site.



Language Setting

The language is available in Japanese and English.

Red LED Light

The built-in red LED light is equipped on the back of the handheld controller. It allows you to keep accommodating your eyes to darkness at an observation site.

Versatile Tracking Options

The tracking options are available from sidereal rate, solar rate, lunar rate, King tracking rate, and many more. The faster tracking speed is divided into three ranges from low to high speed. You can choose your desired tracking speed from x0.1 to x2 at 0.1 increment, from x2 to x5 at 0.5 increments or from x5 to x10 at 1 increment. Also, the different tracking speeds are useful for time-lapse photography.

Slewing Speed

The slewing speed is selected from either a preset 4 speed range or different speed ranges (between x0.5 and x999 of sidereal rate) listed in the menu.

Tracking Direction

The STAR BOOK ONE works in both the northern and southern hemispheres.

Backlash Compensation

Backlash is a momentary stoppage of the tracking motion of the mount that occurs when the motor gears reverse their rotation. It does not occur while the mount continued tracking at a constant speed as the gears keep contact with each other, however, it may occur when the telescope is slewed with different speeds. The backlash compensation provides a reduced time lag at the point of reversed motion where the gears loose contact. It achieves smoother tracking on the mount.

Compatible with an External Autoguider

The STAR BOOK ONE can be used for autoguiding in conjunction with an external autoguiding system that is compatible with the SBIG autoguider. The advantages of autoguider are most apparent during long exposure astrophotography.

PEC (Periodic Error Correction)

The PEC rectifies an irregular motion of the tracking gear wheels that affect long exposure astrophotography. It allows you to achieve highly accurate tracking.

Note: The Star BOOK One is not applicable to a PC.

About Compatibility of Controllers

Mount	SX2, SXD2, SXP2, AXJ, AXD2	AP**	SX, SXD, New ATLUX*** (discontinued)	GP2, GPD2 (discontinued)
Wireless Unit	○	×	×	×
STAR BOOK ONE*	○	○	×	×
STAR BOOK TEN	○	×	×	×
STAR BOOK	×	×	○	×
STAR BOOK-S	×	×	×	○

* STAR BOOK ONE is not sold separately.

** AP, AP-SM, AP Photo Guider and tracking systems with the AP motor modules.

*** Not versions with SkySensor.

STAR BOOK ONE and STAR BOOK TEN are not compatible with the former SX and SXD Mounts. Similarly, the STAR BOOK and STAR BOOK Type-S are not compatible with the SX2, SXD2, SXP2, AXJ, AXD2, and AP Mounts. Do not attempt to use the controller with a mount other than the specified ones here. This could damage the controller and the mount.

AP Mount Packages

39976

AP-A80Mf

39977

AP-A80Mf-SM



An excellent package for the new astronomer.

AP Mount Package

AP or AP-SM, A80Mf OTA, 2x eyepieces, APP-TL130 tripod

Contents

Optical tube : 90mm dia. x 860mm long, 2.5 kg
 Finder scope : 6x30mm, field of view 7 degrees
 Eyepiece : PL20mm (46x), PL6.3mm (144x)
 Mount : AP or AP-SM equatorial mount
 Tripod : 3-section aluminum pipe legs, adjustable from 570mm to 1296mm in length
 Accessories : Erect-image diagonal, Counterweight 1 kg x

Specifications

Objective lens : D=80mm F=910mm (f11.4) achromatic lens, multi-coated
 Light gathering power / Limiting magnitude : 131x unaided eye / 11.3
 Adapter threads : 43mm and 42mm for T-ring
 Visual back : 31.7mm push-fit
 Tripod legs : Adjustable from 526mm to 1159mm in height
 Total weight : AP 10.9 kg or AP-SM 11.3 kg (Excl. eyepieces)

39981

AP-ED80Sf

39982

AP-ED80Sf-SM



AP Mount Package

AP or AP-SM, ED80Sf OTA, 2x eyepieces, APP-TL130 tripod

Contents

Optical tube : 100mm dia. x 570mm long, 3.4 kg
 Finder scope : 9x50mm, field of view 4.8 degrees
 Eyepiece : NPL20mm (30x), NPL6mm (100x)
 Mount : AP or AP-SM equatorial mount
 Tripod : 2-section aluminum legs, adjustable from 570mm to 1296mm in length
 Accessories : Flip mirror diagonal, round accessory tray, Aluminum case for ED80Sf, Counterweights 1 kg x1 and 1.9 kg x1, Parts case

Specifications

Objective lens : D=80mm F=600mm (f7.5) SD apochromatic lens, multi-coated
 Light gathering power / Limiting magnitude : 131x unaided eye / 11.3
 Adapter threads : 42mm for T-ring
 Visual back : 50.8mm and 31.7mm (via flip mirror) push-fit
 Tripod legs : Adjustable from 526mm to 1159mm in height
 Total weight : AP 14.3 kg or AP-SM 14.7 kg (Excl. eyepieces)

26173

AP-SD81SII

26174

AP-SD81SII-SM



If you are looking for a high-quality APO refractor with color-free SD glass, this is it!

AP Mount Package

AP or AP-SM, SD81SII OTA, 2x eyepieces, APP-TL130 tripod

Contents

Optical tube : 90mm dia. x 585mm long, 2.3 kg
 Finder scope : XY red dot finder
 Eyepiece : SLV20mm (31x), SLV5mm (125x)
 Mount : AP or AP-SM equatorial mount
 Tripod : 3-section aluminum pipe legs, adjustable from 570mm to 1296mm in length
 Accessories : Flip mirror diagonal, Counterweights 1 kg x1 and 1.9 kg x1, Parts case

Specifications

Objective lens : D=81mm F=625mm (f7.7) SD apochromatic lens, multi-coated
 Light gathering power / Limiting magnitude : 134x unaided eye / 11.3
 Adapter threads : 60mm and 42mm for T-ring
 Visual back : 50.8mm, 31.7mm push-fit
 Tripod legs : Adjustable from 526mm to 1159mm in height
 Total weight : AP 13.1 kg or AP-SM 13.5 kg (Excl. eyepieces)

39978

AP-R130Sf

39979

AP-R130Sf-SM



Start with this affordable reflector package and move up when your needs change.

AP Mount Package

AP or AP-SM, R130Sf OTA, 2x eyepieces, APP-TL130 tripod

Contents

Optical tube : 160mm dia. x 575mm long, 4.0 kg
 Finder scope : 6x30mm, field of view 7 degrees
 Eyepiece : PL20mm (33x), PL6.3mm (103x)
 Mount : AP or AP-SM equatorial mount
 Tripod : 3-section aluminum pipe legs, adjustable from 570mm to 1296mm in length
 Accessories : Counterweights 1 kg x1, 1.9 kg x 1

Specifications

Objective lens : D=130mm F=650mm (f5.0) Newtonian reflector, multi-coated
 Light gathering power / Limiting magnitude : 131x unaided eye / 11.3
 Adapter threads : 42mm for T-ring
 Visual back : 31.7mm push-fit
 Tripod legs : Adjustable from 526mm to 1159mm in height
 Total weight : AP 14.8 kg or AP-SM 15.2 kg (Excl. eyepieces)



25804

R.A. Motor Module and STAR BOOK ONE Set

- It consists of an R.A. Motor module, a STAR BOOK ONE hand controller, and a cable
- Power supply port: USB Micro-B (DC4.4 – 5.26V)
- Size: 80mm x 136.5mm x 51.5mm
- Weight: 630 g

■ About STAR BOOK ONE

The four direction buttons on the STAR BOOK ONE dual-axis controller move the AP mount electrically in X and Y (R.A. and DEC) directions either quickly or slowly. It can be used for auto-guiding in conjunction with an external autoguider.



Example

25828

Module Base

- This adapter connects the manual slow motion control module and the dovetail slide bar PG.
- Size: 78mm dia. x 12mm
- Weight: 142 g



25805

DEC Motor Module

- It is installed on the DEC rotation axis of the AP mount system to move the mount electrically with the STAR BOOK ONE controller.
- Size: 80mm x 136.5mm x 51.5mm
- Weight: 600 g



25823

Dovetail Slide Bar PG

- Vixen standard dovetail (44mm in width) with a single slot for sight of Polaris with an optional Polar scope.
- With 4 x 1/4 inch attachment bolts and 4 x M6 screw holes
- Size: 182mm x 44mm x 20mm
- Weight: 200 g



35532

Polar Alignment Scope PF-LII

The polar scope is used to accurately align the equatorial mount of your AP system to the north or south celestial pole.

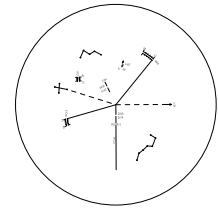
Polar alignment with this unit is easy. Bring Polaris and two other stars into the polar scope's field of view so that each is matched with the designated position on the polar scope's reticle. No hour angle setting is necessary.

Features:

- The switch on the brightness adjustment dial of the polar alignment scope will illuminate the reticle in red when

activated. The red light dims gradually after a short while (about one or two minutes) and turns off automatically.

- A free app called PF-L Assist for smartphones and tablets is available for using the polar alignment scope for using the polar alignment scope PF-LII.
- Battery: CR2032 x 1
- Compatible with AP, SX2, SXD2, SXP2, AXJ, and AXD2 mounts
- Size: 47mm x 55mm x 115mm
- Weight: 155 g



Polar scope's reticle

25816

AP Clamp Lever



- It is installed on the DEC rotation axis of the AP mount system to move the mount electrically with the STAR BOOK ONE controller.
- Size: 80mm x 136.5mm x 51.5mm
- Weight: 600 g

35519

POLARIE Fine Adjustment Unit

Ideal for use with the POLARIE Star Tracker. The Polar fine adjustment unit aids in precise Polar alignment using the polar scope.

- Pan mount head: Quick release screw type, with a 1/4 inch thread screw
- Altitude adjustments: +/- 15 degrees, 3.7 degrees per rotation
- Latitude settings: Between 0 degree and 85 degrees in 3 divided sections.
- Azimuth adjustment: +/- 15 degrees, 5.7 degrees per rotation
- Maximum loading weight: 7kg
- Tripod socket: 1/4 or 3/8 inch thread
- Size: 51mm x 73mm x 49mm
- Weight: 300 g



25191

APP-TL130 Tripod

A highly compact and lightweight tripod combining durability and ease of use.

Protection rubbers on the foot of the tripod legs are retractable and allow for using the tripod according to your setup environment.

- Used with the GP2 and PORTA II also.
- 3-section aluminum legs with quick-release leg clamps.
- Adjustable leg length: 570mm to 1296mm long
- Adjustable tripod height: 526mm to 1159mm high
- Leg pipes: 35mm/32mm/29mm in dia.
- Tripod legs spread: 710mm in radius
- Weight: 3.0 kg



Equatorial Mount



25818

Slow Motion Control Knob

- The AP Mount comes equipped with slow-motion control knobs for the R.A. and DEC worm shafts as standard accessories.
- Usable for the GP2 and GPD2 also.
- Size: 40mm dia. x 51mm
- Weight: 18 g



Example

35511

Polar Meter

- A compass with a bubble level, altitude scale, and tilt meter used for locating Polaris with ease.
- Attachable on a camera accessory shoe.
- Working temperature: -20 degrees Celsius up to +40 degrees Celsius
- Weight: 100g



25826

Supplementary Counterweight Bar

- It is a bar for a counterweight to be attached to the dovetail slide bar PG with a 1/4 inch screw.
- 20mm dia. and 130mm in effective length
- Weight: 330 g



25801

Counterweight 1.0 Kg

- It is a counterweight provided with the AP and AP-SM mounts as a standard accessory.

SX2

SX2 Equatorial Mount WL

The Wireless Unit realizes comfortable automatic GO-TO celestial navigations using a smartphone.

You can use the smartphone as a controller for the SX2 equatorial mount by installing the dedicated app on your smartphone or tablet mobile device. Automatic GO-TO navigations with a star chart and automatic celestial tracking are possible with ease and fun. The SX2WL is a good choice for starting the first step to serious celestial observing.



Operating the SX2WL easily from your Smartphone

The celestial navigation functions such as automatic GO-TO slewing are available with your smartphone or tablet mobile device in which you installed the dedicated STAR BOOK Wireless app.

Equipped with Pulse Motors and a Micro-Step Motion Control System

With the same precision pulses motors and micro-step motions control as used for the SXD2, the SX2WL is an excellent performer with a smooth response. The four-ball bearings used for the R.A. and DEC worm shafts and the one needle bearing for the DEC clamp unit achieve silky smooth movement of the mount.

Declination Body acting as part of Counterweight

The massive motor units are placed in the lower part of the declination body so that the center of balance of the SX2WL shifts below the intersection of the R.A. and DEC axes.

Retractable Counterweight Bar

Durable stainless steel is used for the counterweight bar. It is moved back into the mount body for storage by loosening the bar lock lever. It is convenient for transporting the mount and for easy set up.

Optional Accessories

35532

Polar Alignment Scope PF-LII

A polar scope with a simple alignment method using Polaris and two known stars in the northern hemisphere or use a trapezoid in Octans in the southern hemisphere. No hour angle setting is required. Scope 5x20mm, 10 degrees field of view.



- Variable illuminated reticle with auto-turn-off (adjustable in 8 steps)
- Dark field illumination • Battery: CR2032 x1
- Setting accuracy: Within 3 arc minutes
- Usable with AP, SX2, SXD2, SXP2, AXJ, AXD2 (as of Feb. 2022)
- Size: 47mm x 55mm x 115mm • Weight: 155 g



image

89226

SX Mount Case

- Lightweight but durable and shock absorbing polypropylene and an aluminum alloy frame.
- For SX2, SXD2, or SXP
- Counterweights and a SBT controller can be stored.
- Size: 505 x 220 x 390 mm (W x D x H)
- Weight: 3.3 kg



25049

SX2 Mount WL

Specifications SX2WL with Wireless Unit

R.A. slow motion	Worm and wheel gears with 180-tooth whole circle micro movement, 72mm in diameter
DEC slow motion	Worm and wheel gears with 180-tooth whole circle micro movement, 72mm in diameter
Worm shaft	9mm in diameter, brass made
R.A. axis	40mm in diameter, aluminum alloy die casting
DEC axis	35mm in diameter, aluminum alloy
Number of bearings	5 pieces
Counterweight bar	20mm in diameter, retractable, stainless steel
Polar alignment scope	Optional
Altitude adjustment	Adjustable between 0 degree and 70 degrees in latitude (divided into 3 zones, and +/- 15 degrees each per zone, fine adjustments by tangent screw with knob, about 0.8 degrees per rotation.
Azimuth adjustment	Adjustable range +/- about 7 degrees, fine adjustments by push-pull screws with knobs, about 1.2 degrees per rotation
Motor drive	Pulse motors with micro-step motion control (250 pps)
Slewing / Tracking	Automatic slewing and tracking using a Wireless Unit and a smartphone or a PC tablet
Speed	About 1000x of sidereal rate, high precision tracking
Load capacity	12 kg (300 kg-cm torque load at 25cm from the cross point of the RA and DEC axes.)
Controller power port	D-SUB9PIN male
Power supply cord	A cigarette-lighter plug cord is provided as standard accessory.
Working voltage / Electricity consumption	DC 12V / 0.3A - 2.0A
Power port	DC 12V EIAJ RC5320A Class 4
Size	343mm x 360mm x 128mm
Weight	7 kg (Excl. counterweight)
Counterweight	1.9 kg x1

Tripod for the SX2 Equatorial Mount WL (Optional, Sold Separately)

25161

SXG-HAL130 Aluminum Tripod

The hex legs attached onto the tripod base are designed to be strong against strain for increased rigidity and stability.

- Adjustable leg length: from 807mm to 1299mm long
- Adjustable tripod height: from 730mm to 1156mm high
- Spread tripod legs : 706mm in radius
- Leg width/ thickness: 72mm/ 30mm
- Weight: 5.5 kg



SX2WL Mount Packages



25012

SX2WL-A80Mf

A great package for beginning your journey as a serious observer.

SX2 Mount Package

SX2WL, A80Mf OTA, 2x eyepieces, SXG half pillar, SXG-HAL130 tripod

Contents

Optical tube : 90mm dia. x 860mm long, 2.5 kg
 Finder scope : XY red dot finder II
 Eyepiece : NPL20mm (46x), NPL6mm (167x)
 Mount : SX2WL equatorial mount
 Tripod : SXG-HAL130 sturdy hex-shaped 2-section aluminum legs, adjustable from 870mm to 1299mm in length
 Accessories : Flip mirror diagonal, SXG half pillar, Parts case, Counterweight 1 kg x1

Specifications

Objective lens : D=80mm F=900mm (f11.4) achromatic lens, multi-coated
 Light gathering power / Limiting magnitude : 131x unaided eye / 11.3
 Adapter threads : 43mm, 42mm for T-ring
 Visual back : 31.7mm push-fit
 Tripod legs : Adjustable from 730mm to 1156mm in height
 Total weight : 18.7 kg (Excl. eyepieces)



25021

SX2WL-A105MII

A bit more aperture to view deeper into the night sky.

SX2 Mount Package

SX2WL, A105MII OTA, 2x eyepieces, SXG half pillar, SXG-HAL130 tripod

Contents

Optical tube : 115mm dia. x 1010mm long, 3.8 kg
 Finder scope : XY red dot finder II
 Eyepiece : NPL20mm (50x), NPL6mm (167x)
 Mount : SX2WL equatorial mount
 Tripod : SXG-HAL130 sturdy hex-shaped 2-section aluminum legs, adjustable from 870mm to 1299mm in length
 Accessories : Flip mirror diagonal, SXG half pillar, Parts case, Counterweight 1.9 kg x1

Specifications

Objective lens : D=105mm F=1000mm (f9.5) achromatic lens, multi-coated
 Light gathering power / Limiting magnitude : 225x unaided eye / 11.9
 Adapter threads : 60mm, 42mm for T-ring
 Visual back : 50.8mm, 31.7mm push-fit
 Tripod legs : Adjustable from 730mm to 1156mm in height
 Total weight : 21.1 kg (Excl. eyepieces)



25022

SX2WL-SD81SII

If you are looking for a high-quality small refractor, this is it.

SX2 Mount Package

SX2WL, SD81SII OTA, 2x eyepieces, SXG-HAL130 tripod

Contents

Optical tube : 90mm dia. x 585mm long, 2.3 kg
 Finder scope : XY red dot finder II
 Eyepiece : SLV20mm (31x), SLV5mm (125x)
 Mount : SX2WL equatorial mount
 Tripod : SXG-HAL130 sturdy hex-shaped 2-section aluminum legs, adjustable from 870mm to 1299mm in length
 Accessories : Flip mirror diagonal, Parts case, Counterweight 1 kg x1

Specifications

Objective lens : D=81mm F=625mm (f7.7) SD apochromatic lens, multi-coated
 Light gathering power / Limiting magnitude : 134x unaided eye / 11.3
 Adapter threads : 60mm, 42mm for T-ring
 Visual back : 50.8mm, 31.7mm push-fit
 Tripod legs : Adjustable from 730mm to 1156mm in height
 Total weight : 17.3 kg (Excl. eyepieces)



25023

SX2WL-SD103S

A very good choice for those looking for an exceptional telescope for visual and astrophotography.

SX2 Mount Package

SX2WL, SD103S OTA, 2x eyepieces, SXG half pillar, SXG-HAL130 tripod

Contents

Optical tube : 115mm dia. x 810mm long, 3.6 kg
 Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
 Eyepiece : SLV20mm (40x), SLV5mm (159x)
 Mount : SX2WL equatorial mount
 Tripod : SXG-HAL130 sturdy hex-shaped 2-section aluminum legs, adjustable from 870mm to 1299mm in length
 Accessories : Flip mirror diagonal, SXG half pillar, Parts case, Counterweight 1.9 kg x1

Specifications

Objective lens : D=103mm F=795mm (f7.7) SD apochromatic lens, multi-coated
 Light gathering power / Limiting magnitude : 217x unaided eye / 11.8
 Adapter threads : 60mm, 42mm for T-ring
 Visual back : 50.8mm, 31.7mm push-fit
 Tripod legs : Adjustable from 730mm to 1156mm in height
 Total weight : 21.7 kg (Excl. eyepieces)



25025
SX2WL-R200SS

The fast-focal ratio is perfect for wide-field viewing and deep sky astrophotography.

25024
SX2WL-VC200L

Exquisite viewing and imaging performance with flat, distortion-free images from edge to edge.

SX2 Mount Package **SX2WL, R200SS OTA, 2x eyepieces, SXG-HAL130 tripod**

Contents

Optical tube : 232mm dia. x 700mm long, 5.3 kg
 Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
 Eyepiece : SLV20mm (40x), SLV5mm (160x)
 Mount : SX2WL equatorial mount
 Tripod : SXG-HAL130 sturdy hex-shaped 2-section aluminum legs, adjustable from 870mm to 1299mm in length
 Accessories : Parts case, Counterweights 1.9 kg x2

Specifications

Objective lens : D=200mm F=800mm (f4.0) Parabolic mirror, multi-coated
 Light gathering power / Limiting magnitude : 816x unaided eye / 13.3
 Adapter threads : 60mm, 42mm for T-ring
 Visual back : 31.7mm push-fit
 Tripod legs : Adjustable from 730mm to 1156mm in height
 Total weight : 23.6 kg (Excl. eyepieces)

SX2 Mount Package **SX2WL, VC200L OTA, 2x eyepieces, SXG-HAL130 tripod**

Contents

Optical tube : 232mm dia. x 600mm long, 6.0 kg
 Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
 Eyepiece : SLV20mm (90x), SLV9mm (200x)
 Mount : SX2WL equatorial mount
 Tripod : SXG-HAL130 sturdy hex-shaped 2-section aluminum legs, adjustable from 870mm to 1299mm in length
 Accessories : Flip mirror diagonal, Parts case, Counterweights 1.9 kg x2

Specifications

Objective lens : D=200mm F=1800mm (f9.0) VISAC mirror, multi-coated
 Light gathering power / Limiting magnitude : 816x unaided eye / 13.3
 Adapter threads : 60mm, 42mm for T-ring
 Visual back : 50.8mm, 31.7mm push-fit
 Tripod legs : Adjustable from 730mm to 1156mm in height
 Total weight : 23.3 kg (Excl. eyepieces)

Optional Accessories

35661
Optical Tube Bag 200

Usable for R200SS, VC200L, or VMC200L, or it is available for an optical tube of 200mm in aperture and less than 700mm in length.



35654
Eyepiece Accessory Case



- Suggested accessories to store
- 4 to 6 SLV and/or NPL eyepieces (31.7mm)
 - 2 of LVW/ SLV eyepieces (50.8mm) and 1 or 2 SLV/ NPL eyepieces (31.7mm)
 - 1 of LVW/ SLV eyepieces (50.8mm) and 3 or 4 of SLV/ NPL eyepieces (31.7mm)
 - Size: 175mm x 255mm x 95mm
 - Weight: 345 g

35655
Tube & Tripod Bag 100

- For a telescope optical tube or a tripod less than 950mm long and less than 125mm in width.
- Available for A80M, A80Mf, A70Lf, SD103S, AX103S optical tube or others.

3880
VC200L Aluminum Case

- For VC200L or VMC200L optical tube
- Size: 670 x 270 x 335 mm (W x D x H)
- Weight: 6.2 kg



SXD2

SXD2 Equatorial Mount WL

The Next level of Performance.

Increase Load Capacity

Materials and manufacturing processes have been revised to enhance the rigidity and precision of the original SX Mount. Both the R.A. and DEC rotation axes of the SXD2WL are made of thick steel with brass wheel gears, critical to accurate movement of the Mount. These changes have increased the precision of the Mount.

Smooth Motion with Bearings

Bearings are used in the R.A. and DEC axes and the rotating shafts of the worm gears. This reduces the load on the motors and ensures smooth rotation. Lapping of both worm gears and worm wheels ensures smooth operation.



Pulse Motors and Micro-Step Motion Control

The heart of the SXD2WL is the precision pulse motors. These highly responsive motors have a micro-step motion control system to deliver powerful, yet silky smooth drive controls in both fine motion and quick slewing.



Polar Alignment Scope PF-LII

A polar alignment scope is essential for taking longer exposure astrophotography. The SXD2WL comes as standard with the polar scope PF-LII, which features easy and accurate polar alignment as you bring Polaris and two other stars into designated positions on the reticle in polar scope's field of view. A free app called PF-L Assist for smartphones and tablets will help you bring Polaris and the other two stars in the field of view to the current direction seen in your observing site.



25031

SXD2 Mount WL

Specifications SXD2WL with Wireless Unit

R.A. slow motion	Worm and wheel gears with 180-tooth whole circle micro movement, 72mm in diameter, brass
DEC slow motion	Worm and wheel gears with 180-tooth whole circle micro movement, 72mm in diameter, brass
Worm shaft	9mm in diameter, made of brass
R.A. axis	40mm in diameter, carbon steel
DEC axis	35mm in diameter, carbon steel
Number of bearings	9 pieces
Counterweight bar	20mm in diameter, retractable, stainless steel
Polar alignment scope	(Built-in) 5x20mm, 8 degrees field of view, 3-star alignment system, variable intensity illuminated reticle with auto turn-off, brightness adjustable in 8 steps, dark field illumination, setting accuracy within 3 arc minutes.
Altitude adjustment	Latitude adjustable between 0 degree and 70 degrees (divided into high, middle, and low latitude zones and adjustable +/- 15 degrees per zone, fine adjustments by tangent screw with knob, about 0.8 degrees per rotation.
Azimuth adjustment	Fine adjustments by double screws with knob, about 1.2 degrees per rotation, adjustable range +/- about 7 degrees.
Motor drive	Pulse motors with micro-step motion control (250 pps)
Slewing / Tracking	Automatic slewing and tracking using a Wireless Unit and a smartphone or a PC tablet
Load capacity	15 kg (375 kg-cm torque load at 25cm from the cross point of the RA and DEC axes. For details refer to page 15.)
Controller power port	D-SUB9PIN male
Power supply	A cigarette-lighter plug cord is provided as standard accessory.
Working voltage / Electricity consumption	DC 12V / 0.45A - 2.5A
Power port	DC 12V EIAJ RC5320A Class 4
Size	360mm x 343mm x 128mm
Weight	9.2 kg (Excl. counterweight)
Counterweight	1.9 kg x1 and 3.7 kg x1

Optional Tripods compatible with the SXD2WL Mount

25164

ASG-CB90 Carbon Tripod

(For details, refer to page 63.)



25161

SXG-HAL130 Aluminum Tripod

- Adjustable leg length: from 807mm to 1299mm long
- Adjustable tripod height: from 730mm to 1156mm
- Spread tripod legs: 706mm in radius
- Weight: 5.5 kg

What is Different?

	SXD2WL	SX2WL
Maximum torque load	375 kg-cm	300 kg-cm
Photographic loading weight	15 kg / 33 lb	12kg / 26.5 lb
Rotating shafts	Carbon steel	Aluminum alloy
Wheel gears	Brass	Aluminum
Bearings	9	5
Controller	STAR BOOK TEN	STAR BOOK ONE
Polar axis scope	Equipped	Optional
Counterweights	1.9 kg x 1, 3.7 kg x 1	1.9 kg x 1

SXD2WL Mount Packages

25043

SXD2WL-AX103S

Images are breathtakingly sharp and clear with perfect color correction.



SXD2 Mount Package

SXD2WL, AX103S OTA, 2x eyepieces, SXG half pillar, SXG-HAL130 tripod

Contents

Optical tube : 115mm dia. x 762mm (shortened to 670mm) long, 4.6 kg
 Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
 Eyepiece : SLV20mm (41x), SLV5mm (165x)
 Mount : SXD2WL equatorial mount
 Tripod : SXG-HAL130 sturdy hex-shaped 2-section aluminum legs, adjustable from 870mm to 1299mm in length
 Accessories : Flip mirror diagonal, SXG half pillar, Parts case, Counterweights 1.9 kg x1, 3.7

Specifications

Objective lens : D=103mm F=825mm (f8.0) Quad SD apochromatic, multi-coated
 Light gathering power / Limiting magnitude : 217x unaided eye / 11.8
 Adapter threads : 60mm, 42mm for T-ring
 Visual back : 50.8mm, 31.7mm push-fit
 Tripod legs : Adjustable from 730mm to 1156mm in height
 Total weight : 28.9 kg (Excl. eyepieces)

25037

SXD2WL-SD103S

A very good choice for those looking for an exceptional telescope for visual and astrophotography.



SXD2 Mount Package

SXD2WL, SD103S OTA, 2x eyepieces, SXG half pillar, SXG-HAL130 tripod

Contents

Optical tube : 115mm dia. x 810mm long, 3.6 kg
 Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
 Eyepiece : SLV20mm (40x), SLV5mm (159x)
 Mount : SXD2WL equatorial mount
 Tripod : SXG-HAL130 sturdy hex-shaped 2-section aluminum legs, adjustable from 870mm to 1299mm in length
 Accessories : Flip mirror diagonal, SXG half pillar, Parts case, Counterweights 1.9 kg x1 and 3.7 kg x1

Specifications

Objective lens : D=103mm F=795mm (f7.7) SD apochromatic, multi-coated
 Light gathering power / Limiting magnitude : 816x unaided eye / 13.3
 Adapter threads : 60mm, 42mm for T-ring
 Visual back : 50.8mm, 31.7mm push-fit
 Tripod legs : Adjustable from 730mm to 1156mm in height
 Total weight : 27.9 kg (Excl. eyepieces)

25042

SXD2WL-SD115S

For astrophotography enthusiasts and those who looking for a larger aperture optical tube.



SXD2 Mount Package

SXD2WL, SD115S OTA, 2x eyepieces, SXG half pillar, SXG-HAL130 tripod

Contents

Optical tube : 125mm dia. x 930mm long, 4.4 kg
 Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
 Eyepiece : SLV20mm (45x), SLV5mm (178x)
 Mount : SXD2WL equatorial mount
 Tripod : SXG-HAL130 sturdy hex-shaped 2-section aluminum legs, adjustable from 870mm to 1299mm in length
 Accessories : Flip mirror diagonal, SXG half pillar, Parts case, Counterweights 1.9 kg x1 and 3.7 kg x1

Specifications

Objective lens : D=115mm F=890mm (f7.7) SD apochromatic, multi-coated
 Light gathering power / Limiting magnitude : 270x unaided eye / 12.1
 Adapter threads : 60mm, 42mm for T-ring
 Visual back : 50.8mm, 31.7mm push-fit
 Tripod legs : Adjustable from 730mm to 1156mm in height
 Total weight : 28.7 kg (Excl. eyepieces)

25044

SXD2WL-VC200L

Exquisite viewing and imaging performance with flat, distortion-free images from edge to edge.



SXD2 Mount Package

SXD2WL, VC200L OTA, 2x eyepieces, SXG-HAL130 tripod

Contents

Optical tube : 232mm dia. x 600mm long, 6.0 kg
 Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
 Eyepiece : SLV20mm (90x), SLV9mm (200x)
 Mount : SXD2WL equatorial mount
 Tripod : SXG-HAL130 sturdy hex-shaped 2-section aluminum legs, adjustable from 870mm to 1299mm in length
 Accessories : Parts case, Counterweights 1.9 kg x1 and 3.7 kg x1

Specifications

Objective lens : D=200mm F=1800mm (f9.0) VISAC mirror, multi-coated
 Light gathering power / Limiting magnitude : 816x unaided eye / 13.3
 Adapter threads : 60mm, 42mm for T-ring
 Visual back : 50.8mm, 31.7mm push-fit
 Tripod legs : Adjustable from 730mm to 1156mm in height
 Total weight : 27.6 kg (Excl. eyepieces)

25045

SXD2WL-R200SS

The fast-focal ratio is perfect for wide-field viewing and deep sky astrophotography.



SXD2 Mount Package

SXD2WL, R200SS OTA, 2x eyepieces, SXG-HAL130 tripod

Contents

Optical tube : 232mm dia. x 700mm long, 5.3 kg
 Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
 Eyepiece : SLV20mm (40x), SLV5mm (160x)
 Mount : SXD2WL equatorial mount
 Tripod : SXG-HAL130 sturdy hex-shaped 2-section aluminum legs, adjustable from 870mm to 1299mm in length
 Accessories : Parts case, Counterweights 1.9 kg x1 and 3.7 kg x1

Specifications

Objective lens : D=200mm F=800mm (f4.0) Parabolic mirror, multi-coated
 Light gathering power / Limiting magnitude : 816x unaided eye / 13.3
 Adapter threads : 60mm, 42mm for T-ring
 Visual back : 31.7mm push-fit
 Tripod legs : Adjustable from 730mm to 1156mm in height
 Total weight : 27.9 kg (Excl. eyepieces)

Optional Accessory



89226

SX Mount Case

Used for storing SX2, SXD2, or SXP mount. Not usable with SXP2 mount.



35661

Optical Tube Bag 200

Used for storing R200SS, VC200L, or VMC200L optical tube.



The SX2WL and SXD2WL mounts comes as standard with the Wireless Unit that allows for using a smartphone as an operating controller.

Wireless Unit

An equatorial mount wireless control unit.

Wireless Unit

25029

CPU / 32bit GISC Processor 120MHz
 Controller Cable Port / D-SUB 9PIN Female
 Autoguider Port / 6-pole -wired modular jack (for external autoguider)
 Wi-Fi / With dedicated application software and a smartphone as a user interface
 Operating environment / OS: Android ver. 6 or higher, iOS ver. 9.0 or higher, Wi-Fi:
 IEEE802.11b/g/n, Data encryption: WPA2-PSK Please be sure to check the
 app's operation before use regardless of conformity with the conditions.
 Power Source / Supplied from a mount
 Dimensions / 56 x 36 x 19.5 mm
 Weight / 60 g
 Software Update / via Wi-Fi connection

Celestial GO-TO Navigation with a Smartphone

On installing a dedicated app "STAR BOOK Wireless" to your smartphone, you will make good use of various menus prepared for celestial navigation including an automatic GO-TO function.

No Tangled Cables

Attaching the Wireless Unit to the mount will enable you to operate your telescope via Wi-Fi using a smartphone or a PC tablet comfortably. No cables are required that are likely to be tangled during operation.

High-Speed Response

Troubles typically seen with the wireless connection are delays in motion against response. We successfully reduced this shortcoming to the level of a cable connection. You will enjoy stress-free operation with smooth responses.

Low Power Consumption

The electricity consumption is reduced by 20% as compared to the STAR BOOK TEN controller with a visual screen display (Factory default settings). It is an advantage for hours of celestial observation or astrophotography.

Controlling the Telescope by Swiping the Screen

Pointing the telescope to your celestial target is easy with a swiping motion. The telescope moves in the same direction as you swipe the star chart on the screen of your smartphone.



Examples of the Celestial Navigation Screens

It is essential to download the app "STAR BOOK Wireless" to your smartphone for using the Wireless Unit.

Celestial GO-TO Navigation

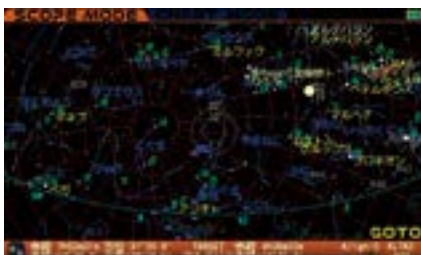
While looking at the star chart screen of your smartphone, you tap a target object you want to observe. The telescope will lead the object into the field of view of the eyepiece and starts tracking it.



The SXP2 and AXD2 mounts come as standard with a user-friendly STAR BOOK TEN controller that features a large LCD screen and intuitive operation by command keys.

STAR BOOK TEN

With observatory-quality precision controls, your target object appears on the high definition screen of the STAR BOOK TEN and in your telescope's field of view instantaneously. The night vision mode illuminates the whole screen in red, if applied, and will limit the brightness to the observer's eyes. Zooming in and out of the star chart is interlocked with motor speed. With the STAR BOOK TEN, a bulky PC is not needed.



Wireless Unit vs STAR BOOK TEN

	Wireless Unit	STAR BOOK TEN
Type	App + Smartphone	Dedicated controller
GO-TO Navigation and Tracking	○	○
General Information on Celestial Objects	△	○
Locating and Tracking Comet	○	○
PEC	△	○
Autoguider	○	○
Access to a PC	△(Wi-Fi connection)	○(LAN connection).
AXJ Encoders	x	○

As of February 2022. △ will be supported in future update.

SXP2 SXP2 Equatorial Mount

The pinnacle of the Vixen SX series mounts has been re-designed for increased performance.

Combining the best functions of the SX series of mounts and the STAR BOOK TEN controller, the Sphinx Professional is designed for high-performance observing and astrophotography.

Pedestal with Robust Fork Arms Design

The fork arms construction that brings high stability is the same as the upper-class AXJ mount. With this feature, the sturdiness of the compact and handy equatorial mount has been increased further with the SXP2.



Belt Drive System

In the conventional drive system of the Vixen equatorial mounts, the power of the motors is transferred to the worm gears by the gear trains. The gear trains require a minimum amount of play to rotate gears because play gains as the number of gears increases. To avoid such demerits, we changed the transmission power by the motors from the gear train to a belt system. We eliminated the backlash originating from the gear trains and reduced gear noise dramatically. Quiet and stable motion with reliable response has been a result.

Precise Tracking with P-PEC

Every movable part of the SXP2 mount has a design to produce highly smooth movements. Besides, the periodic error corrections provided by the STAR BOOK TEN rectify an irregular motion of the tracking gear wheels. The advanced P-PEC (permanent periodic error correction) employed with the SXP2 allows you to save the records of your rectification. When you power the SXP2 off, the corrected tracking errors are stored. When you turn it on again, the recorded corrections can read out to keep the celestial tracking of a level higher next time.

Advanced Motor Layout

As seen in our SX series of the equatorial mounts, heavy R.A. and DEC motors are set in the lower part of the declination body. The advantage is you may need fewer counterweights as the center of balance of the SXP2 comes below the crossing point of the R.A. and DEC axes.

Flat Mount Head

The top of the round mount head, 35mm in diameter, features eight M8 with pitch 1.25mm thread holes. These holes are arranged at 45 degrees intervals for attachment of different optical tubes. The Vixen dovetail tube plate or dovetail bar is attachable using an optical dovetail-plate mounting block.



25131

SXP2 Mount

Specifications

SXP2 with STAR BOOK TEN

R.A. slow motion	Worm and wheel gears with 180-tooth whole circle micro movement, 73.2mm in diameter, brass
DEC slow motion	Worm and wheel gears with 180-tooth whole circle micro movement, 73.2mm in diameter, brass
Worm shaft	9mm in diameter, made of brass
R.A. axis	40mm in diameter, aluminum alloy
DEC axis	40mm in diameter, aluminum alloy
Number of bearings	16 pieces
Counterweight bar	20mm in diameter, retractable, stainless steel
Polar alignment scope	(Built-in) 5x20mm, 8 degrees field of view, 3-star alignment system, variable intensity illuminated reticle with auto turn-off, brightness adjustable in 8 steps, dark field illumination, setting accuracy within 3 arc minutes.
Altitude adjustment	Latitude adjustable between 0 degree and 70 degrees (divided into high, middle, and low latitude zones and adjustable +/- 15 degrees per zone, fine adjustments by double screws with knob, about 0.7 degrees per rotation.
Azimuth adjustment	Fine adjustments by double screws with knob, about 1.7 degrees per rotation, adjustable range +/- about 5 degrees.
Motor drive	Pulse motors with micro-step motion control (250 pps)
Slewing / Tracking	High precision tracking with STAR BOOK ONE, maximum slewing speed about 1000x of sidereal rate (999x on display)
Load capacity	15 kg (375 kg-cm torque load at 25cm from the cross point of the RA and DEC axes.)
Controller power port	D-SUB9PIN male
Power supply	A cigarette-lighter plug cord is provided as standard accessory.
Working voltage / Electricity consumption	DC 12V / 0.45A - 2.5A
Power port	DC 12V EIAJ RC5320A Class 4
Size	386mm x 419mm x 128mm
Weight	13.3 kg (Excl. counterweight)
Counterweight	3.7 kg x 1

Optional Tripods and Pillar compatible with the SXP2 Mount

25164 ASG-CB90 Carbon Tripod

Usable with AXJ, SX series, AP mounts.

- Tripod legs: 2-section carbon fiber legs, adjustable from 510mm to 815mm in height
- Leg extension: from 545mm to 900mm long
- Minimum tripod length: 590mm long including the tripod head
- Weight: 3.4 kg

25161 SXG-HAL130 Aluminum Tripod

- Adjustable leg length: from 807mm to 1299mm long
- Adjustable tripod height: from 730mm to 1156mm high
- Weight: 55 kg

25172 SXG-P85DX Pillar

- Pipe size: 114.3mm dia. and 839.5mm high
- Thickness: 3.5mm
- Support legs: 450mm long
- Weight: 19.5 kg

SXP2 Mount Packages

25132

SXP2 -AX103S

Images are breathtakingly sharp and clear with perfect color correction.



SXP2 Mount Package

SXP2, AX103S OTA, 2x eyepieces, SXG half pillar, SXG-HAL130 tripod

Contents

Optical tube : 115mm dia. x 762mm (shortened to 670mm) long, 4.6 kg
 Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
 Eyepiece : SLV20mm (41x), SLV5mm (165x)
 Mount : SXP2 equatorial mount
 Tripod : SXG-HAL130 sturdy hex-shaped 2-section aluminum legs, adjustable from 870mm to 1299mm in length
 Accessories : Flip mirror diagonal, SXG half pillar, Dovetail-plate mounting block, Parts case, Counterweights 1.9 kg x1, 3.7 kg x1

Specifications

Objective lens : D=200mm F=1950mm (f9.75) Quad SD apochromatic, multi-coated
 Light gathering power / Limiting magnitude : 217x unaided eye / 11.8
 Visual back : 50.8mm, 31.7mm push-fit
 Tripod legs : Adjustable from 730mm to 1156mm in height
 Total weight : 33.0 kg (Excl. eyepieces)

25133

SXP2-SD103S

A very good choice for those looking for an exceptional telescope for visual and astrophotography.



SXP2 Mount Package

SXP2, SD103S OTA, 2x eyepieces, SXG half pillar, SXG-HAL130 tripod

Contents

Optical tube : 115mm dia. x 810mm long, 3.6 kg
 Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
 Eyepiece : SLV20mm (40x), SLV5mm (159x)
 Mount : SXP2 equatorial mount
 Tripod : SSXG-HAL130 sturdy hex-shaped 2-section aluminum legs, adjustable from 870mm to 1299mm in length
 Accessories : Flip mirror diagonal, SXG half pillar, Dovetail-plate mounting block, Parts case, Counterweights 1.9 kg x1, 3.7 kg x1

Specifications

Objective lens : D=103mm F=795mm (f7.7) SD apochromatic, multi-coated
 Light gathering power / Limiting magnitude : Limiting magnitude: 816x unaided eye / 13.3
 Adapter threads : 60mm, 42mm for T-ring
 Visual back : 50.8mm, 31.7mm push-fit
 Tripod legs : Adjustable from 730mm to 1156mm in height
 Total weight : 32.0 kg (Excl. eyepieces)

25134

SXP2-SD115S

For astrophotography enthusiasts and those who looking for a larger aperture optical tube.



SXP2 Mount Package

SXP2, SD115S OTA, 2x eyepieces, SXG half pillar, SXG-HAL130 tripod

Contents

Optical tube : 125mm dia. x 930mm long, 4.4 kg
 Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
 Eyepiece : SLV20mm (45x), SLV5mm (178x)
 Mount : SXP2 equatorial mount
 Tripod : SXG-HAL130 sturdy hex-shaped 2-section aluminum legs, adjustable from 870mm to 1299mm in length
 Accessories : Flip mirror diagonal, SXG half pillar, Dovetail-plate mounting block, Parts case, Counterweights 1.9 kg x1, 3.7 kg x1

Specifications

Objective lens : D=115mm F=890mm (f7.7) SD apochromatic, multi-coated
 Light gathering power / Limiting magnitude : 270x unaided eye / 12.1
 Adapter threads : 60mm, 42mm for T-ring
 Visual back : 50.8mm, 31.7mm push-fit
 Tripod legs : Adjustable from 730mm to 1156mm in height
 Total weight : 32.8 kg (Excl. eyepieces)

25136

SXP2-VC200L

Exquisite viewing and imaging performance with flat, distortion-free images from edge to edge.



SXP2 Mount Package

SXP2, VC200L OTA, 2x eyepieces, SXG-HAL130 tripod

Contents

Optical tube : 232mm dia. x 600mm long, 6.0 kg
 Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
 Eyepiece : SLV20mm (90x), SLV9mm (200x)
 Mount : SXP2 equatorial mount
 Tripod : SXG-HAL130 sturdy hex-shaped 2-section aluminum legs, adjustable from 870mm to 1299mm in length
 Accessories : Dovetail-plate mounting block, Parts case, Counterweights 1.9 kg x1 and 3.7 kg x1

Specifications

Objective lens : D=200mm F=1800mm (f9.0) VISAC mirror, multi-coated
 Light gathering power / Limiting magnitude : 816x unaided eye / 13.3
 Adapter threads : 60mm, 42mm for T-ring
 Visual back : 50.8mm, 31.7mm push-fit
 Tripod legs : Adjustable from 730mm to 1156mm in height
 Total weight : 31.7 kg (Excl. eyepieces)

25135

SXP2-R200SS

The fast-focal ratio is perfect for wide-field viewing and deep sky astrophotography.



SXP2 Mount Package

SXP2, R200SS OTA, 2x eyepieces, SXG-HAL130 tripod

Contents

Optical tube : 232mm dia. x 700mm long, 5.3 kg
 Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
 Eyepiece : SLV20mm (40x), SLV5mm (160x)
 Mount : SXP2 equatorial mount
 Tripod : SXG-HAL130 sturdy hex-shaped 2-section aluminum legs, adjustable from 870mm to 1299mm in length
 Accessories : Dovetail-plate mounting block, Parts case, Counterweights 1.9 kg x1 and 3.7 kg x1

Specifications

Objective lens : D=200mm F=800mm (f4.0) Parabolic mirror, multi-coated
 Light gathering power / Limiting magnitude : 816x unaided eye / 13.3
 Adapter threads: 60mm, 42mm for T-ring
 Visual back: 31.7mm push-fit
 Tripod legs: Adjustable from 730mm to 1156mm in height
 Total weight: 32.0 kg (Excl. eyepieces)

Optional Accessories

25029

Wireless Unit

3810

Dovetail-plate Mounting Block

- Usable for a Dovetail-plate mounted optical tube
- Fits to the mount head of AXD2, AXJ, and SXP2 directly.
- Usable with an Accessory Plate DX or an AXD Large Accessory Plate.
- With 1/4" screw threaded holes and two M8 holes (span of 35mm).
- Weight: 220 g

3599

AC Adapter 12V 3A

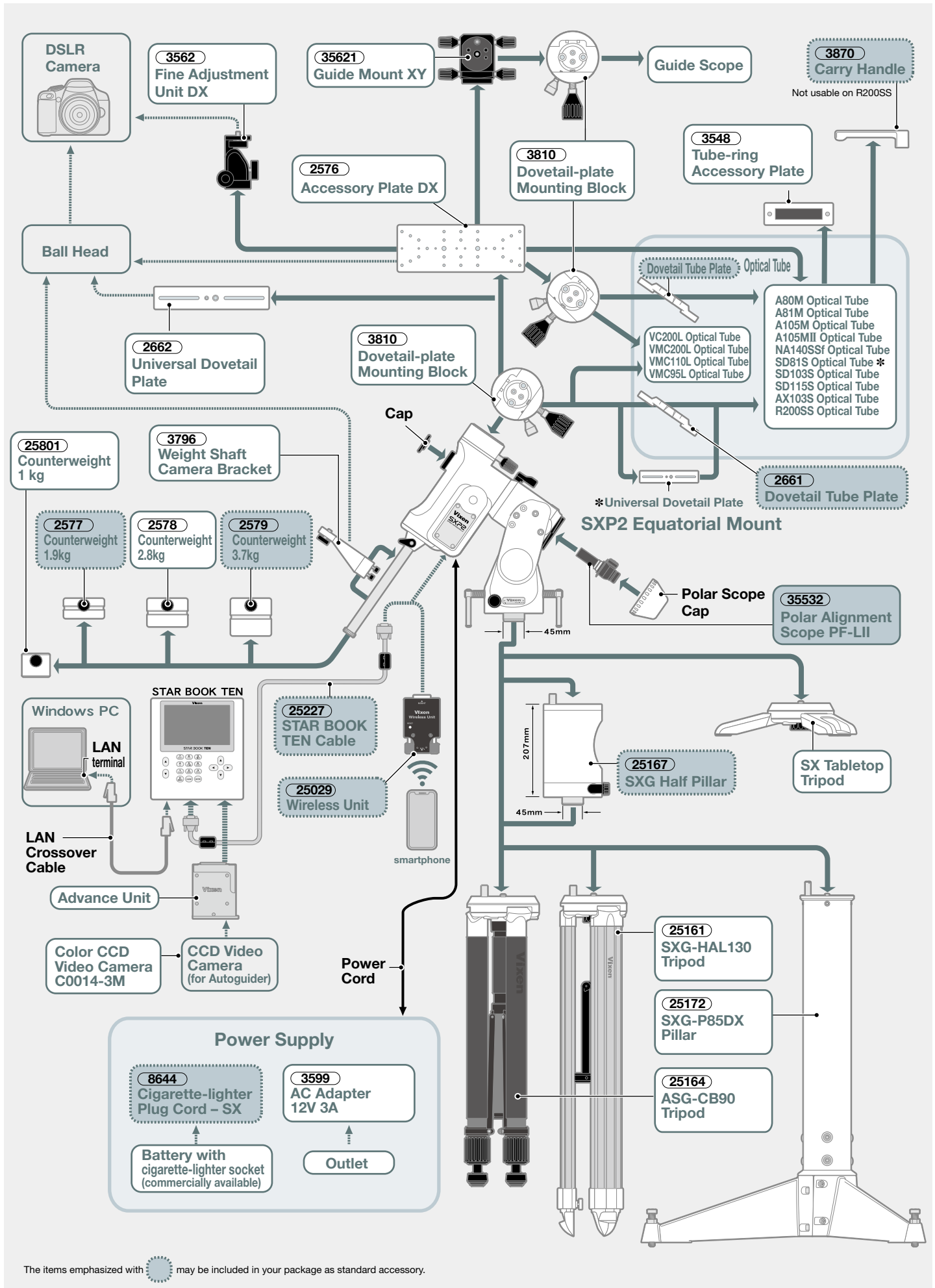
35661


Optical Tube Bag 200

89225

SXP2 Mount Case

SXP2 System Structure Diagram



The items emphasized with  may be included in your package as standard accessory.

The AXJ Mount features superior performance for the discriminating astrophotographer.

Vixen's new design introduces the sturdy and precision-made AXJ mount is designed with a belt drive to eliminate backlash and gear noise. It is best suited for the demanding astrophotographer as a comfortable and secure imaging platform.

Superior Periodic Error Correction V-PEC

The periodic motion of each mount measured and corrected in advance is stored on the nonvolatile memory inside the AXJ mount. The periodic motions in 12 points are checked on the worm wheel at an angle of 30 degrees each by using a high-resolution periodical motion measuring tool. The most effective correction has been calculated based on this inspection.

Vixen's permanent periodic error corrections called the VPEC work automatically when you use the AXJ mount. It provides precise tracking as accurate as +/- 4 arc seconds or less. You can progress the tracking accuracy further by adding your own recorded PEC as the occasion demands.

Belt Drive System

In the conventional drive system of the Vixen equatorial mounts, motion power of the motor was conveyed to the worm gear by the gear trains. The gear trains require a minimum amount of play to move the gears and the amount of play gains as the number of gears increases. To avoid this, the transmission of the motion power has been changed from the gears to a belt system. As a result, backlash originating from the gear train has been eliminated and gear noise has been dramatically reduced. Quiet and stable motion with reliable response has been achieved.



36951

AXJ Mount

Specifications

AXJ with STAR BOOK TEN

R.A. slow motion	Worm and wheel gears with 225-tooth whole circle micro movement, 114.5mm in diameter, brass
DEC slow motion	Worm and wheel gears with 192-tooth whole circle micro movement, 98mm in diameter, brass
Worm shaft	15.5mm in diameter, brass
R.A. axis	40mm in diameter, carbon steel
DEC axis	40mm in diameter, carbon steel
Number of bearings	14 pieces
Counterweight bar	25mm in diameter, retractable, stainless steel
Polar alignment scope	(Built-in) 5x20mm, 10 degrees field of view, 3-star alignment system, variable intensity illuminated reticle with auto turn-off, brightness adjustable in 8 steps, dark field illumination, setting accuracy within 3 arc minutes.
Altitude adjustment	Latitude adjustable between 0 degree and 70 degrees in 5 degrees increments (divided into high, middle, and low latitude zones) and adjustable +/- 15 degrees per zone, fine adjustments by double screws with knob, about 0.7 degrees per rotation.
Azimuth adjustment	Fine adjustments by double screws with knob, about 1.7 degrees per rotation, adjustable range +/- about 5 degrees.
Motor drive	Pulse motors with micro-step motion control (300 pps)
Tracking/ Slewing	High precision tracking with STAR BOOK TEN, maximum slewing speed about 1000x of sidereal rate (999x on display)
Load capacity	22 kg/ 48.5 lb. (550 kg-cm torque load at 25cm from the cross point of the RA and DEC axes. For details refer to page 15.)
Controller power port	D-SUB9PIN male
Power supply	A cigarette-lighter plug cord is provided as standard accessory.
Working voltage / Electricity consumption	DC 12V / 0.45A - 2.5A
Power port	DC 12V EIAJ RC5320A Class 4 (center-plus polarity)
Size	420mm x 466mm x 138mm
Weight	17.4 kg (Excl. counterweight)
Counterweight	1.5 kg x1 and 3.5 kg x 1

Optional Tripods compatible with AXJ Mount

25164

ASG-CB90 Carbon Tripod

- Adjustable leg length: from 545mm to 900mm long
- Adjustable tripod height: from 510mm to 815mm high
- Spread tripod legs: from 340mm to 520mm in radius
- Leg pipes: 36mm, 32mm in diameter
- Weight: 3.4 kg

25161

SXG-HAL130 Aluminum Tripod

(For details, refer to page 63.)

36916

AXD-TR102 Aluminum Tripod

- Adjustable leg length: from 760mm to 1018mm long
- Adjustable tripod height: from 690mm to 915mm high
- Spread tripod legs: from 440mm to 570mm in radius
- Leg pipes: 55mm in diameter
- Weight: 10.3 kg

It is available for an AXJ mount by using an optional AXJ-TR102 conversion adapter set.

Optional Accessories

25029

Wireless Unit

3810

Dovetail-plate Mounting Block

3599

AC Adapter 12V 3A

36918

AXD Large Accessory Plate

89224

AXJ Mount Case

35621

Guide Mount XY

36953

AXJ-TR102 Conversion Adapter Set

With this adapter, you can use the TR102 aluminum tripod for AXJ and SXP2 mounts. It is provided an AXD2 mount as a standard accessory.

36912

AXD Counterweight 1.5 kg

36913

AXD Counterweight 3.5 kg

36914

AXD Counterweight 7 kg

Make your AXJ Mount further comfortable and more accurate.

The high-precision encoders will make highly progress in the performance of your AXJ Mount if installed.

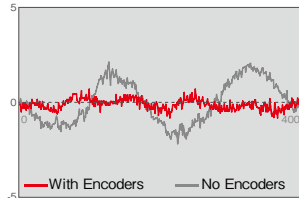
Comfortable 'Go-To' Manual Slewing

In general, astronomical navigation is established by electrically matching the coordinate information stored in the memory of the controller with the motor-rotation angle of the equatorial mount and mechanically matching the orientation of the telescope tube with the motor-rotation angles at the same time. For this reason, as long as you use the functions for automatic navigations, a relation between the orientation of an optical tube and the mechanical position of the motor-rotating angles must be kept constantly. You are not allowed to unfasten the clamps on the equatorial mount to move the telescope's optical tube manually in any direction.



Therefore, if you can match the telescope's orientation with the motor's rotating angles both electrically and mechanically, positions between the telescope and the coordinate on the controller will always correspond even if you unfasten the clamp levers. The AXJ encoders make that possible.

You will be allowed to move the telescope by hand to change its direction while the encoders are functioning. You can comfortably search for your celestial target by operating the telescope manually as you watch the star chart screen on the controller.



High Precision Tracking

The encoders monitor the tracking of the AXJ equatorial mount with high accuracy of 0.1 arc second (R.A.) per resolution. The diagram shown is a comparison of the periodic motions of the AXJ without the encoders and the AXJ equipped with the encoders. The AXJ encoders detect the slightest amount of periodic motions*1 that are remaining in the AXJ renowned for its high precision tracking and realize even a higher precise tracking as a result.

*1: The periodic errors at celestial rate when installed to the AXJ. (in compliance with the test method prescribed by Vixen.)

37913

AXJ Encoders



R.A. Encoder



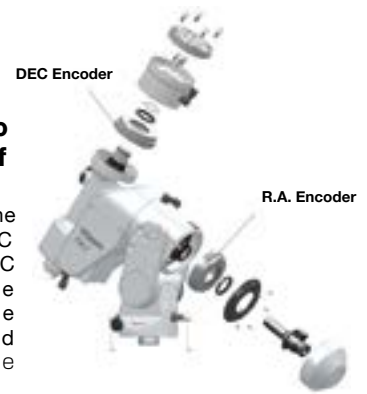
DEC Encoder

Specifications	R.A. Encoder	DEC Encoder
Sensor	Reflective type laser sensor	*2x2 Reflective type optical sensor
Scale	Reflective rotary disc made of glass	Reflective rotary disc made of PET
Resolving power	0.1 arc second	0.2 arc second
Periodic error	Less than 0.5 arc sec. rms(typical)	
Power supply	from AXJ, DC 5V 0.2A	from AXJ, DC 5V 0.1A
Terminal	D-SUB9PIN female	D-SUB9PIN female
Operating Temp.	0 - 40 degrees Celsius	0 - 40 degrees Celsius
Size	99.5mm dia. x 27mm thick	99.5mm dia. x 25mm thick
Weight	350 g	320 g

*2: Class 1 laser product. (IEC60825-1:2014)

Built-in type Encoders no hinder the appearance of the AXJ.

The R.A. encoder fits inside the R.A. body, and the DEC encoder is inside of the DEC body. These built-in type encoders do not hinder the appearance of the AXJ, and you can store it in the same case as before.



Innovation and inheritance are here. The AXJ mount is a new endeavor to build high quality imaging platform.

The AXJ mount not only succeeds superior quality and excellent performance from the Vixen's flagship AXD2, but also has an advanced technology that raises the level of accuracy.

14pieces of Bearings

The rotational parts of the AXJ have 14 pieces of bearings in total. This provides highly smooth motion for tracking and slewing to the target objects.



22 kg Loading Capacity

Two pairs of bearings are at both ends of the R.A. axis. The distance of those bearings from one set to another is wide in breadth to increase load capacity.

Fork Arms Style R.A. Body Cradle

The R.A. body of the AXJ is fixed with two fork arms. Its design is lightweight while keeping its sturdiness.



Versatile Mount Head

The mount head of the AXJ is an anodized aluminum plate resistant to scratches. Threaded holes for an optical tube on the mount head accept Vixen's mounting plates and other manufacturer's plates. The four screw holes for M8 metric screws and another four screws for UNC 5/16 inch screws.

The AXJ Mount combines the best slewing and tracking in a user-friendly ergonomic design.

No matter how you are involved with astronomical observing or astrophotography, the superior interface of the STAR BOOK TEN lets you operate the AXJ mount without difficulty.

Advanced Motor Layout

As heavy RA and DEC motor units are placed in the lower part of the declination body, the center of balance of the AXJ sits below the crossing point of the RA and DEC axes. It is an advantage as you can balance AXJ with fewer counterweights.



Accessory Shoe for Simple Polar Alignment

An accessory shoe for an optional Polar Meter consisting of a compass with a bubble level and an altitude scale is convenient for a quick and easy setup in the daytime. Also, you can use it to locate the direction of the north celestial pole hidden by trees or buildings.



Applicable for two types of tripod standards

The AXJ is usable with an SXG-HAL130 tripod sold separately. Another option is an ASG-CB90, a compact and lightweight tripod made of durable carbon fiber legs suitable for a traveling astrophotographer. Using an optional AXJ-TR102 conversion adapter set, a robust AXD-TR102 tripod designed originally for the AXD2 mount will be available for the AXJ. Optionally available SGX-P85DX and AXD-P85DX pillars can offer you a permanent installation of the AXJ in an observatory dome.

Retractable Counterweight Bar

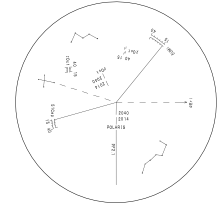
The counterweight bar is durable stainless steel 25mm thick. It is storable inside the declination body for aids in a quick setup.



Polar Alignment Scope

The Polar scope is used for aligning the AXJ accurately to the north or south celestial pole. You bring Polaris and two other stars into the polar scope's field of view to match with the designated position on the scale on the polar scope's reticle in the northern hemisphere.

The brightness adjustment dial of the polar scope will illuminate the reticle in red when turned on. The brightness varies in 8 steps. The red light gradually goes dimmer after a while and turns off automatically.



Reticle

AXJ Mount Packages

36956

AXJ -AX103S

Images are breathtakingly sharp and clear with perfect color correction.



Shown with eyepieces sold separately

36957

AXJ -VMC260L(WT)

The great light gathering power and long focal length of the VMC260L are best for detailed views of planets and faint deep sky objects.



Shown with eyepieces sold separately

AXJ Mount Package	AXJ, AX103S OTA, Dovetail-plate mounting block, ASG-CB90 tripod
Contents	Optical tube : 115mm dia. x 762mm (shortened to 670mm) long, 4.6kg
	Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
Specifications	Eyepiece : Optional
	Mount : AXJ equatorial mount
	Tripod : ASG-CB90 carbon tripod, 2-section legs adjustable from 545mm to 900mm in length, 3.4kg
	Accessories : Flip mirror diagonal, Dovetail-plate mounting block, Parts case, Counterweights 1.5 kg x1, 3.5kg x1
	Objective lens : D=103mm F=825mm (f8) Quad SD apochromatic, multi-coated
	Light gathering power / Limiting magnitude : 217x unaided eye / 11.8
	Adapter threads : 60mm, 42mm for T-ring
	Visual back : 50.8mm, 31.7mm push-fit
	Tripod legs : Adjustable from 510mm to 815mm in height, with legs quick spreader
	Total weight : 32.6kg

AXJ Mount Package	AXJ, VMC260L(WT) OTA, Saddle plate, ASG-CB90 tripod
Contents	Optical tube : 304mm dia. x 680mm long, 10kg
	Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
Specifications	Eyepiece : Optional
	Mount : AXJ equatorial mount
	Tripod : ASG-CB90 carbon tripod, 2-section legs adjustable from 545mm to 900mm in length, 3.4kg
	Accessories : Flip mirror diagonal, Wide slide bar cradle, Parts case, Counterweights 1.5kg x1, 3.5 kg x1, 7 kg x1
	Objective lens : D=260mm F=3000mm (f11.5) precision spherical mirror, multi-coated
	Light gathering power / Limiting magnitude : 1380x unaided eye / 13.8
	Adapter threads : 60mm, 42mm for T-ring
	Visual back : 50.8mm, 31.7mm push-fit
	Tripod legs : Adjustable from 510mm to 815mm in height
	Total weight : 45.1kg

AXD2

AXD2 Equatorial Mount

Vixen's flagship equatorial mount combines superior performance with ease of use.

With its surprising precision, incredible performance, and simplicity of use, the AXD2 mount has no rival in its class. It provides tracking as accurate +/- 2.8 arc seconds.



Pleasure of Using the Flagship AXD2

Avid astronomers will find that the high performance and precise tracking of the AXD2 mount will enhance their level of astrophotography. With its ease of use and superior performance, the AXD2 offers even novice astronomers the opportunity to be successful astrophotographers. No matter how you are involved in astronomical observing or astrophotography, an excellent interface of the STAR BOOK TEN lets you operate the AXD2 without difficulty.

Sturdy and Precise Mount for Astrophotography

With the increase of digital imaging equipment, we see many exquisite astrophotos. The pixels and sensitivity of the imaging sensors are increasing, allowing for even more amazing astrophotographs. Vixen has re-worked a standard structure of a German equatorial mount to create the AXD2. Both the R.A. and DEC axes are lightweight but strong super aluminum alloy A7075 with 50mm in diameter. As a result, the AXD2 outperforms other imaging platforms. And, with a 30 kg load capacity, the mount is suitable for all your imaging equipment.

Star-Chart Go-To Navigation

The AXD2 comes as standard with STAR BOOK TEN which features an intuitive 'Star-Chart Go-To' system with high definition color LCD.



36941

AXD2 Mount

Specifications AXD2 with STAR BOOK TEN

R.A. slow motion	Worm and wheel gears with 270-tooth whole circle micro movement, 135mm in diameter, brass
DEC slow motion	Worm and wheel gears with 216-tooth whole circle micro movement, 108mm in diameter, brass
Worm shaft	14.5mm in diameter, brass
R.A. axis	50mm in diameter, super aluminum alloy A7075
DEC axis	35mm in diameter, super aluminum alloy A7075
Number of bearings	21 pieces
Counterweight bar	25mm in diameter, retractable, stainless steel
Polar alignment scope	(Built-in) 5x20mm, 10 degrees field of view, 3-star alignment system, variable illuminated reticle with auto turn-off, brightness adjustable in 8 steps, 1d illumination, setting accuracy within 3 arc minutes.
Altitude adjustment	Latitude adjustable between 0 degree and 70 degrees in 2 degrees increments (divided into high, middle, and low latitude zones) and adjustable +/- 15 degrees per zone, fine adjustments by double screw with knob, about 0.5 degrees per rotation.
Azimuth adjustment	Fine adjustments by double screws with knob, about 1 degree per rotation, adjustable range +/- about 7 degrees.
Motor drive	Pulse motors with micro-step motion control (400 pps)
Slewing / Tracking	High precision tracking with STAR BOOK TEN, maximum slewing speed about 800x of sidereal rate
Load capacity	30 kg (750 kg-cm torque load at 25cm from the cross point of the RA and DEC axes. For details refer to page 15.)
Controller power port	D-SUB9PIN male
Power supply	A cigarette-lighter plug cord is provided as standard accessory.
Working voltage / Electricity consumption	DC 12V / 0.45A - 2.5A
Power port	DC 12V EIAJ RC5320A Class 4 (center-plus polarity)
Size	457mm x 465mm x 152mm
Weight	25 kg (Excl. counterweight)
Counterweight	1.5 kg x 1, 7 kg x 1

Optional Tripod or Pillar for AXD2 Mount



25173

AXD-P85DX Pillar

- Robust observatory pillar.
- Pillar size: 139.8mm dia. x 881.5mm high
 - Pillar pipe: 3.8mm thick
 - Spread base: 450mm in radius
 - Weight: 24.5 kg



36916

AXD-TR102 Aluminum Tripod

- Adjustable leg length from 760mm to 1018mm long
- Adjustable tripod height from 690mm to 915mm high
 - Spread tripod legs from 440mm to 570mm in radius
 - Leg pipe: 55mm in diameter
 - Weight: 10.3 kg

Optional Pars and Accessories

25029

Wireless Unit

3810

Dovetail-plate Mounting Block

36915

AXD Half Pillar

3599

AC Adapter 12V 3A

36918

AXD Large Accessory Plate

35621

Guide Mount XY

36912

AXD Counterweight 1.5 kg

36913

AXD Counterweight 3.5 kg

36914

AXD Counterweight 7.0 kg

89222

AXD Aluminum Case

For Serious Astrophotographer who demands A Perfect Imaging Platform.

The AXD2 has consciousness with the design for the era of digitalization. With its surprising precision, incredible performance, and simplicity of use, it has no rival in its class.

Sturdy R.A. and DEC axes but Lightweight Body

The structures of German equatorial mounts have been thoroughly examined to create the sturdy but lightweight AXD2 Mount. The A7075 super-alloy, the strongest among the group of aluminum alloys, is chosen as the material for the R.A. and DEC axes. The tension of the A7075 super alloy is said to be stronger than titanium featuring lightweight and high strength, even though its specific gravity is 38% less than titanium. Both axes are as thick as 50mm in diameter. The A7075 super-alloy used for the axes has made the AXD2 lightweight while retaining its sturdiness.



R.A. Shaft (Polar Axis) DEC Shaft

Large Worm Wheels

The sizes of the worm wheels increase in the AXD design compared to our former-flagship New ATLUX mount. The AXD2 mount has 270 teeth in R.A. and 216 teeth in DEC. It achieves a high level of tracking accuracy and tracking stability.

Model	AXD2	New ATLUX
Specification		
Worm Wheel Diameter	R.A. : 135mm DEC : 108mm	R.A. : 90mm DEC : 90mm
Number of Teeth	R.A. : 270 DEC : 216	R.A. : 180 DEC : 180

21 pieces of Bearings

The rotational parts of the AXD2 mount employ as many as 21 pieces of bearings in total. It provides surprisingly smooth motion for tracking and slewing to the target objects.



High Response Pulse Motors

Vixen selected two-phase hybrid pulse motors of high performance for the AXD2 to achieve quick responses and silk-smooth movements. An excellent micro-step motion control system yields a wide dynamic range to the pulse motors. The AXD2 fruits surprisingly ultra-smooth driving from tracking speed to slewing speed 800x of the sidereal rate at a maximum. The micro-step motion controls with high 400 pulses per second will result in movements free of unstable behaviors. A newly developed software program and improvement of the motor control board successfully reduce the electricity consumption of the pulse motors while maintaining high torque.



Excellent Backlash Reduction

The pulse motors work accurately from low speed to high speed with the micro-step controls. It eliminates the need for gears of reduction in the gear trains and dramatically decreases the backlash of gears.



Ultimate Periodic Error Correction – VPEC

The periodic motion of each AXD2 mount is pre-measured precisely and stored in the nonvolatile memory inside the mount unit at Vixen's factory. It is called V-PEC. The V-PEC works in automatic as you start using the mount for tracking. It provides tracking as accurate as +/- 2.8 arc seconds. You can upgrade the tracking accuracy further by adding your own recorded PEC as the occasion demands.



STAR BOOK TEN Highly Comfortable Operation with STAR BOOK TEN

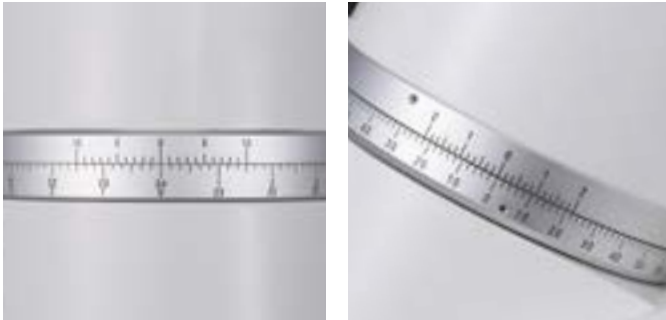
The STAR BOOK TEN has a large capacity of backup memory where your alignment information is stored. It allows you to turn off the power of the AXD2 temporarily to save batteries. The Mount resumes tracking and GO-TO slewing once you turn on the power again.

The AXD2 Mount – Innovative, Elegant and Functional.

The AXD2 mount has minimal external protrusions and an innovative interior design. It is the flagship of Vixen's line of well-designed equatorial mounts.

Elegant Silver Setting Circles

Polished silver anodized setting circles in R.A. and DEC have both beauty and utility. They not only match the white AXD2 body nicely but also allow you to point your telescope to a target well within the provided verniers. The R.A. reads one minute (hour angle), and the DEC reads ten arc minutes (or about 0.167 degrees).



Retractable Counterweight Bar

The counterweight bar is durable stainless steel 25mm thick and possible to store inside the declination body. That will aid in a quick setup.



Reliable Wiring

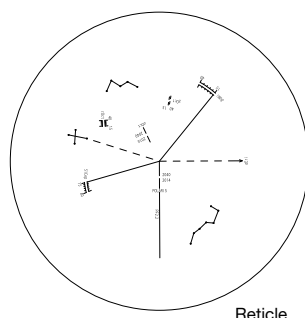
All the electronic parts inside the AXD2 mount are accumulated on one electric circuit board to simplify electrical wiring. The electrical circuit board equipped is highly reliable and safe.



Polar Alignment Scope

The Polar Scope is to accurately align the AXD2 mount to the north or south celestial pole. The polar alignment is easy. You bring Polaris and two other stars into the polar scope's field of view and match them with the designated position on the scale on the polar scope's reticle (in the northern hemisphere).

The brightness adjustment dial of the polar scope will illuminate the reticle in red when turned on. Brightness is adjusted in 8 steps. The red light gradually dims after a given interval of time and turns off automatically.



Advanced Motor Layout

The heavy R.A. and DEC motor units are placed in the lower part of the declination body so that the center of balance of the AXD2 mount shifts to below the crossing point of the R.A. and DEC axes. It makes the lower portion of the declination body act as a counterweight. Additionally, the low-profile mount head allows the mount to balance with less counterweight.

Flat Mount Head

The mount head of the AXD2 mount is an anodized aluminum plate that is highly resistant to scratches. The threaded holes on the mount head accept Vixen's dovetail mounting block and other manufacturer's tube plates as well.



Threaded holes x 8 for M8 screws

Threaded holes x 4 for 5/16 inch screws

Heavy-duty Vibration-Free Tripod

A sturdy tripod with higher stability is essential to utilize the AXD2 mount fully. The dedicated AXD-TR102 tripod with 55mm thick legs is strong enough against strain. It achieves perfect stability when using the AXD2.



AXD2 Mount Packages

36942

AXD2 -AX103S

The AX103S, a quad-element apochromatic system including SD glass, is proud of uncompromising optical performance. It is the pinnacle of this aperture class.



Shown with eyepieces sold separately

AXD2 Mount Package

AXD2, AX103S OTA, Dovetail-plate mounting block, AXD half pillar, AXD-TR102 tripod

Contents

- Optical tube : 115mm dia. x 762mm (shortened to 670mm) long, 4.6 kg
- Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
- Eyepiece : Optional
- Mount : AXD2 equatorial mount
- Tripod : AXD-TR102 Aluminum pipe tripod, 2-section legs adjustable from 760mm to 1018mm in length, 10.3 kg
- Accessories : Flip mirror diagonal, Dovetail-plate mounting block, Counterweights 1.5 kg x1, 7.0 kg x1

Specifications

- Objective lens : D=103mm F=825mm (f8) Quad SD apochromatic, multi-coated
- Light gathering power / Limiting magnitude : 217x unaided eye / 11.8
- Adapter threads : 60mm, 42mm for T-ring
- Visual back : 50.8mm, 31.7mm push-fit
- Tripod legs : Adjustable from 690mm to 915mm in height, with legs quick spreader
- Total weight : 55.3 kg

36943

AXD2 -AX103S-P

The 103mm f8 SD apochromatic refractor, designed both for visual observation and astrophotography, comes mounted on a sophisticated AXD2 atop a solid pedestal.



Shown with eyepieces sold separately

AXD2 Mount Package

AXD2, AX103S OTA, Dovetail-plate mounting block, AXD-P85DX pillar

Contents

- Optical tube : 115mm dia. x 762mm (shortened to 670mm) long, 4.6 kg
- Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
- Eyepiece : Optional
- Mount : AXD2 equatorial mount
- Pillar : AXD-P85DX thick aluminum pipe pillar
- Accessories : Flip mirror diagonal, Dovetail-plate mounting block, AXD Half pillar, Counterweights 1.5 kg x1, 7.0 kg x1

Specifications

- Objective lens : D=103mm F=825mm (f8) Quad SD apochromatic, multi-coated
- Light gathering power / Limiting magnitude : 217x unaided eye / 11.8
- Adapter threads : 60mm, 42mm for T-ring
- Visual back : 50.8mm, 31.7mm push-fit
- Pillar size : 139.8mm in diameter and 881.5mm in height, 24.5 kg
- Total weight : 64.6 kg

36947

AXD2 -VMC260L(WT)

The large, lightweight VMC260L comes mounted on the sophisticated AXD2 mount and sturdy tripod. You can easily transport it to distant observing sites.



Shown with eyepieces sold separately

AXD2 Mount Package

AXD2, VMC260L(WT), Saddle plate, AXD-TR102 tripod

Contents

- Optical tube : 304mm dia. x 680mm long, 10 kg
- Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
- Eyepiece : Optional
- Mount : AXD2 equatorial mount
- Pillar : AXD-P85DX thick aluminum pipe pillar
- Accessories : Flip mirror diagonal, Wide slide bar cradle, Counterweights 1.5 kg x1, 7 kg x1

Specifications

- Objective lens : D=260mm F=3000mm (f11.5) precision spherical mirror, multi-coated
- Light gathering power / Limiting magnitude : 1380x unaided eye / 13.8
- Adapter threads : 60mm, 42mm for T-ring
- Visual back : 50.8mm, 31.7mm push-fit
- Tripod legs : Adjustable from 690mm to 915mm in height, with legs quick spreader
- Total weight : 55.9 kg

36948

AXD2 -VMC260L(WT)-P

The excellent light gathering power and long focal length of the VMC260L are best for detailed views of planets and faint deep sky objects. The robust pillar is suitable for use in a permanent observing site.



Shown with eyepieces sold separately

AXD2 Mount Package

AXD2, VMC260L(WT), Saddle plate, AXD-P85DX pillar

Contents

- Optical tube : 304mm dia. x 680mm long, 10 kg
- Finder scope : 7x50mm with illuminated reticle, 7 degrees field of view
- Eyepiece : Optional
- Mount : AXD2 equatorial mount
- Pillar : AXD-P85DX thick aluminum pipe pillar
- Accessories : Flip mirror diagonal, Wide slide bar cradle, Counterweights 1.5 kg x1, 7 kg x1

Specifications

- Objective lens : D=260mm F=3000mm (f11.5) precision spherical mirror, multi-coated
- Light gathering power / Limiting magnitude : 1380x unaided eye / 13.8
- Adapter threads : 60mm, 42mm for T-ring
- Visual back : 50.8mm, 31.7mm push-fit
- Pillar size : 139.8mm in diameter and 881.5mm in height, 24.5 kg
- Total weight : 70.1 kg

Star-Scape Photography and Wide-Field Astrophotography

Taking pinpoint images of stars is simple by using a camera equipped with a wide field photographic lens. Generally, there are two types of astrophotography in which a telescope's optical tube is not necessary. Taking constellations and the Milky Way in combination with scenery is called **Star-Scape photography**. Taking only celestial objects is called **Wide-Field astrophotography**. You will need a camera attached to a polar-aligned equatorial mount or star tracker to reduce star trails.

Star-Scape Photography

Photographs of landscape or architectural objects, accompanied by constellations and the Milky Way, are examples of this type of photography. Adding landscape or architectural objects in the foreground may make your photos more impressive.

What we Recommend: POLARIE U and POLARIE star trackers allow you to create 'star-scape' photos in night-sky scenes by adding an almost motionless night landscape or silhouetted figure in the foreground of your frame.



Orion Ascending Photo by Akio Nakanishi
Taken with POLARIE (Star-scape mode)
Camera: Canon EOS 60D, at ISO1600, 15-minute exposure



Mist to autumn (In Autumn mist air)
Photo by Kouji Ohnishi

Taken with POLARIE (Star tracking mode)
Camera: Canon EOS 5D Mark II
at ISO2500, 30-minute exposure



[Fixed-Tripod Imaging]

When shooting a starry night sky with a camera fixed on a tripod, if an exposure time is longer, the stars will not appear as dots but appear as lines. This is because the stars appear to move due to the diurnal motion of the stars (rotation of the Earth).

Wide Field Astrophotography

Usually, nightscapes are not included in the frames of photographs, or they will be in the background part of your image.

What we Recommend: It is essential to use an equatorial mount or AP star tracker (or POLARIE / POLARIE U with polar alignment scope) to eliminate trails of stars caused by the earth's rotation.

Time-Lapse Imaging

The time-lapse astrophotography is video imaging, made of hundreds or thousands of still images of the starry skies taken at regular intervals. It allows you to capture the motion of constellations and the Milky Way impressively with the passage of time in the foreground of silhouetted terrestrial objects.

What we Recommend: A POLARIE U is highly recommended in conjunction with a sturdy camera tripod.

Afocal Imaging (Collimation Photography) with a smartphone

Taking pinpoint images of stars is simple by using a camera equipped with a wide field photographic lens. Generally, there are two types of astrophotography in which a telescope's optical tube is not necessary. Taking constellations and the Milky Way in combination with scenery is called Star-Scape photography. Taking only celestial objects is called Wide-Field astrophotography. You will need a camera attached to a polar-aligned equatorial mount or star tracker to reduce star trails.

What you need:

Astronomical Telescope: An alt-azimuth mount with slow motion control works well for shooting the moon and bright planets.

Smartphone Camera Adapter: You simply place your smartphone attached to a dedicated camera adapter in tandem with the visual back of your astronomical telescope.



The Moon (Afocal Imaging) Photo by Masafumi Suzuki
Taken with PORTA II A80Mf
Camera: iPhone 6s and Smartphone Camera Adapter

Prime Focus Photography and Eyepiece Projection Photography

The prime focus photography technique uses a camera body, or a CCD/ CMOS imaging camera attached with adapters to an optical tube. Neither an eyepiece nor a camera lens is required. Eyepiece projection photography is a method for taking images of a magnified object through an eyepiece inserted between the optical tube and a DSLR camera body or a CCD/ CMOS imaging camera.

Prime Focus Photography

Prime focus photography is a typical method of photographing nebulae or star clusters. It employs a DSLR (Digital Single Lens Reflex) camera directly attached to the astronomical telescope. Particularly, it is a method of astrophotography in which you replace the telephoto lens with the optical tube of the astronomical telescope. It enables photography with a high magnification at a reasonable cost compared to a dedicated telephoto lens for the DSLR camera. When you take photographs of deep-sky objects with the prime focus photography method, it is necessary to track a celestial object for a long time. It may sound a little complex, but you can try this method by referring to articles on astrophotography.

What we Recommend: An equatorial mount such as AP, SX2WL, SXD2WL, SXP2, AXJ, or AXD2 is recommended. Long exposure is required for capturing faint objects like nebulae and star clusters. Thus, the use of a sturdy mount with a motor drive for autoguiding is essential.



orion nebula



Eyepiece Projection Photography

Eyepiece projection photography is employed when you take photographs of the moon's surface or planets. Unlike prime focus photography in which only the telescope optical tube is used, the eyepiece is added to magnify images of the object searching for details. The images taken with this technique appear larger than those taken with the prime focus.

What we Recommend: An equatorial mount such as AP, SX2WL, SXD2WL, SXP2, AXJ, or AXD2 is recommended.



Lunar Craters



Did you Know 'Night Photograph' ?

The night photographs generally feature artificial objects such as decorative illuminations, fireworks, streetlights, and neon signs. Also, photographs of scenery illuminated by moonlight, wide field photos of starry skies and images of the wonders of nature are contents of Night Photograph. Expressing the world at night will extend your fun with photography. Vixen promotes photography at night with an icon of 'NIGHT PHOTOGRAPH' shown here to encourage more people to look up to the starry night sky.

It enables you to capture the starry sky as a piece of scenery and leave the beauty of the night sky as a photo of the landscape above the earth, the universe.

The POLARIE U extends the world of star-scape photography, and everyone can experience real enjoyment of shooting the starry sky. It is a lightweight, compact, motor-driven mount for your camera that moves according to the movement of stars. By moving the camera according to the diurnal motion of the celestial object, it accomplishes not only conventional photography with pin-point stars through tacking and long exposure but also offers interval and time-lapse photography by remote control via a smartphone.

Five tracking modes

Star-scape photography (Half speed of the sidereal rate) mode... If this model is chosen, the POLARIE U tracks stars at half the speed of the diurnal motion of the stars. The terrestrial objects are moved less as compared with images taken by wide-field astrophotography at a given exposure time.

Wide-field astrophotography (Sidereal rate) mode... If this model is chosen, the POLARIE U follows stars at the same speed as the diurnal motion of the stars. It is suitable for capturing constellations, the Milky Way, or faint celestial objects such as nebulae and star clusters.

Solar tracking mode... Useful for shooting spectacular pictures of a solar eclipse.

Lunar tracking mode... Useful for shooting the Moon.

Custom mode... It allows for setting the POLARIE U to your desired tracking speed. The initial setting is four times of the sidereal rate. If you change the settings for a different speed, a smartphone or other wireless device and application software are required.

Shutter release terminal and Autoguider port

With the use of a camera that is equipped with a bulb shutter function, the shutter release terminal allows for the control and setting of interval photography. The shutter release control in conjunction with the motion of the POLARIE U allows for setting up a time-lapse sequence with ease via a smartphone. An autoguider port for a commercially available autoguider is provided. (in the direction of R.A. only).



Applicable to tripods with the 3/8" and 1/4" camera screws

The sockets for the 3/8" camera screw are provided. A supplied 1/4" convert screw adapter makes the POLARIE U available for tripods with the 1/4" camera screw also.

Corresponding to attachment plates of the thin standard type

The quick release base system on the bottom and backside corresponds to an attachment plate of the thin standard type. The base on the bottom is usable for star-scape photography and the back side is usable for time-lapse photography.



A versatile mounting platform available for different options

- Camera Mounting Block

The supplied camera mounting block is equipped with a 1/4" camera screw. A commercially available ball head can fit on it.

- POLARIE Multi-Mounting Block

Exchanging the camera mounting block for the POLARIE multi-mounting block will increase the loading capacity of the POLARIE U. In combination with a dovetail slide bar DD, it is transformable into a platform suitable for imaging with a telephoto lens or an FL55SS short tube telescope.

- Quick-Release Panorama Clamp

It is possible to install the quick-release panorama clamp by removing the camera mounting block. It enables you to use an attachment plate of the thin standard type.



35491

POLARIE U Star Tracker

The POLARIE U Star Tracker is a lightweight, compact, motor-driven mount for your camera that moves according to the movement of the stars. By moving the camera according to the diurnal motion of celestial objects, it not only accomplishes conventional photography with pin-point stars through tracking and long exposures but also offers interval and time-lapse photography by remote control via a smartphone. This App, available from the Vixen Website, changes the rotation speed and the shutter release.

Tracking modes	Celestial, 0.5X celestial, Solar, Lunar, Usable in both hemispheres, Remote settings are available with a smartphone
Drive gears	Wheel and worm gears full circle micro movement, 58.4mm wheel diameter with 144-tooth, made of aluminum alloy
Polar axis	40mm in diameter, aluminum alloy
Worm gear shaft	9.8mm in diameter, brass
Number of bearings	2
Drive motor	Pulse motor
Loading capacity	with configuration in the celestial tracking Standard setting: 2.5 kg, Upgraded setting: 6.5 kg Time-lapse setting: 10 kg (10cm away from the rotation axis)
Sight tube finder	Used in the northern hemisphere to guide the unit to Polaris, 8.9 degrees field of view with no magnification (Attached to the accessory shoe.)
Polar alignment scope	Optional
Leveling	Bubble level for time-lapse photography
Azimuth graduations	Time-lapse direction scale
Tripod adapter	A3/8" tripod socket with a convert adapter for 1/4" camera screw, the mounting block is compatible with attachment plates of the standard thin type.
Shutter release port	2.5mm 3-pole stereo mini-plug
Autoguider port	6-pin 6-wire modular jack (for external autoguider)
External power port	USB type-C
Power source	Batteries: 4x AA alkaline batteries, Ni-MH, or Ni-Cd rechargeable batteries External power supply: Available with USB type-C
Working voltage/ Electricity consumption	4 x AA batteries: DC4.8V to 6.0V / Max. 0.6A External power supply: DC4.4V to 5.25V / Max. 0.5A
Working duration	About 7 hours at 20 degrees C.(68F) temperature, with the use of alkaline batteries
Wi-Fi function	Application software that works on a smartphone is required.
Operating environment for apps	OS: Android 4.4 and over or iOS9.9 and over* Wi-Fi: IEEE 802.11b/g Data encryption: WPA2-PSK *Be sure to confirm the operation of the application, as some smartphones do not meet the requirements.
Operating temperature	0 degree to 40 degrees C(104F)
Dimensions	88.5 x 72.0 x 210.5 mm
Weight	575 g (without batteries)

Power supply in two ways: Batteries and USB external power supply

The POLARIE U works with 4 AA batteries. Besides, it is equipped with a USB external power supply port (USB Type-C) and works with commercially available mobile batteries.



Bubble level and Direction scale for time-lapse

The POLARIE U comes equipped with a bubble level that is useful for horizontal orientation. In addition, it comes equipped with a scale in 5-degree increments that allows you to check roughly an angle of rotation roughly during time-lapse photography.



A "shoot-move-shoot" function linked with the shutter release

In shooting time-lapses of the night sky or daytime, you can stop the motion of a camera during exposures and then start the motion of the camera again after you finish the exposures. Because of this, every single shot has no blurring, and it is usable as an excellent motion controller. The POLARUE U has an SMS (shoot-move-shoot) function and a release terminal that controls the shutter of the camera during interval shootings. With the free App, it is possible to control the rotation speed of the motor and activate the shutter release via a smartphone.

Note: A communication device such as a smartphone that can connect to Wi-Fi and application software are required to use this function. Also, a shutter cable (sold separately) connecting the camera and Polarie U is required.

Activating the custom setting mode via a smartphone

With the communication function of the App, you can customize various settings via a smartphone or tablet. With the custom mode, fine settings of the tracking speeds are available for star-scape photography. Settings of the interval times, exposures, and rotation speeds are available for time-lapse photography. A communication terminal connected to Wi-Fi and the App is needed to activate this function.

Polaris sight tube

A sight tube finder for rough polar alignment in the northern hemisphere comes equipped. It fits into the accessory shoe on the POLARIE U. A convenient tool in alignment when shooting with a wide-photo lens.



35492 Polar Fine Adjustment Unit DX

It is convenient for polar alignment when you set up the POLARIE U equipped with the polar alignment scope PF-LII. You can gradually adjust the position of the POLARIE U by turning in the direction of right or left or tilting up or down. Installed onto a camera tripod or usable for the APP-TL130 tripod for a telescope with an adapter plate supplied.

- Weight: 795 g
- It comes with a quick release angle plate and a disc tripod adapter for Vixen's astronomical tripod.

Example



35494 Polar Scope Arm Bracket

It is used to install the polar alignment scope PF-LII into the POLARIE U.

- Weight: 74g

Example



35495 POLARIE U Polar Scope Set

It contains a polar alignment scope PF-LII and a polar scope arm bracket. This is the best tool to set up the POLARIE U as accurately as possible when you use a telephoto lens. Polar alignment is simple and easy. You just bring Polaris and two other stars into the polar scope's field of view to match each with the designated position on the scale on the polar scope's reticle (in the northern hemisphere). (Use three stars in Octans in the southern hemisphere.)

- Weight: 155 g (Excl. battery)

60142

Tripod Accessory Pouch

The tripod accessory pouch has a size to fit a POLARIE U snugly. It is usable like an accessory tray as it is attached to the camera tripod as shown in the photo. It is convenient to store a mobile battery, a remote shutter release, or others. The neoprene rubber that features absorbing shock and insulating from heat is a material of the tripod accessory pouch. It will allow not only for transporting the equipment safely, but also preventing the mobile battery from voltage drop in a cold environment.

- Weight: 95g



Example

lens Heater OFF



lens Heater ON



35418 Lens Heater 360 III

It is a dew remover with a USB connector to prevent a camera lens from dewing in astrophotography. Use by wrapping the trip of the heating elements around the camera lens. The surfaces of the lens heater are made of unique tape fasteners that allow for easy wrapping and unwrapping.

- Weight: 67g



Shutter Cables

It is to connect between the POLARIE U and the camera you use. Read an instruction manual for the camera and select a shutter cable that is appropriate to the shutter terminal of your camera.

Length of the spiral cable: 20cm – 50cm



image

39061

Shutter Cable S

Shutter terminal: Sony multi/micro USB terminal plug

39062

Shutter Cable COM

Shutter terminal: 2.5mm stereo mini plug

39063

Shutter Cable N10

Shutter terminal: 10-pin remote terminal plug

39064

Shutter Cable NA

Shutter terminal: Nikon accessory remote terminal plug

39065

Shutter Cable O

Shutter terminal: Olympus multi-connector plug

39066

Shutter Cable PL

Shutter terminal: Panasonic/ Leica 2.5mm remote terminal plug

39068

Shutter Cable CN3

Shutter terminal: Canon CN3 type remote terminal plug

Taking photos of the night sky has never been easier!

The POLARIE star tracker makes imaging of the night sky accessible to everyone. Put a POLARIE in your knapsack or camera bag and go out to snap pictures of the beautiful starry sky. With a simple polar alignment setup, the POLARIE, on a camera tripod, allows you to take images of the night sky without trailing as it automatically follows the movement of the stars. The POLARIE is your traveling companion and records memories of night sky scenes.

Power Source of the POLARIE

The POLARIE works with 2 AA alkaline batteries for about two hours (Also, rechargeable batteries are available for use.) For long hours of use, the POLARIE comes equipped with USB mini-B plug socket available for an external power supply.



Easy Setup in a dark site

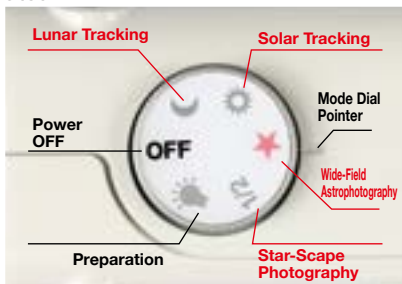
The built-in indicator is backlit in red for the northern hemisphere. The legend on the mode dial will illuminate also.

Applicable to a DSLR camera

The permissible maximum loading weight of the POLARIE is 2 kg. Not only a compact mirrorless body, but also a full-frame DSLR camera with a lens is available with the POLARIE.

Different Tracking Speed

Besides the ordinary celestial tracking rate, the POLARIE has Solar rate, Lunar rate, and a half-speed of the celestial rate that allows you to take images of the night sky with a minimal blurring of the foreground (Called 'star-scape' mode.) Each position on the mode dial is backlit if selected.



Solar and Lunar rates

The apparent motions of the sun and the moon differ from those of stars. Use either the sun or the moon rate according to your demand.

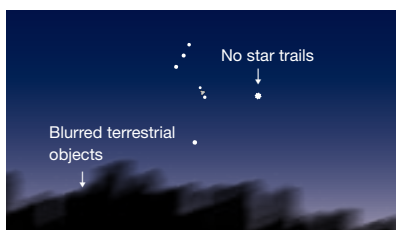
Star-Scape Photography

It allows moderately long exposures with a minimal blurring of the foreground.



Wide-Field Astrophotography

It allows moderately long exposures with no star trails but blurred terrestrial objects.



35505

POLARIE Star Tracker

Tracking modes	Celestial rate, 1/2 celestial rate, Solar rate, Lunar rate, Usable in both northern and southern hemispheres
Drive gears	Worm gear and 57.6mm dia. wheel gear with 144-tooth
Polar axis	40mm dia. made of aluminum alloy
Bearings	2
Drive motor	Pulse motor
Polar sight hole	About 8.9 degrees field of view
Tilt indicator	Angles between 0 degree and 70 degrees (5 degrees increments)
Compass	Detachable, supplied as standard accessory
Working voltage/ Electricity consumption	2x AA batteries: DC2.4V to 3.0V / Max. 0.6A External power supply: DC4.4V to 5.25V / Max. 0.3A
External power supply	USB mini-B
Operating duration	About 2 hours at 20 degrees C(68F) temperature with alkaline batteries
Operating temperature	0 degree to 40 degrees Celsius
Dimensions	95 x 137 x 58mm
Weight	740 g (without batteries)

Just put the camera on the POLARIE and you are ready to start capturing images of the starry sky.



Increase the loading weight of the POLARIE with optional accessories below to take images of deep sky wonders with a telephoto lens.



Quick Release Angle Plate

It is an 'L' shaped plate that is used to hold a DSLR camera body both in vertical and horizontal positions. The Quick release angle plate has an advantage over the Ball head in its stability. With the use of this accessory, a camera can be mounted closer to the center of gravity. Thus, it prevents the camera from moving unexpectedly.



Quick Release Panorama Clamp

The Quick release panorama clamp has a low-profile design that mounts a DSLR camera in the position with a low center of gravity. It is installed on an end of the optional Dovetail slide bar DD, and used in combination with the optional Quick release angle plate. As the POLARIE Multi mounting block can only rotate the camera in the direction of the diurnal movement, the Quick release panorama clamp allows you to turn the camera in the direction of declination as well. It can direct the camera to your target readily.



Dovetail Slide Bar DD

This dovetail bar has the Vixen standard width of 44mm. It has disc plates with 1/4-inch screws on its both ends to install the optional Quick release panorama clamp or a commercially available Ball head on it.



Counterweight
1kg

Supplementary
Counterweight Bar

POLARIE Multi Mounting Block

This mounting block is used to attach the Vixen standard dovetail attachment plates to the POLARIE. The standard camera mounting block provided for the POLARIE will be replaced by the POLARIE Multi mounting block so that you can increase the loading weight of the POLARIE. As a result, the optional dovetail slide bar DD and a counterweight assembly sold separately become available with the POLARIE to mount a heavy telephoto lens for deep-sky imaging.



POLARIE Fine Adjustment Unit

The POLARIE fine adjustment unit allows for smooth polar alignment if used with the POLARIE Polar scope PF-LII installed on the POLARIE or AP Star Tracker. It is usable with a commercially available camera tripod.

Camera Tripod

POLARIE Step-up Kit II

This POLARIE Step-up Kit II is complete with the POLARIE Multi mounting block, Dovetail slide bar DD, POLARIE Polar scope PF-LII and POLARIE Fine adjustment unit. If you already have a POLARIE, this heavy loading kit is beneficial to your deep-sky astrophotography with a telephoto lens.

Example



Quick Release Clamp Set

It consists of a Quick release panorama clamp and a Quick release angle plate shown in the images.

Example



Allowable Loading Weight Comparison

Model Names	Distance from the RA/DEC crossing		Maximum torque load (kg-cm)
	10cm away	25cm away	
POLARIE U	2.5kg/ 5.51 lb.	1.0 kg/ 2.20 lb.	25 kg-cm
POLARIE	2.0 kg/ 4.4 lb.	0.8 kg/ 1.76 lb.	20 kg-cm
POLARIE U Telephoto Kit	6.5 kg/ 14.33 lb.	2.6 kg/ 5.73 lb.	65 kg-cm
AP PhotoGuider, AP, AP-SM	15 kg/ 33.06 lb.	6 kg/ 13.22 lb.	150 kg-cm
SX2WL	30 kg/ 66.13 lb.	12 kg/ 26.45 lb.	300 kg-cm
SXD2WL	37.5 kg/ 82.67 lb.	15 kg/ 33.06 lb.	375 kg-cm
SXP2	42.5 kg/ 93.69 lb.	17 kg/ 37.47 lb.	425 kg-cm
AXJ	55 kg/ 121.25 lb.	22 kg/ 48.50 lb.	550 kg-cm
AXD2	75 kg/ 165.34 lb.	30 kg/ 66.13 lb.	750 kg-cm

For Long Exposure Astrophotography

This optional accessory for the POLARIE enables quick and accurate polar alignment.



35533

POLARIE Polar Scope PF-LII

The polar scope allows you to accurately align your POLARIE star tracker to the north or south celestial pole. Its 5x20mm scope tube fits to the center hole of the POLARIE neatly. The polar scope comes equipped with variable intensity illuminator for reading scales in the scope's dark field of view.

- 5x20mm polar scope
- A free download PF-L Assist app, which helps you in aligning your POLARIE, is available for iPhone, Android, and Kindle fire.
- Not usable with a POLARIE U.



image

Example



35511

Polar Meter

The Polar Meter is a compass with a bubble level and an altitude scale used for locating Polaris with ease. It attaches to the accessory shoe on the POLARIE.
Weight: 100 g

Example



35512

POLARIE Cradle

It is useful to mount a POLARIE on a MINI PORTA, PORTA II, or MOBILE PORTA mount.
Weight: 500 g
Not usable with a POLARIE U.



35418

Lens Heater 360III

A dew removing heater allows you to prevent a camera lens from condensation during astrophotography.

Example



35519

POLARIE Fine Adjustment Unit

It is used in combination with a POLARIE, or AP Star tracker made up of an AP Polar axis bracket and other units.
Weight: 300 g
Not usable with a POLARIE U.

Example



35522

POLARIE Multi Mounting Block

It is used exclusively for a POLARIE as a mounting block for Vixen's dovetail slide bars in place of the standard camera mounting block of the POLARIE.
Weight: 440 g

Example



35525

Dovetail Slide Bar DD

A dovetail slide bar of the Vixen standard that is designed to use in combination with a POLARIE Multi mounting block.
Weight: 390 g

Example



35527

Quick Release Panorama Clamp

It allows for rotating a camera in the direction of the perpendicular against the diurnal motion if this unit is attached onto the Dovetail slide bar DD.

Example



35528

Quick Release Clamp Set

It is useful for holding a camera securely on a POLARIE Step-up kit.
Weight: 320 g

Example



35534

POLARIE Step-up Kit II

A perfect starter kit for upgrading your POLARIE so that you can take deep-sky objects with the use of a telephoto lens.
Weight: 1350 g
Not usable with a POLARIE U.

Example



35526

Quick Release Angle Plate

It is used together with a Quick release panorama clamp to set a camera in a vertical position setting while keeping the low center of gravity.
Weight: 110 g

Star-Scape Photography and Wide-Field Astrophotography

AP Photo Guider



Enjoy long exposure dee-sky imaging with a telephoto lens

The AP Photo Guider is a handy and versatile star tracker for long exposure astrophotography, having the same precision as the AP Mount and the ease of portability. It comes equipped with the STAR BOOK ONE controller that provides accurate tracking for hours and comfortable operation. With a complete system weighing only about 5.4 kg, convenient for transporting to a dark location away from light pollution.



39999 AP Photo Guider Telephoto Setup Kit

This is a package of an AP Photo Guider and an accessories kit consisting of a Dovetail slide bar DD, a Quick release clamp set, a Supplementary counterweight bar, and a Counterweight 1.9 kg. You will make it ready to start taking closed-up images of celestial objects with a telephoto lens.

39989

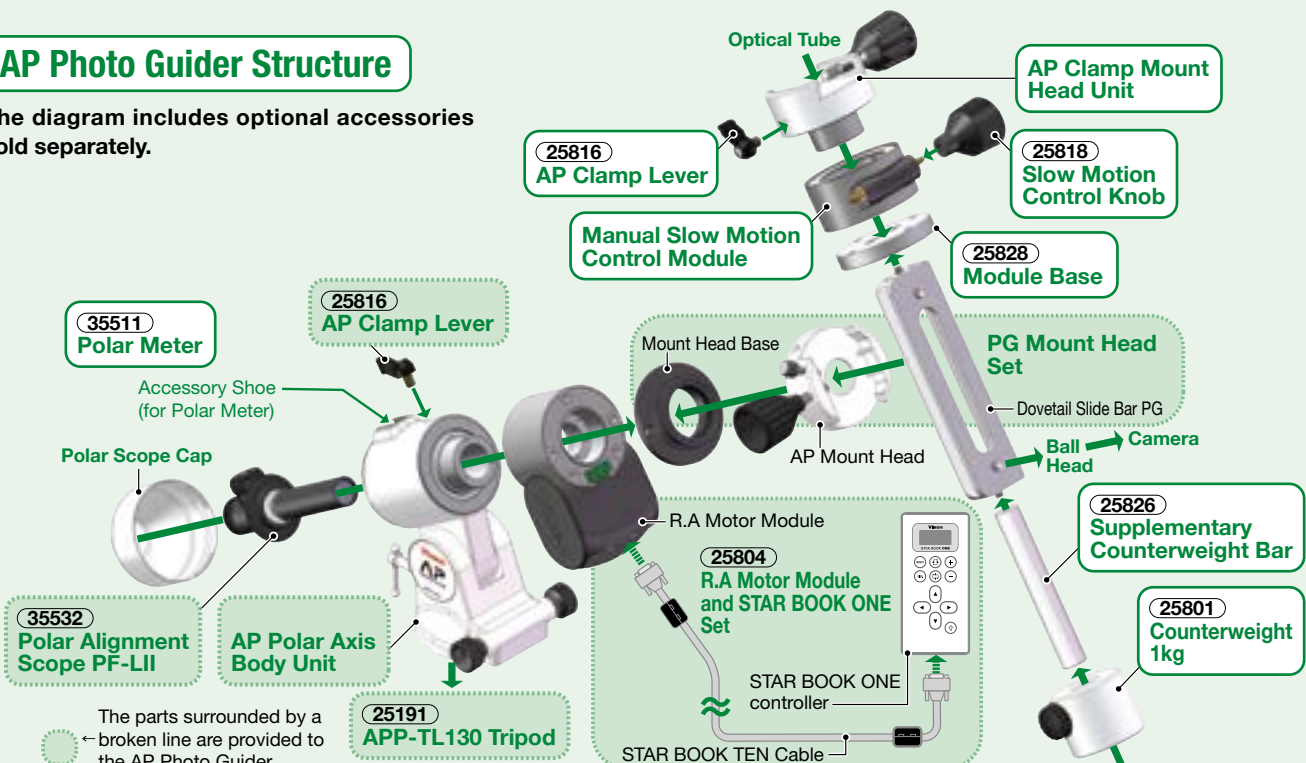
AP Photo Guider

Slow motion control	Wheel and worm gears full circle micromovement by electricity
Quick slewing	Friction stop motion by hand
Wheel gear	73.5mm in diameter, 144-tooth
Worm gear	11mm in diameter, brass made
Polar axis	59mm in diameter, aluminum alloy
Bearings	4
Azimuth adjustment	Adjustable +/- 6.5 degrees by double screws with knob, 1.4 degrees per rotation
Altitude adjustment	Adjustable between 0 degree and 65 degrees by tangent screw with knob, 1.9 degrees per rotation
Polar alignment scope	(Built-in) 5x20mm, 8 degrees field of view, 3-star alignment system, variable intensity illuminated reticle with auto turn-off, brightness adjustable in 8 steps, dark field illumination, setting accuracy within 3 arc minutes.
Motor drive	Pulse motor
Celestial tracking	High precision tracking with STAR BOOK ONE
Cable connecting port	D-SUB9PIN male plug
Power supply port	USB micro-B (DC4.4 to 5.26V)
Power supply	USB external battery pack (not sold by Vixen)
Electricity consumption	0.2A to 0.5A (1.0W to 2.5W) at DC5V
Tripod	APP-TL130 3-section aluminum legs with quick-release leg clamps
Total weight	5.4 kg

Astrophotography

AP Photo Guider Structure

The diagram includes optional accessories sold separately.



Star-Scape Photography and Wide-Field Astrophotography

AP Star Tracker



A simple and versatile core unit extracted from the AP equatorial mount.

Getting Started with Wide-Field 'Star-Scape' Photography!

The versatile AP Mount modules and expandable units are appropriate for building a highly compact equatorial mount or handy imaging platform that is suitable for your needs. The system structure below shows an example of what you can create with the AP modules and units.

A Lightweight and Ultra-compact Tracking System

Despite being compact with an allowable loading weight of 6 kg, the rigid body is lightweight at about 1.5 kg. Combined with a lightweight tripod, it's a great companion when walking around the mountains looking for the best shooting locations.



25832
AP Star Tracker

Slow motion control	Wheel and worm gears full circle micromovement by electricity
Quick slewing	Friction stop motion by hand
Wheel gear	73.5mm in diameter, 144-tooth
Worm gear	11mm in diameter, brass made
Polar axis	45mm in diameter, aluminum alloy
Bearings	3
Polar alignment scope	(Built-in) 5x20mm, 8 degrees field of view, 3-star alignment system, variable intensity illuminated reticle with auto turn-off, brightness adjustable in 8 steps, dark field illumination, setting accuracy within 3 arc minutes.
Motor drive	Pulse motor
Celestial tracking	High precision tracking with STAR BOOK ONE
Cable connecting port	D-SUB9PIN male plug
Power supply port	USB micro-B (female)
Power supply	USB external battery pack (not sold by Vixen)
Electricity consumption	0.2A to 0.5A (1.0W to 2.5W) at DC5V
Dimensions	169 x 161 x 80mm, excluding Dovetail slide bar DD
Weight	1.5 kg, excluding Dovetail slide bar DD
Accessories	STAR BOOK ONE controller, Dovetail slide bar DD

Optional Accessories

35511
Polar Meter

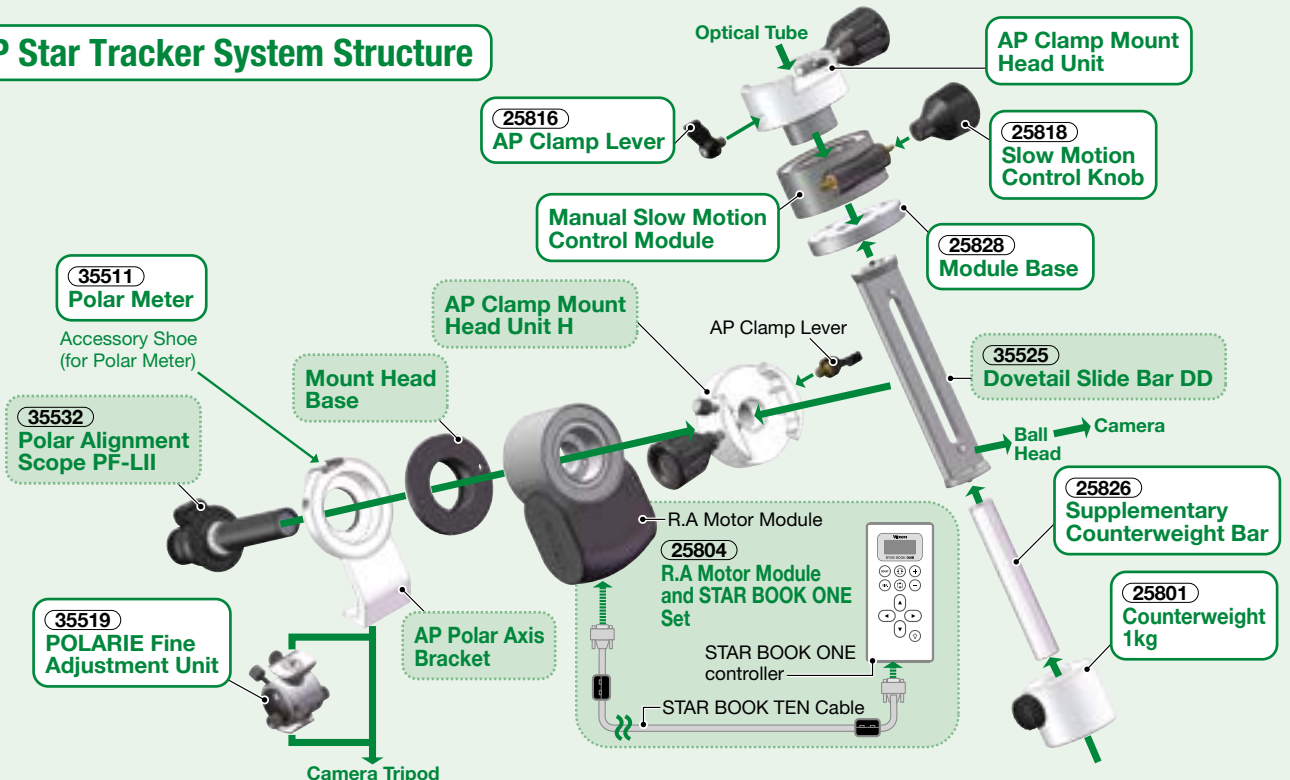
The Polar Meter is a compass with a bubble level and an altitude scale used for locating Polaris instantly in the northern hemisphere. It attaches to the accessory shoe on AP Star Tracker.

- Weight: 170 g

25826
Supplementary Counterweight Bar

25801
Counterweight 1 kg

AP Star Tracker System Structure



Afocal Imaging

Smartphone Camera Adapter



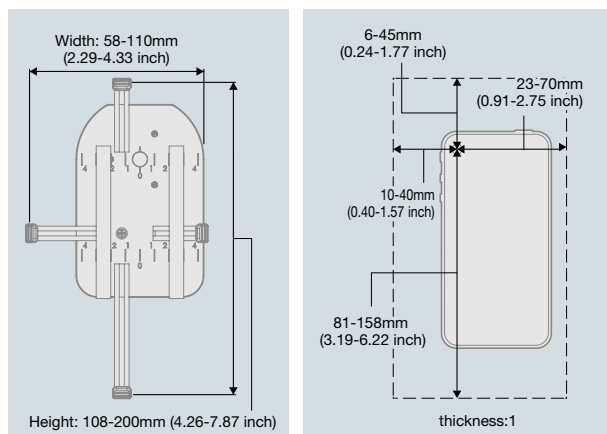
When you apply a smartphone for taking photography using it with an astronomical telescope or spotting scope, you need to set the smartphone to come closest to the eyepiece of that scope. It would be very difficult to keep aligning to the optical axis of that scope by holding the smartphone stably, for such purposes. The smartphone camera adapter makes it easy. You simply adjust the position of the camera lens on the smartphone mounted on the smartphone camera adapter to an image on the eyepiece caught by the astronomical telescope or spotting scope.

The smartphone camera adapter is usable for telescopes, spotting scopes, and microscopes if the eyepiece barrels are adaptable to it in diameter. Be sure to priority check the conformity to your smartphone with a table of figures below.

Eyepiece Barrel Size

It is designed to pinch the barrel of the visual back or eyepiece having a grip of 19mm to 53mm in outer diameter and over 20mm in height.

Conformity to Smartphone



The size of smartphones is between 58mm and 110mm (2.29" and 4.33") in width (minor axis length) and between 108mm and 200mm (4.26" and 7.87") in height (major axis length). A thickness of less than 15mm (0.59").



39919 Smartphone Camera Adapter

A handy tool for shooting the moon surfaces with a smartphone by attaching the visual back of a PORTA II telescope.
Size: 149 x 90 x 56mm
Weight: 178 g

More precise focus at imaging and visual observation



37227 Dual Speed Focuser

- Two stage focusing with coarse or fine adjustments at a speed ratio of 1:7.
- Attachable to the focuser of the following models: A81M, A105M, ED81S, ED103S, ED115S, SD81S II, SD103S, SD115S, AX103S, FL55SS, VC200L, VMC200L, R200SS
- Not usable on VMC95L, VMC110L, VMC260L, VMC330L, ED80Sf, ED100Sf, A70Lf, A80Mf, R130Sf, VSD100F3.8
- Weight: 170 g

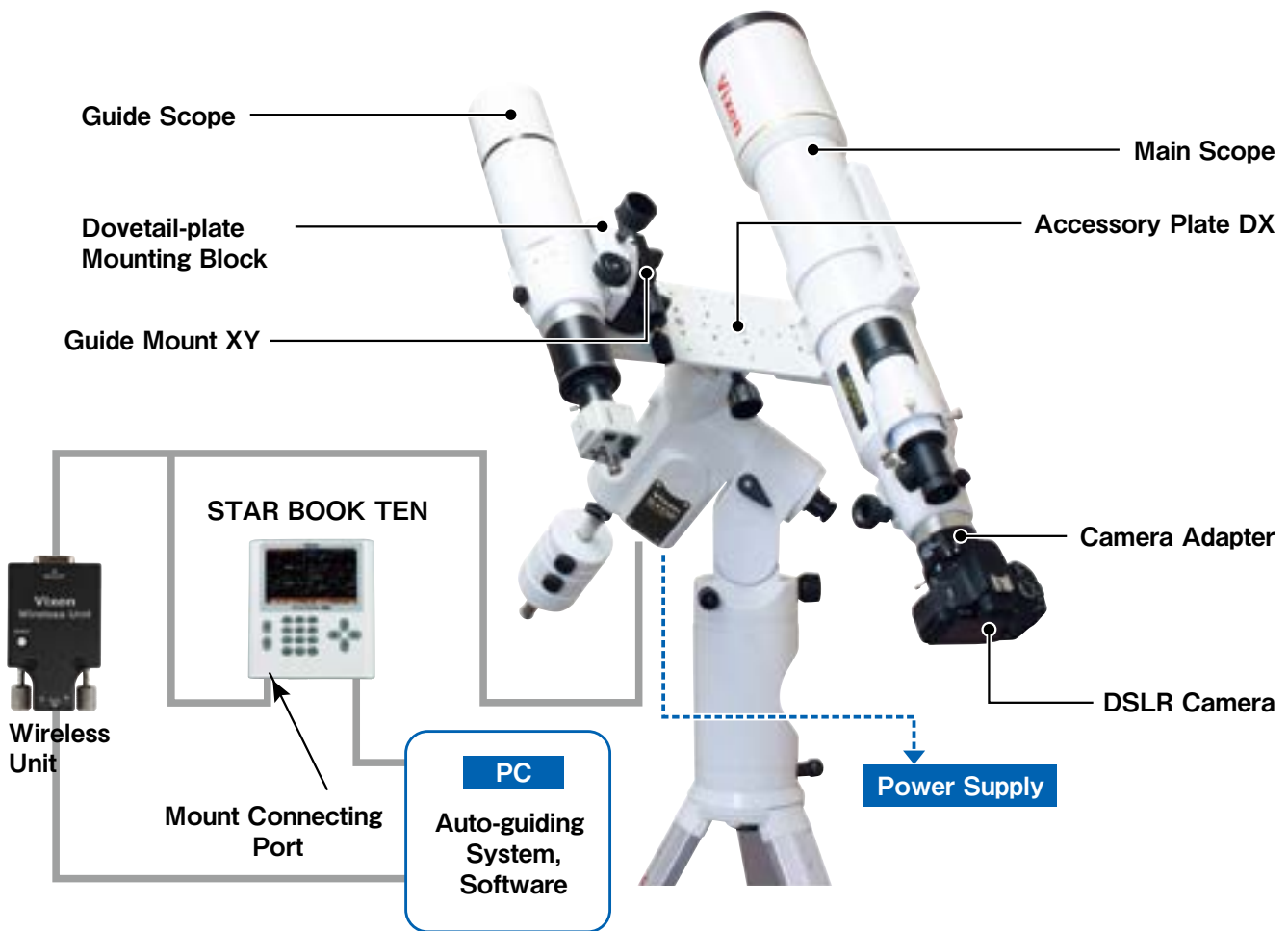
- Fits the focuser with metal focus knob.
- Fits the focuser with plastic focus knob shown below.
- X Does NOT fit the focuser with cylindrical plastic focus knob (a screw in its center).



*The specifications are subject to change without notice.

Auto-Guiding

Configuration



Astrophotography

If you take photos of faint deep sky objects such as nebulae with a telescope and a DSLR camera (Prime focus astrophotography), you often need to apply long exposure times. The longer the focal length of the telescope, the larger the atmospheric refraction of stars appears. This affects the accurate tracking of your mount. Mechanically inherent periodic motions of the mount may further influence the tracking that precisely follows a guide star's diurnal motion.

The auto-guiding offers perfect tracking by a system shown on the above as an example. A CMOS or CCD auto-guiding camera attached to the guide scope keeps the guide star in view to achieve accurate tracking. The auto-guiding is more convenient and less fatiguing for the astrophotographer.

Optional Accessories



35621

Guide Mount XY

- A low-profile mount for installing a guide scope (80mm or smaller aperture)
- 8mm dia. holes, and threaded holes for M6 screws
- Usable for Dovetail-plate Mounting Block, Accessory Plate DX, or AXD Large Accessory Plate
- Size: 100 x 79 x 160 mm
- Weight: 750 g

Prime Focus Photography and Eyepiece Projection Photography



Camera Adapters and T-rings

39361

Eyepiece Projection Camera Adapter

- Fits a telescope directly with a flip mirror diagonal or the visual back on R200SS, VSD100F3.8.
- Usable on A70Lf, A80Mf, R130Sf.
- Not compatible with LVW eyepieces and 50.8mm eyepieces.
- Size: 60mm dia. x 105mm long
- Weight: 242 g



37315

Camera Mounting Adapter for 645D

- For use exclusively with VSD100F3.8.
- Applicable to Pentax 645AF2 mount.
- 55mm image circle at 70% illuminated.
- Size: 71mm dia. x 49mm long
- Weight: 65 g





- 3876** for Canon EOS or FourThirds
- 3878** for General use

Wide Photo Adapter 60

- It is used to reduce vignetting by the standard T-rings. A part detached from the T-ring fits.
- For prime focus photography.
 - Fits the visual back on R200SS and VSD100F3.8 directly.
 - An extension tube VC is required if attached directly to a flip mirror or a SX60 to 50.8 AD.
 - An extension tube VC is not required if the focal reducer is used for photography.
 - Size: 72mm dia. x 20mm thick
 - Weight: 55 g



- 38751**
- ### Wide Photo Adapter 60DX for Canon EOS

- This is a durable reinforced version of the Wide Photo Adapter 60 with high precision for Canon EOS (Canon EF camera mount, not available for EF-M mount). It fits directly without a T-ring.
- Applicable to: VSD100F3.8, R200SS (recommended), AX103S, SD81SII, SD103S, SD115S, FL55SS, VC200L, VMC200L, VMC260L, and others.
 - With mechanics for a camera-frame rotation.
 - Threads: 60mm, pitch 0.75mm and 56mm, pitch 0.75mm for Corrector PH
 - Size: 81mm dia. x 30mm thick
 - Weight: 190 g



- 38752**
- ### Wide Photo Adapter 60DX for Nikon

- This is a durable reinforced version of the Wide Photo Adapter 60 with high precision for Nikon DSLRs. (Not available for Nikon D5100, D5000, D3200, D3100, D3000, D40 and D40DX). It fits directly without a T-ring.
- Applicable to: VSD100F3.8, R200SS (recommended), AX103S, SD81SII, SD103S, SD115S, FL55SS, VC200L, VMC200L, VMC260L, and others.
 - With mechanics for a camera-frame rotation.
 - Threads: 60mm, pitch 0.75mm and 56mm, pitch 0.75mm for Corrector PH
 - Size: 81mm dia. x 26.5mm thick
 - Weight: 170 g



- 37239**
- ### M56 Adapter Ring compatible with 48mm and 52mm Filters

- It is an M56 adapter ring used to attach a commercially available filter to the Vixen optical tubes. You mount it to a Wide photo adapter 60, a Wide photo adapter 60DX, a 60mm Ring with T-thread adapter, or an ED60mm to 50.8mm to allow for using a filter with the following optical tubes: A81M, A105MII, SD81SII, SD103S, SD115S, AX103S, FL55SS, VC200L, VMC200L, VMC260L, R200SS.
- Outside threads: 56mm – pitch 0.75mm, Inside threads: 52mm – pitch 0.75mm (one side), 48mm – pitch 0.75mm (the other side).
 - Size: 56mm diameter x 7mm thick
 - Weight: 7 g

T-rings (Thread 42mm pitch 0.75mm)



T-Ring for Nikon



T-Ring for Canon EOS

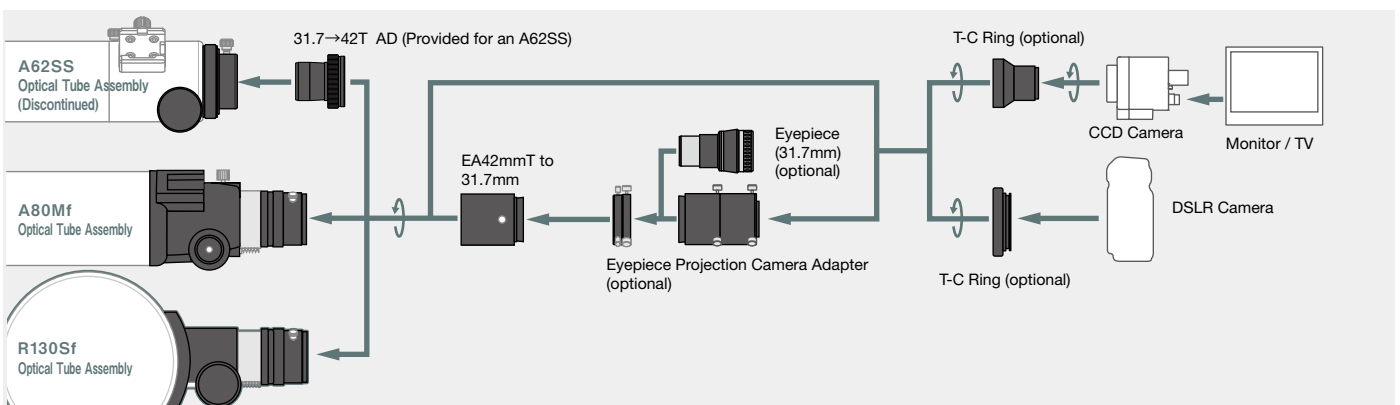
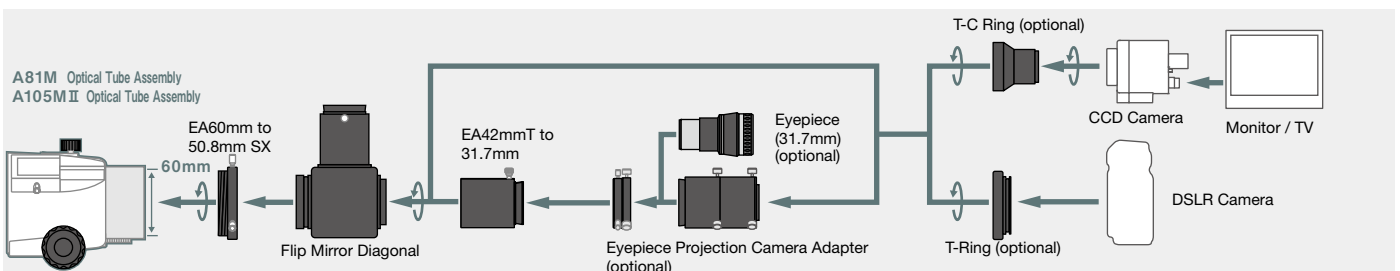
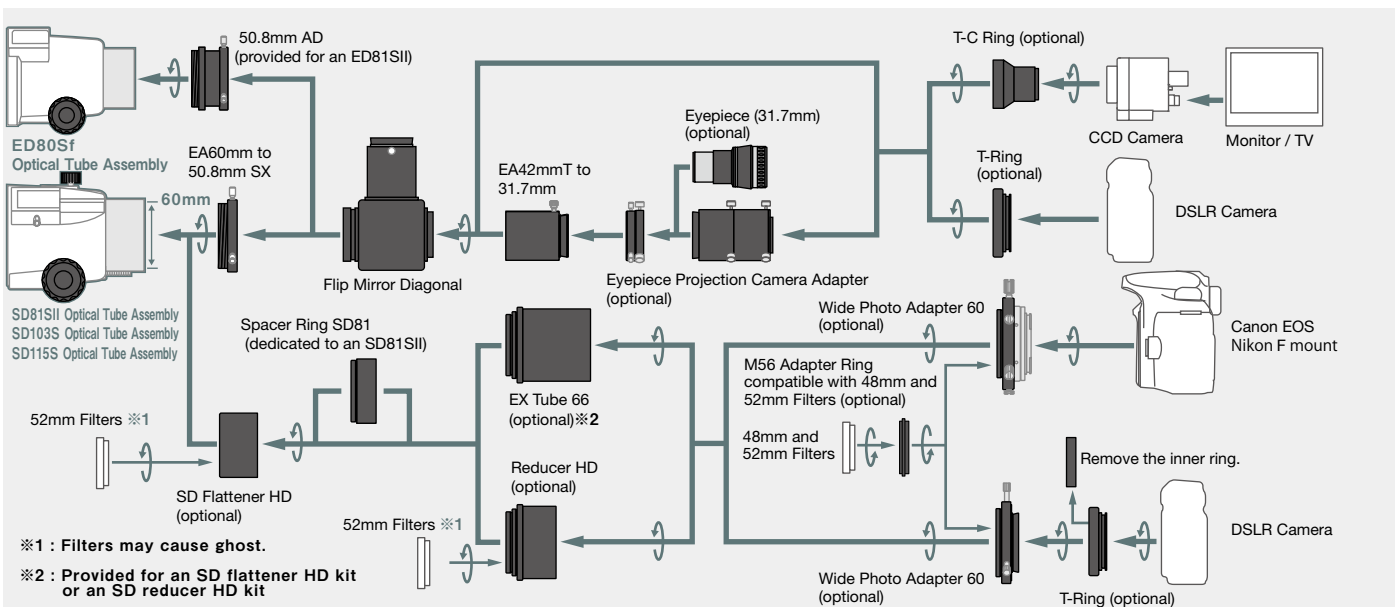
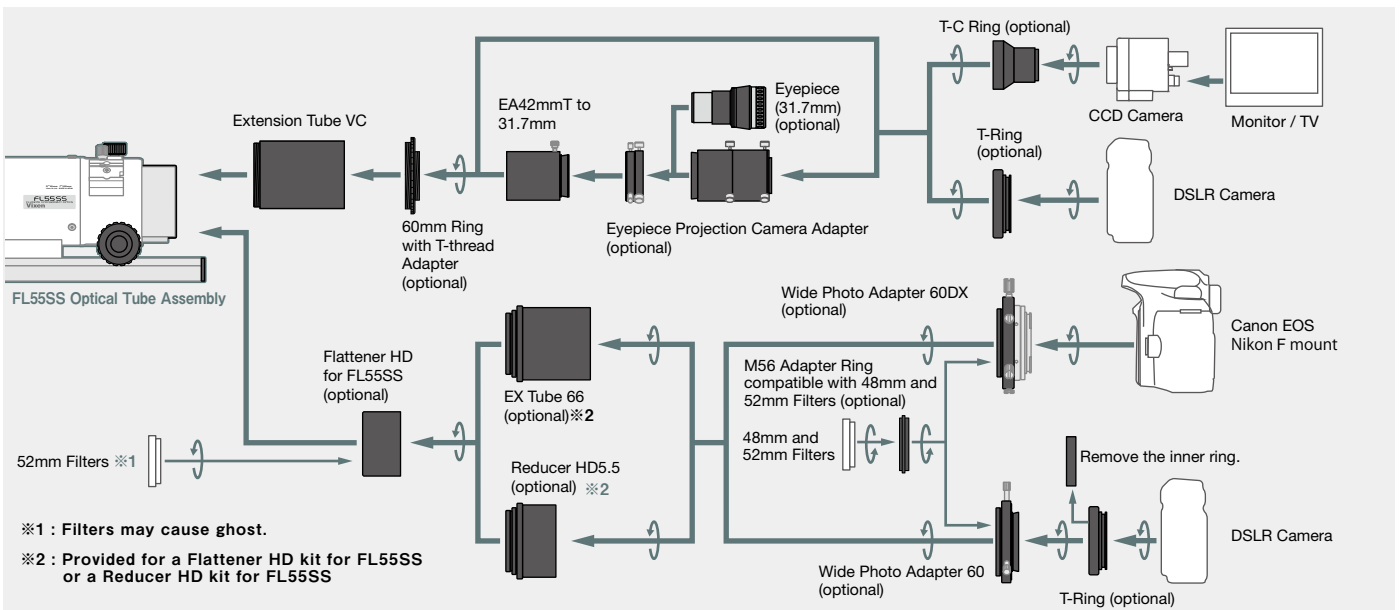


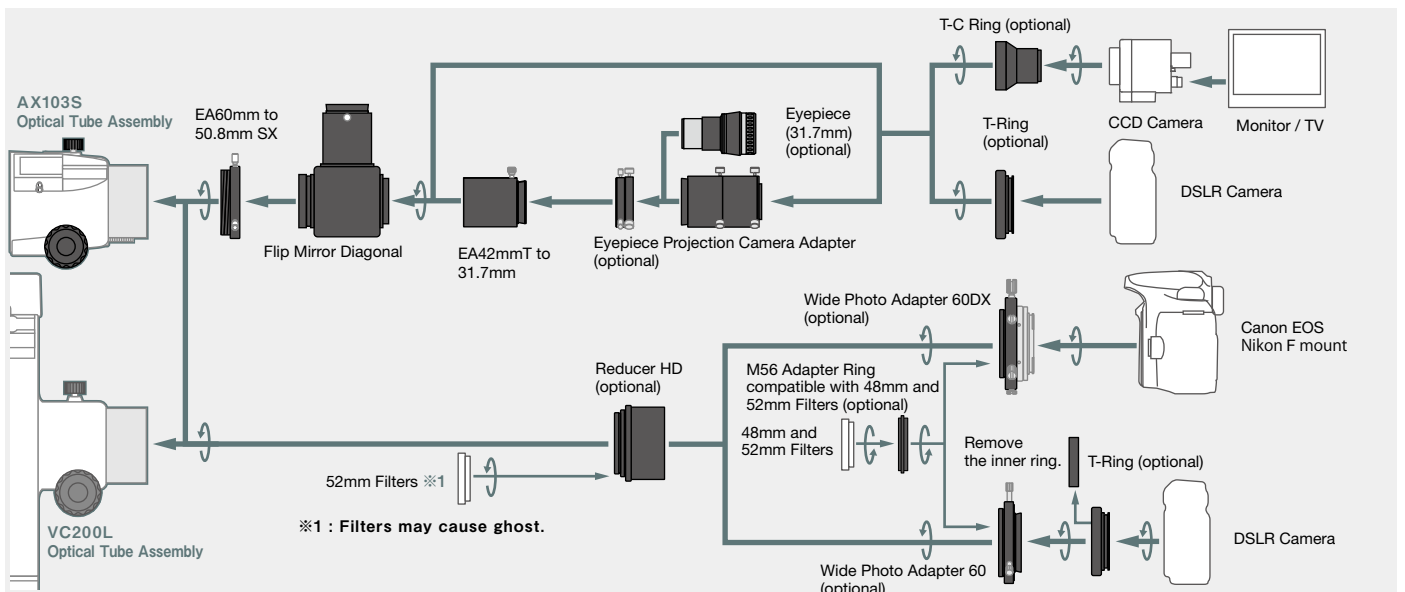
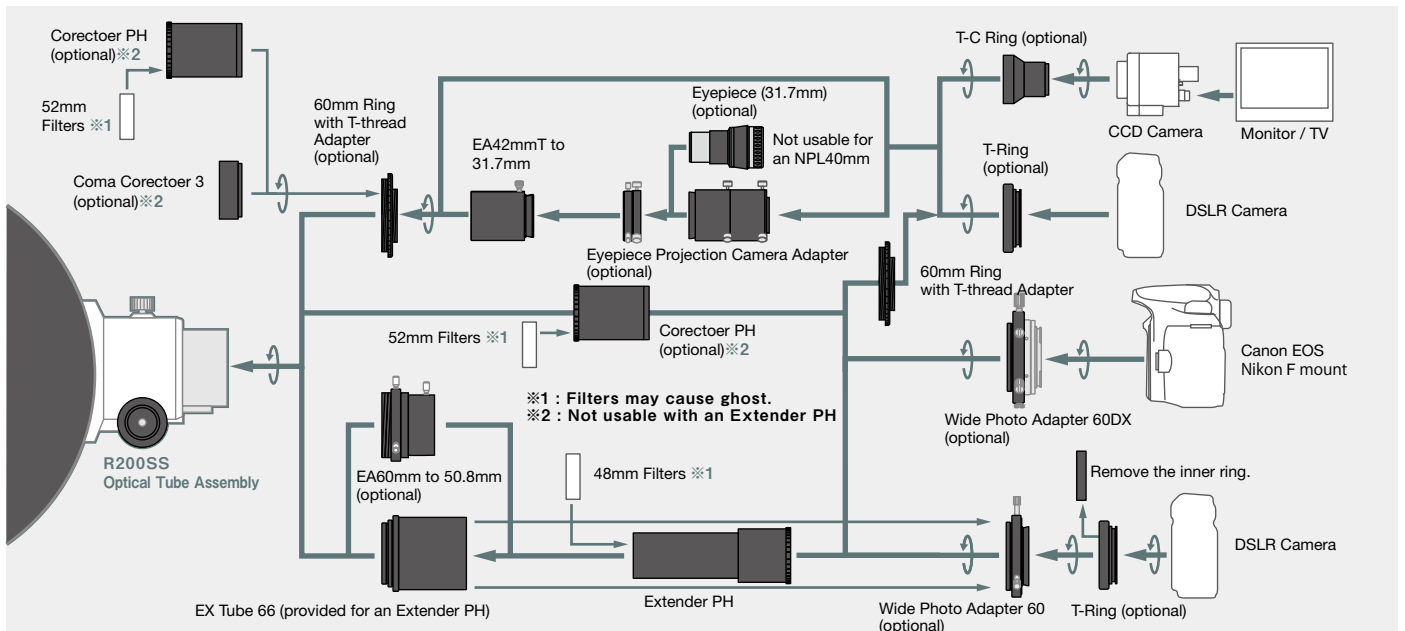
T-C Ring for C mount

Item No.	Find your Camera Brand	Weight
37301	Nikon, Fuji Film	22 g
37303	Sony Alpha (Konica Minolta Alpha)	45 g
37314	Sony E	113 g
37304	Minolta (for manual focus)	30 g
37306	Canon EOS, EOS Rebel	52 g

Item No.	Find your Camera Brand	Weight
37308	Vixen, Pentax K, Ricoh, Cosina	36 g
37302	Four Thirds	58 g
37313	Micro Four Thirds	110 g
37316	Fuji Film X	113 g
3763	T-C Ring (for C mount)	52 g

Components Guide for Astrophotography





SD Apochromatic Refractors

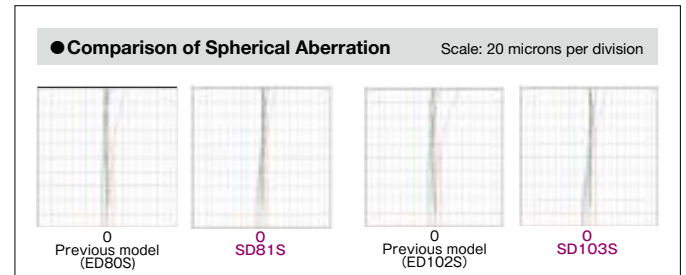
SD81SII, SD103SII, SD115SII

The SD glass produces clear and high-contrast image viewing, virtually free of false color. The design uses newly developed environmentally friendly glass technology. Brighter F7.7 images will satisfy the most demanding visual astronomer or astrophotographer.

The optical tubes are very compact and lightweight. That helps in handling the optical tube without inconvenience when you carry and set up the telescope. You have less counterweight to balance the telescope, also. It comes with a carry handle.

The SD lenses focus visible rays of light from the C-ray (red), d-ray (yellow), e-ray (green), and F-ray (blue) to g-ray (purple) at nearly the very same position, as compared with our previous models, as shown in the diagrams of spherical aberration below.

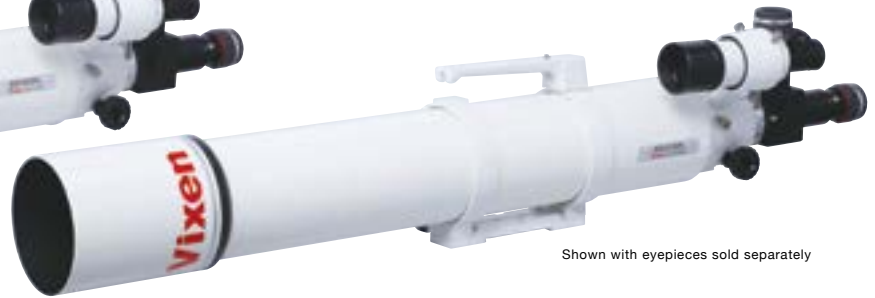
It verifies that the chromatic aberration is corrected at a high level over a broad spectrum of light with the SD lenses. Especially the g-ray, which affects image contrast, is depressed excellently.



Shown with eyepieces sold separately



Shown with eyepieces sold separately



Shown with eyepieces sold separately

26146

SD81SII OTA

Objective lens	D=81mm F=625mm (F7.7), multi-coated
Resolving power	1.43 arc seconds
Limiting magnitude	11.3
Light gathering power	134X unaided eye
Finder scope	XY red dot finder
Adapter threads	60mm, 42mm for T-ring
Visual back	50.8mm, 31.7mm push-fit with the supplied flip mirror diagonal
Accessories	Tube rings, dovetail tube plate, carry handle, flip mirror diagonal,
Dimensions	90mm dia. x 585mm long
Weight	3.6 kg (Net 2.3 kg)

26086

SD103SII OTA

Objective lens	D=103mm F=795mm (F7.7), multi-coated
Resolving power	1.13 arc seconds
Limiting magnitude	11.8
Light gathering power	217X unaided eye
Finder scope	7x50mm, 7 degrees field of view
Adapter threads	60mm, 42mm for T-ring
Visual back	50.8mm, 31.7mm push-fit with the supplied flip mirror diagonal
Accessories	Tube rings, dovetail tube plate, carry handle, flip mirror diagonal
Dimensions	115mm dia. x 810mm long
Weight	5.4 kg (Net 3.6 kg)

26087

SD115SII OTA

Objective lens	D=115mm F=890mm (F7.7), multi-coated
Resolving power	1.01 arc seconds
Limiting magnitude	12.1
Light gathering power	270X unaided eye
Finder scope	7X50mm, 7.0 degrees field of view
Adapter threads	60mm, 42mm for T-ring
Visual back	50.8mm, 31.7mm push-fit, with the supplied flip mirror diagonal
Accessories	Tube rings, dovetail tube plate, carry handle, flip mirror diagonal
Dimensions	125mm dia. x 930mm long
Weight	6.2 kg (Net 4.4 kg)

Vixen SD apochromatic refractors feature 'Super extra-low Dispersion' SD optical glass for the objective lens. The optical design with SD glass suppresses residual chromatic aberration far under the threshold of visibility for producing outstanding sharp images with high contrast for both visual and photographic applications.

ED80Sf

The ED80Sf combines excellent color correction with affordable pricing. A combination with a PORTA II Mount will be a standard of most welcome grab-and-go telescopes. A Crayford type focuser provides smooth friction focusing.

Optional Pairs for ED80Sf



37231 for Nikon
37233 for Sony Alpha
Focal Reducers for ED80Sf

2617

ED80Sf OTA



Shown with eyepieces sold separately

With aluminum carry case

Specifications	ED80Sf
Objective lens	D=80mm F=600mm (F7.5), multi-coated
Resolving power	1.45 arc seconds
Limiting magnitude	11.3
Light gathering power	131X unaided eye
Finder scope	9X50mm, 4.8 degrees field of view
Adapter threads	42mm for T-ring
Visual back	50.8mm, 31.7mm push-fit, with the supplied flip mirror diagonal
Focuser	Crayford type, with stopper
Accessories	Tube rings, dovetail tube plate, flip mirror diagonal, carry case
Dimensions	100mm dia. x 570mm long
Weight	4.8 kg (Net 3.4 kg)



27426

SD Flattener HD Kit

Contents SD flattener HD lens, EX tube 66, Spacer ring for SD81S

Specifications

SD flattener HD lens	2 elements in 1 group
Optical coatings	anti-reflection AS coatings
Dimensions and weight	
SD flattener HD	58mm dia. x 34mm long, 111 g
EX tube 66	68mm dia. x 76mm long, 89 g
Spacer ring	57.5mm dia. x 55.2mm, 18 g

Shooting with a Full-frame Imaging Sensor

It is a kit consisting of a field flattener lens and the related accessories for use primarily with the SD series of Vixen apochromatic refractors. The SD flattener HD improves images toward the edge of a field of view while closely maintaining the original focal length of a telescope. It covers the entire imaging field of a DSLR camera with a full-frame imaging sensor. Thus, it secures images of pinpoint stars for an image circle of 44mm with prime focus photography. The SD flattener HD is fitted to the drawtube with a camera connecting ring, such as an optional wide photo adapter 60DX sold separately. □

High Contrast Image

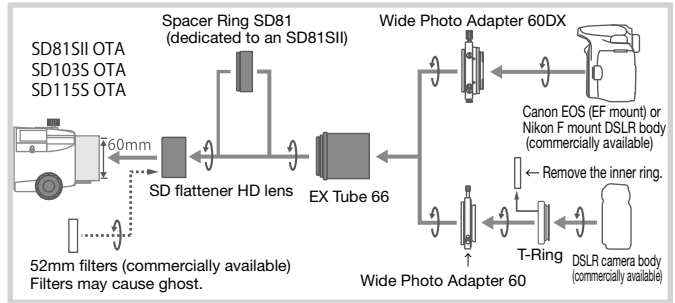
The premium anti-reflection AS coatings, which are applied for our high end VSD100F3.8 astrograph, are used to achieve extremely high transmission of light (over 99.9% on every single surface of the lens). Besides, the internal reflection and loss of light are eliminated thanks to an elaborate matte finish.



Enhancing Sharp Image with the Reducer HD

An optionally available Reducer HD reduces the focal length of the SD series of apochromatic refractors by 0.79 (from F7.7 to F6.1) while keeping the illuminated image circle. The images are shaper in the whole field of view.

Components and Configuration for Photography



Spec.	Focal length (Power) / Focal ratio	Fully illuminated image circle* 1	Field illumination at the edge
SD81SII	625mm to 644mm (1.03x) F7.7 to F7.9	φ44mm	89%
SD103S	795mm to 811mm (1.02x) F7.7 to F7.9	φ44mm	83%
SD115S	890mm to 908mm (1.02x) F7.7 to F7.9	φ44mm	80%

1: There is no elongated image of stars in the image circle, and illuminated field remains over 60% at the edge. Image circles of 28mm and 44mm cover APS-C and 35mm format, respectively.

35mm Full-frame and APS-C

It is a common name for the size that indicates the size or shape of the light-receiving plane (imaging sensor) in DSLR cameras. The main sizes are Full Frame (36x24mm), APS-C(23x16mm), and FourThirds (17.3x13mm). There are minor differences in the size depending on the models of the DSLR cameras. The larger the light-receiving plane, the larger the imaging field taken



27425

Reducer HD Kit

Contents Reducer HD lens, SD flattener HD lens, EX tube 66, Spacer ring for SD81S

Specifications

SD flattener HD lens	2 elements in 1 group
Reducer HD lens	2 elements in 2 groups
Optical coatings:	anti-reflection AS coatings
Dimensions and weight	
SD flattener HD	58mm dia. x 34mm long, 111 g
Reducer HD:	68mm dia. x 45.2mm long, 218 g
EX tube 66	68mm dia. x 76mm long, 89 g
Spacer ring	57.5mm dia. x 55.2mm, 18 g

Shooting with a Full-frame Imaging Sensor

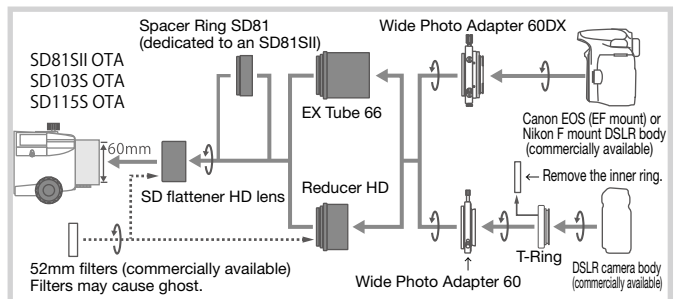
This is a kit of a field flattener lens, a reducer lens, and the related accessories for use with the SD series of Vixen apochromatic refractors primarily. The reducer HD, in combination with the SD flattener HD, covers the entire imaging field of a DSLR camera with a full-frame imaging sensor. The focal length is reduced to 0.79x while keeping flat and sharp images toward the very edge of field of view. The reducer HD is fitted to the drawtube with a camera connecting ring, such as an optional wide photo adapter 60DX sold separately.

The SD flattener HD is an indispensable when you use the reducer HD with the SD series of telescopes, except for the AX103S and VC200L telescopes.

Usable with the AX103S and VC200L

Both the AX103S and VC200L have a built-in field flattener in their optical system, and you can get sharp images of stars by using the reducer HD only. The AX103S provides an image circle of 44mm at 60% peripheral illumination, and that is suitable for a DSLR camera with a full frame 36mm x 24mm imaging sensor. The VC200L provides an image circle of 36mm at 60% peripheral illumination (44mm at 47% peripheral illumination), suitable for a DSLR camera with an APS-C imaging sensor.

Components and Configuration for Photography (Flattener + Reducer)



Spec.	Focal length (Power) / Focal ratio	Fully illuminated image circle* 1	Field illumination at the edge
SD81SII	625mm to 496mm (0.79x) F7.7 to F6.1	φ44mm	72%
SD103S	795mm to 624mm (0.79x) F7.7 to F6.1	φ44mm	63%
SD115S	890mm to 699mm (0.79x) F7.7 to F6.1	φ44mm	60%

1: There is no elongated image of stars in the image circle, and illuminated field remains over 60% at the edge. Image circles of 28mm and 44mm cover APS-C and 35mm format, respectively.

2: The illuminated field will decrease to 47% at an image circle of 44mm.

3: The SD 115S provides an image circle of 36mm at 60% peripheral illumination.

F9~6.9^{※3}

*The specifications are subject to change without notice.

'Apo Maximum' SD Apochromatic Refractor with unparallel 'Photo-Visual' performance



Shown with eyepieces sold separately

26144

AX103S OTA

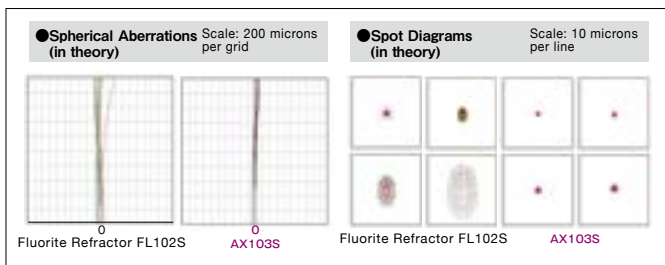
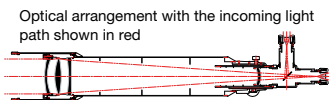
Objective lens	D=103mm F=825mm (F8), multi-coated
Resolving power	1.13 arc seconds
Limiting magnitude	11.8
Light gathering power	217X unaided eye
Finder scope	7X50mm with illuminated reticle, 7.0 degrees field of view
Adapter threads	60mm, 42mm for T-ring
Visual back	50.8mm, 31.7mm push-fit, with the supplied flip mirror diagonal
Accessories	Tube rings, dovetail tube plate, carry handle, flip mirror diagonal
Dimensions	115mm dia. x 762mm long (670mm long for storage)
Weight	6.4 kg (Net 4.6 kg)

Quad Element Design

Vixen AX103S features a three-element objective lens, incorporating an SD lens in the center of an air-spaced triplet lens system and the fourth lens inside the focuser drawtube. The 'Apo Maximum' lens elements are laid in the precision machining cells to exhibit superb optical performance. The advanced design produces crystal-clear, sharp, and high-contrast images with no trace of false color.

Surpass Fluorite at Color Correction

Below is a comparison of spherical aberration between the AX103S and Vixen's FL102S Fluorite telescope, which was renowned as a masterpiece for its excellent color correction. The diagram shows how the AX103S outperforms the fluorite optics. The bundle of light rays (spectrum) on the AX103S is straighter than on the FL102S. The result is that residual chromatic aberrations are reduced far below the threshold of visibility.



Star images less than 20 microns at the edge

The spherical aberration of the g-ray (purple in the diagram), which affects contrast by digital imaging, is excellently decreased on the AX103S. In spot diagrams of the AX103S, the star images are more concentrated and are seen as small as less than 20 microns at the edge of the imaging field.

High Light Transmission

Besides, Vixen's high precision multi-coatings 'AS coatings on each surface to the AX103S lenses enhance visible light transmission to 99.5% on any single surface, assuring ultimate light transmission.



M17 the Omega Nebula
Photo by Shuichi Takeuchi
Taken with AX103S with Reducer HD
Camera: Pentax K1,
3 five-minute exposures at ISO800 and 5 two--minute exposures at ISO3200
(25 minutes in total exposure)

Optional Accessories

37247

Reducer HD

With the AX103S, the reducer HD covers the imaging field of a DSLR camera with a full-frame imaging sensor (36mm x 24mm) at prime focus photography. The telescope's focal length is reduced to 0.77X. The reducer HD is attached to the drawtube with a camera connecting ring, such as a wide photo adapter 60DX sold separately. A commercially available 52mm filter is usable.



37228

Focal Reducer for AX103S(For APS-C use)

It is suitable for a DSLR camera with an APS-C imaging sensor (23mm x 16mm).



Fluorite Apochromatic Refractor

It is a highly portable short tube OTA designed for the astrophotographer and the visual observer.

Compact Astrograph of High Performance

The FL55SS turns into a fast F4.3 astrograph by adding an optional flattener lens and an optional focal reducer lens. It features surprisingly sharp and bright images to the very edge of a full-frame imaging sensor (95% light transmission at the edge of a 44mm image circle).

Fluorite Objective Lens

The FL55SS uses a fluorite element which yields uncompromising optical performance. You will enjoy a stunningly clear view of the moon and bright planets a level higher, despite a range of small apertures.



Attachable to a Camera Tripod

The bottom of the FL55SS OTA has a mounting block with two 1/4" thread holes and a 3/8" thread hole for a camera tripod. With the supplied dovetail slider bar M, you can attach the FL55SS to any mount head of Vixen's standard dovetail attachment system.



26201

FL55SS OTA

Objective lens	D=55mm F=300mm (F7.7), multi-coated
Resolving power	2.11 arc seconds
Limiting magnitude	10.5
Light gathering power	62X unaided eye
Finder scope	Optional, a finder bracket shoe sold separately is needed
Adapter threads	60mm, 43mm, 36.4mm
Visual back	31.7mm push-fit
Accessories	Dovetail slide bar M, extension tube, eyepiece adapter 31.7mm
Dimensions	80mm dia. x 282mm long
Weight	1.5 kg

Optional Accessories



37252

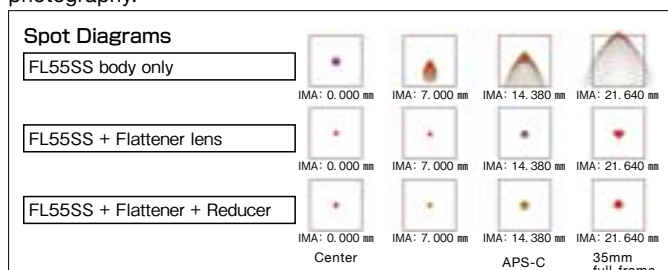
Flattener HD Kit for FL55SS

A kit of a field flattener lens and an extension tube dedicated to the FL55SS for prime focus astrophotography. You insert it onto the drawtube of the FL55SS using the supplied EX tube 66. An optional wide photo adapter 60DX or an optional wide photo adapter 60 and a T-ring that is appropriate for your DSLR camera are needed.

Contents	Flattener HD lens for FL55SS and EX tube 66
Specifications	
Flattener HD for FL55SS	2 elements in 1 group
Optical coatings	anti-reflection AS coatings
Dimensions and weight	
Flattener HD for FL55SS	58mm dia. x 30mm long, 107 g
EX tube 66	68mm dia. x 76mm long, 89 g

Shooting with a Full-frame Imaging Sensor

The flattener HD for FL55SS improves images toward the edge of a field of view while closely maintaining the original focal length of a telescope. It covers the entire imaging field of a DSLR camera with a full-frame imaging sensor. It is possible to secure images of pinpoint stars in an image circle of 44mm for prime focus photography.



37253

Reducer HD Kit for FL55SS

A kit of a reducer lens, a field flattener lens, and an extension tube dedicated to the FL55SS for prime focus astrophotography. An optional wide photo adapter 60DX or an optional wide photo adapter 60 and a T-ring that is appropriate for your DSLR camera are needed.

Contents	Reducer HD lens for FL55SS, Flattener HD lens for FL55SS, and EX tube 66
Specifications	
Reducer HD for FL55SS	3 elements in 3 groups
Flattener HD for FL55SS	2 elements in 1 group
Optical coatings	anti-reflection AS coatings
Dimensions and weight	
Reducer HD for FL55SS	68mm dia. x 45.3mm long, 237 g
Flattener HD for FL55SS	58mm dia. x 30mm long, 107 g
EX tube 66	68mm dia. x 76mm long, 89 g

Shooting with a Full-frame Imaging Sensor

The reducer HD for FL55SS, in combination with the flattener HD for FL55SS, covers the entire imaging field of a DSLR camera with a full-frame imaging sensor. The focal length is reduced to 0.79X while keeping flat and sharp images toward the very edge of the field of view.

Outperform the telephoto lens by the sharpness of astrophotography

Unlike the telephoto lenses for general photographic purposes, which are composed of many lenses to compensate for optical aberrations, the FL55SS consists of a minimum quantity of the lens to concentrate on creating a pin-point image of stars free of false color. It is highly suitable for taking not only photos of celestial objects but also photos of wild birds.

*The specifications are subject to change without notice.



Vixen Sixth-order Aspherical Catadioptric system - VISAC

Vixen's unique catadioptric system consisting of a high precision sixth-order aspherical primary mirror, a convex secondary mirror, and a triplet corrector lens, provides high-definition star images to the edge of a wide imaging field and offers exceptionally outstanding performance in astrophotography.

As coma aberration, spherical aberration, and curvature of field are perfectly corrected, images captured with the VISAC are stunningly sharp. Star images are less than 15 microns across the very edge of the 42mm image circle. The VISAC mirror produced by a unique aluminum vacuum evaporation technology is a superb optical system truly designed for both visual observation and astrophotography.



Shown with eyepieces sold separately

2632

VC200L OTA

Objective lens	D=200mm F=1800mm (F9) VISAC mirror, multi-coated
Resolving power	0.58 arc seconds
Limiting magnitude	13.3
Light gathering power	816X unaided eye
Finder scope	7X50mm with illuminated reticle, 7.0 degrees field of view
Adapter threads	60mm, 42mm for T-ring
Visual back	50.8mm, 31.7mm push-fit, with the supplied flip mirror diagonal
Accessories	Dovetail tube plate, carry handle, flip mirror diagonal
Dimensions	232mm dia. x 600mm long
Weight	6.9 kg (Net 6.0 kg)



Waning Gibbous Moon

Photo by Masahiro Shimada

Taken with VC200L
Camera: Canon Kiss (EOS Rebel) X5 tune-up,
at ISO250, 1/80-second exposure

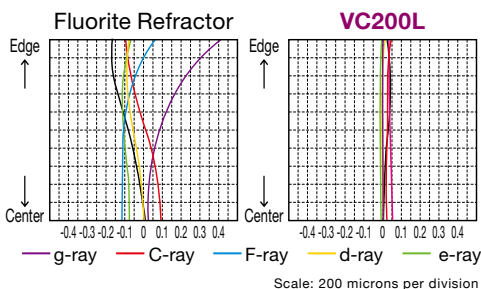
Optical Tube Assembly

Optical Design Comparisons

Telescope Systems	Spherical Aberration	Coma	Field Curvature
Classical Cassegrain	○	-	-
Dall-Kirkham	○	-	-
Ritchey-Chretien	○	○	-
Schmidt-Cassegrain	○	-	-
VISAC	○	○	○

VISAC vs. Fluorite

This comparison reveals minute chromatic aberration by small unit of five hundredth millimeters to clearly show that the chromatic aberration on the VISAC is far less than on a fluorite refractor.



Optional Accessories for VC200L

37247

Reducer HD

By using it with the VC200L optical tube, the focal length reduces to 0.77X. The Reducer HD covers the imaging field of a camera with an APS-C image sensor in prime focus photography. A commercially available 52mm filter is usable.

37229

Reducer 2 for VC200L

By using it with the VC200L optical tube, the focal length reduces to 0.71X.

3880

VC200L Aluminum Case

- For VC200L or VMC200L optical tube
- Size: 670 x 270 x 335 mm (W x D x H)
- Weight: 6.2 kg



image

N Newtonian Reflectors

Newtonian reflector telescopes are free of chromatic aberration completely and are generally less expensive than refractor telescopes of equal aperture.

The primary mirror of the R200SS is produced with unique aluminum vacuum evaporation technology to form a high-precision parabolic mirror surface consistently. The lightweight and high-quality R200SS with a faster F4 focal ratio are best suited for astrophotography of nebulae, star clusters, and comets.



Shown with eyepieces sold separately

2642

R200SS OTA

Objective lens	D=200mm F=800mm (F4) Parabolic mirror, multi-coated
Resolving power	0.58 arc seconds
Limiting magnitude	13.3
Light gathering power	816X unaided eye
Finder scope	7X50mm with illuminated reticle, 7.0 degrees field of view
Adapter threads	60mm, 42mm for T-ring
Visual back	31.7mm push-fit
Accessories	Tube rings, dovetail tube plate, vinyl wide strap
Dimensions	232mm dia. x 700mm long
Weight	7.2 kg (Net 5.3 kg)

Recommended Optional Accessories for Astrophotography with an R200S

37238

Extender PH Kit



Applicable to	R200SS Newtonian reflector
Lens design	4-element in 3-group
Coatings	AS coatings (99.9% light transmission per surface)
Magnifying power	1.4X
Focal length	1120mm (F5.6) with R200SS
Image circle	44mm diameter (available for a 36mm x 24mm full-frame format)
Peripheral illumination	0.702
Installation	M56mm pitch 0.75mm (male) threads
Filter threads	For commercially available 48mm filters
Body size / Weight	56mm outer diameter x 128mm long / 245 g

- The Extender PH Kit extends the original focal length of an R200SS to 1.4 times (1120mm) while eliminating coma aberration excellently.
- The Extender PH has an image circle of 44mm covering a 36mm x 24mm imaging sensor of full-frame DSLR cameras. It provides surprisingly sharp and crisp star images to the corners of the imaging field.
- The anti-reflective AS coatings applied are perfect at 99.9% transmission of light per surface. These not only change the R200SS into an astrograph of high performance without ghost and flare but also works on visual observation.

The Extender PH is designed primarily for astrophotography, but is usable for visual observation with a 31.7mm or 50.8mm eyepiece (Optional adapter is needed to use the 50.8mm eyepiece).



37237

Corrector PH



Applicable to	R200SS Newtonian reflector
Lens design	3-element in 3-group Wynne design
Coatings	AS coatings (99.9% light transmission per surface)
Magnifying power	0.95X
Focal length	760mm (F3.8) with R200SS
Image circle	44mm diameter (available for a 36mm x 24mm full-frame format)
Installation	M56mm pitch 0.75mm threads
Filter threads	For commercially available 52mm filters
Body size / Weight	56mm outer diameter x 78mm long / 175 g

- The Corrector PH is a corrector lens system of the highest quality that features a Wynne type 3-element in a 3-group optical design.
- It corrects the coma aberration originating from parabolic mirrors and compensates for spherical aberration excellently.
- The anti-reflective AS coatings applied are perfect at 99.9% transmission of light per surface. It achieves high optical performance without ghost and flare. The Corrector PH is designed primarily for astrophotography, but is usable for visual observation with a 31.7mm eyepiece.

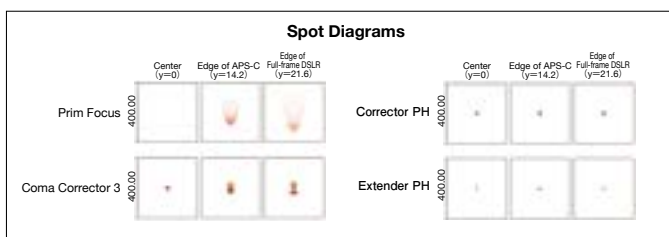


2604

R130Sf OTA



Objective lens	D=130mm F=650mm (F5.0) Parabolic mirror, multi-coated
Resolving power	0.89 arc seconds
Limiting magnitude	12.3
Light gathering power	345X unaided eye
Finder scope	6X30mm with reticle, 7.0 degrees field of view
Adapter threads	42mm for T-ring
Visual back	31.7mm push-fit
Accessories	Tube rings, dovetail tube plate, PL20mm and PL6.3mm eyepieces
Dimensions	160mm dia. x 575mm long
Weight	5.3 kg (Net 4.0 kg)





Vixen original Maksutov-Cassegrain Telescopes

The newest Catadioptric design from Vixen features a combination of a meniscus lens unit in front of the secondary mirror and a spherical mirror with high precision. Spherical aberration and curvature of a field are all corrected to a high level of optical performance for clear and sharp images. The open tube design of the VMC telescopes eliminates the dew problem that is common with Schmidt-Cassegrain designs. The VMCs are suitable for observing a variety of celestial objects, from the moon and planets to deep-sky objects.



26302

VMC260L OTA

Objective lens	D=260mm F=3000mm (F11.5), precision spherical mirror, multi-coated
Resolving power	0.45 arc seconds
Limiting magnitude	13.8
Light gathering power	1380X unaided eye
Finder scope	7X50mm with illuminated reticle, 7.0 degrees field of view
Adapter threads	60mm, 42mm for T-ring
Visual back	50.8mm, 31.7mm push-fit, with the supplied flip mirror diagonal
Accessories	Wide dovetail slide bar, carry handle, flip mirror diagonal
Dimensions	304mm dia. x 680mm long (720mm incl. focus knob)
Weight	12.1 kg (Net 10.0 kg)



Enjoy Observing the surface of the planets with a VMC260L

The Japanese-made Vixen VMC260L is a true-all-purpose telescope. The Catadioptric design with a large 260mm aperture consists of two mirrors and a unique double meniscus lens design. This corrector lens, placed in front of the secondary mirror, virtually eliminates spherical aberration and field curvature. With its 260mm aperture high-reflectivity dielectric coated mirror, the VMC260L corrects enough light for visual and photographic applications. It is a mighty telescope for planetary and deep-sky observations.



Jupiter taken with VMC260L, Image courtesy of William Rison, USA.

[VMC200L]

The VMC200L is a 200mm aperture f/9.75 Catadioptric optical system that incorporates a primary mirror and a meniscus corrector lens just before a secondary mirror for correcting spherical aberration. It results in extremely sharp focus in the center of the field of view. It is highly regarded by visual observers who enjoy the moon, planets, and beyond.



Shown with eyepieces sold separately

2633

VMC200L OTA

Specifications VMC200L Optical tube assembly

Primary Mirror	: D=200mm F=1950mm (f9.75), precision spherical mirror, multicoated
Resolving power	: 0.58 arc seconds
Limiting magnitude	: 13.3
Light gathering power	: 816x unaided eye
Finder scope	: 7x50mm finder, 7 degrees field of view
Adapter thread	: 60mm and 42mm for T-ring
Visual back	: 50.8mm and 31.7mm push fit with the supplied Flip mirror diagonal
Accessories	: Flip mirror diagonal, Dovetail attachment rail, Carry handle
Size	: 232mm dia. x 510mm long
Weight	: 6.8 kg / 14.97 lb (Net 5.9 kg / 12.98 lb)



Achromatic Reflectors

OTAs for Visual Observation and Astrophotography

Vixen's mounts are available with a wide variety of optical tubes, including refractors, reflectors, and catadioptrics. Select the one that is best suited for your purpose. The optical tube is attached to the mount head of a Vixen mount easily without using special tools.

Achromatic Refractor Optical Tube Assemblies

Vixen achromatic refractors allow sharp views of the moon and planets and pinpoint images of stars. The easy-to-maintain refractors are an excellent choice for not only beginners but also experts.



2602

A70Lf OTA

Specifications	A70Lf
Objective lens	D=70mm F=900mm (F12.9), multi-coated
Resolving power	1.66 arc seconds
Limiting magnitude	11.0
Light gathering power	100X unaided eye
Finder scope	6X24mm, 5 degrees field of view
Adapter threads	42mm for T-ring
Visual back	31.7mm push-fit
Accessories	PL20mm and PL6.3mm 31.7mm eyepieces, erect-image diagonal 31.7mm, tube rings, dovetail
Dimensions	76mm dia. x 860mm long
Weight	2.5 kg (Net 1.9 kg)

2603

A80Mf OTA

Specifications	A80Mf
Objective lens	D=80mm F=910 (F11.4), multi-coated
Resolving power	1.45 arc seconds
Limiting magnitude	11.3
Light gathering power	131X unaided eye
Finder scope	6X30mm, 7 degrees field of view
Adapter threads	42mm for T-ring
Visual back	31.7mm push-fit tube plate
Dimensions	90mm dia. x 860mm long
Weight	3.3 kg (Net 2.5 kg)

26071

A105MII OTA

Objective lens	D=105mm F=1000mm (F11.4), multi-coated
Resolving power	1.1 arc seconds
Limiting magnitude	11.9
Light gathering power	225X unaided eye
Finder scope	XY red dot finder
Adapter threads	60mm, 42mm for T-ring
Visual back	50.8mm, 31.7mm push-fit with the supplied flip mirror diagonal
Accessories	Tube rings, dovetail tube plate, carry handle, flip mirror diagonal,
Dimensions	90mm dia. x 860mm long
Weight	4.8 kg (Net 3.8 kg)



Optical Tube Assembly

Optional Accessories

A Pair of Tube Rings

The SX tube rings are provided for the Vixen OTAs as a standard accessory. The SX tube rings are used together with the dovetail tube plate for the OTA.



2664 SX Tube Rings 90mm

• Applicable to: A81M, A80Mf, SD81S • Weight: 360 g

2665 SX Tube Rings 115mm

• Applicable to: A105MII, SD103S, AX103S • Weight: 400 g

2666 SX Tube Rings 125mm

• Applicable to: SD115S • Weight: 500 g

2672 SX Tube Rings 232mm

• Applicable to: R200SS • Weight: 1400 g

*The specifications are subject to change without notice.

Optional Parts and Accessories

Optional parts allow for using your Vixen astronomical telescope for various purposes.



Focal Reducers and Flatteners for Prime Focus Astrophotography



3666
Focal Reducer for F7.7 ED
• Usable on SD81SII, SD103S or SD115S



37228
Focal Reducer for AX103S (For APS-C use)



37231 for Nikon
37233 for Sony Alpha
Focal Reducer for ED80Sf



37229
Focal Reducer 2 for VC200L



26637
Focal Reducer V0.79X
• Usable on VSD100F3.8
• Reduces focal length by 0.79X (Changes to F3.0)
• Wide photo adapter 60mm or 60mmDX and T ring are needed separately for prime focus photography
• Available for visual observation
• Weight 330 g / 11.64 oz



37245
SD Reducer HD Kit
• Usable on SD81S, SD103S, SD115S, AX103S or VC200L



37246
SD Flattener HD Kit
• Usable on SD81S, SD103S or SD115S



37247
Reducer HD
• Usable on AX103S or VC200L



37253
Reducer HD Kit for FL55SS



37252
Flattener HD Kit for FL55SS

SLV Series of 31.7mm Eyepieces



The SLV Series of eyepiece feature a hexagonal shaped eyepiece barrel, long 20mm eye relief, and twist up click stop eyecup for adjusting to the most comfortable eye point for viewing. The SLV eyepieces with high grade Lanthanum glass, deliver remarkably clear and high contrast star images to the edge of the viewing circle. The lenses are fully multi-coated for high light transmission.

Item No.	Description	Push-fit Size	Apparent FOV	Eye relief	Weight
37202	SLV2.5mm	31.7mm	50 degrees	20mm	173 g / 6.10 oz
37203	SLV4mm	31.7mm	50 degrees	20mm	168 g / 5.92 oz
37204	SLV5mm	31.7mm	50 degrees	20mm	165 g / 5.82 oz
37205	SLV6mm	31.7mm	50 degrees	20mm	165 g / 5.82 oz
37206	SLV9mm	31.7mm	50 degrees	20mm	176 g / 6.20 oz
37207	SLV10mm	31.7mm	50 degrees	20mm	175 g / 6.17 oz
37208	SLV12mm	31.7mm	50 degrees	20mm	172 g / 6.06 oz
37211	SLV15mm	31.7mm	50 degrees	20mm	163 g / 5.74 oz
37212	SLV20mm	31.7mm	50 degrees	20mm	155 g / 5.46 oz
37213	SLV25mm	31.7mm	50 degrees	20mm	151 g / 5.32 oz

NPL Series of 31.7mm Eyepieces



The 2-group 4-element Plossl optical design of the NPL series eyepieces delivers flat and clear images with good color correction. The NPL20, NPL25, NPL30 and NPL40 eyepieces employ twist-up eye-guards for viewing comfort. The lenses are fully multi-coated for high light transmission.

Item No.	Description	Push-fit Size	Apparent FOV	Eye relief	Weight
39201	NPL4mm	31.7mm	50 degrees	2.3mm	70 g / 2.47 oz
39202	NPL6mm	31.7mm	50 degrees	3.0mm	70 g / 2.47 oz
39203	NPL8mm	31.7mm	50 degrees	4.5mm	79 g / 2.79 oz
39204	NPL10mm	31.7mm	50 degrees	6.5mm	80 g / 2.82 oz
39205	NPL15mm	31.7mm	50 degrees	11mm	100 g / 3.53 oz
39206	NPL20mm	31.7mm	50 degrees	15mm	110 g / 3.88 oz
39207	NPL25mm	31.7mm	50 degrees	19.5mm	130 g / 4.59 oz
39208	NPL30mm	31.7mm	50 degrees	24mm	120 g / 4.23 oz
39209	NPL40mm*	31.7mm	40 degrees	36mm	120 g / 4.23 oz

* Not available for eyepiece projection photography with R200SS.
Note: The following older optional accessories are not compatible with the SLV and NPL series of eyepieces.
SX Camera Adapter (3931), Universal Digital Camera Adapter (3919) and NST Camera Adapter 36.4 (3911) and Universal Camera Adapter II (39197).

What is SLV Series Eyepieces?

We use Lanthanum glass in our SLV eyepieces to materialize high-quality, comfortable eyepieces with the superior optical performance. With the advantage of the extraordinarily high dispersion rate of Lanthanum glasses, the SLV eyepieces yield bright and sharp images to the very edge of a field of view.

So-called "ED" glass is widely known as a high-quality lens element, but Lanthanum glass featuring high dispersion rates cannot be compared simply to ED glass having low dispersion rates. The application of Lanthanum glasses to the optical design reduces the lens elements, improves light transmission, and results in brighter images. Besides, with the SLV eyepieces, image distortions are successfully reduced to the edge, and both coma aberration and astigmatism are depressed invisibly. That makes the SLV eyepieces compact, lightweight, and easy to handle.

The apparent field of view of the SLV eyepieces is determined to be a moderate 50 degrees to prevent fatigue or stress to the observer's eyes. Eye fatigue may occur when using an eyepiece with an ultra-wide field of view over 85 degrees. We believe that such a wide but unstable viewing field is beside the point of "comfortable" viewing. An advantage of the moderate 50 degrees field of view with comfortable 20mm long eye relief will help observers to concentrate on a target object.

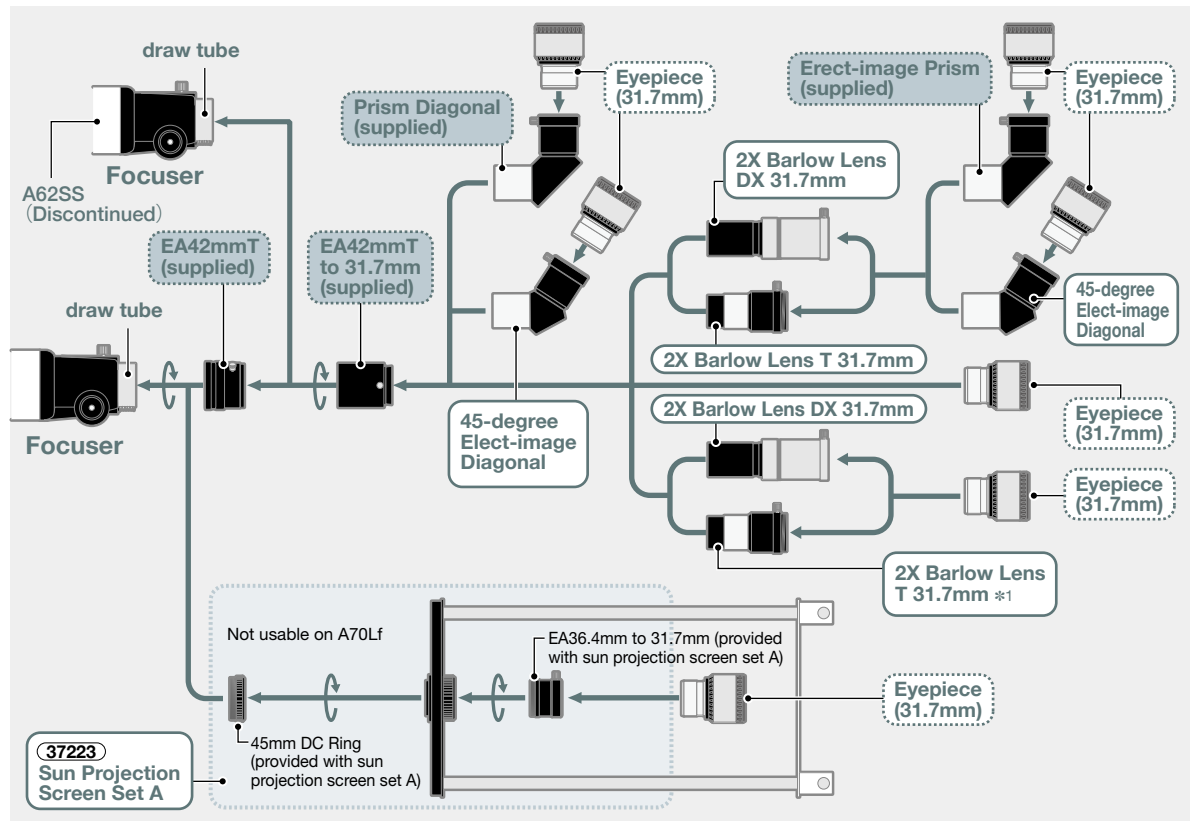
50.8mm Eyepieces

Item No.	Description	Push-fit Size	Apparent FOV	Eye relief	Weight
39301	NLVW30mm	50.8mm	65 degrees	22.4mm	363g
3727	LVW42mm	50.8mm	65 degrees	20.0mm	545g

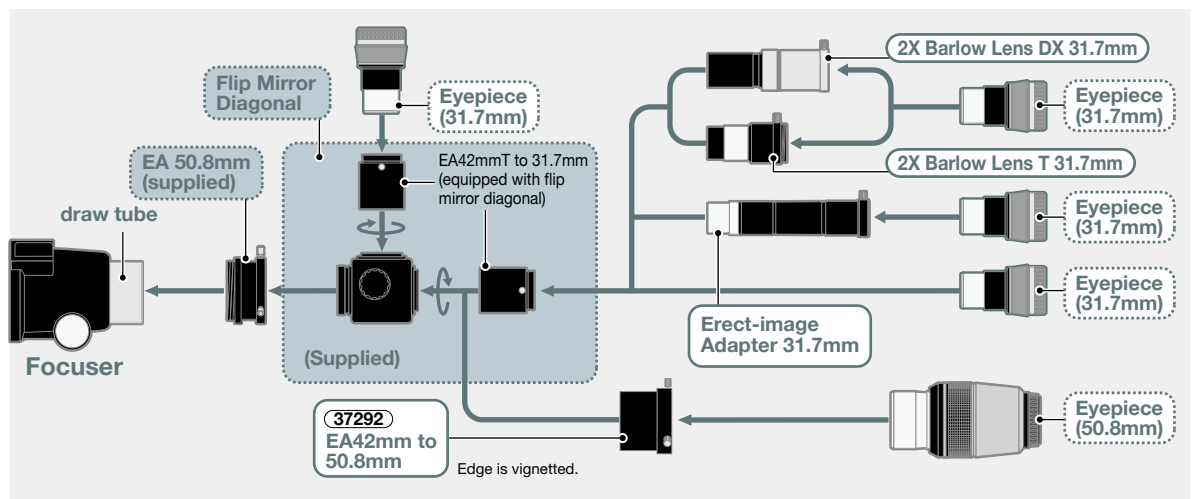


Visual Back Guide:

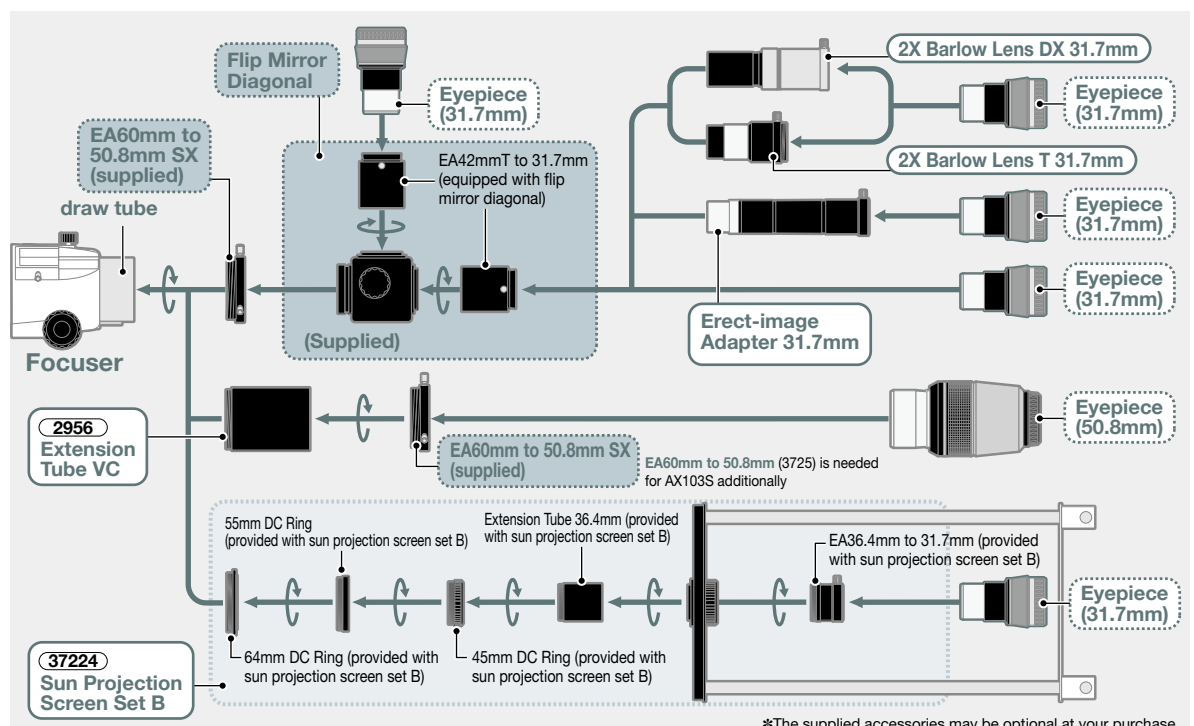
A62SS, A70Lf and A80Mf Optical Tubes



ED80Sf Optical Tube



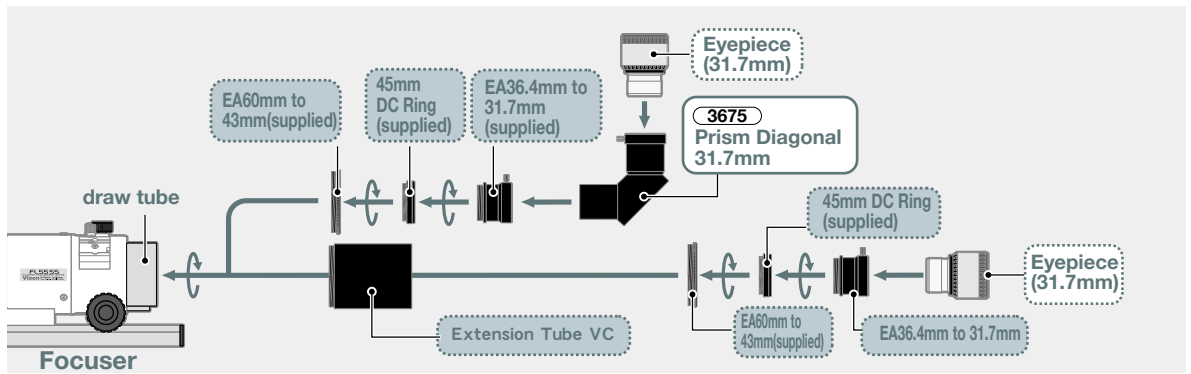
A81M, A105MII, NA140SS, SD81SII, SD103S, SD115S and AX103S Optical Tubes



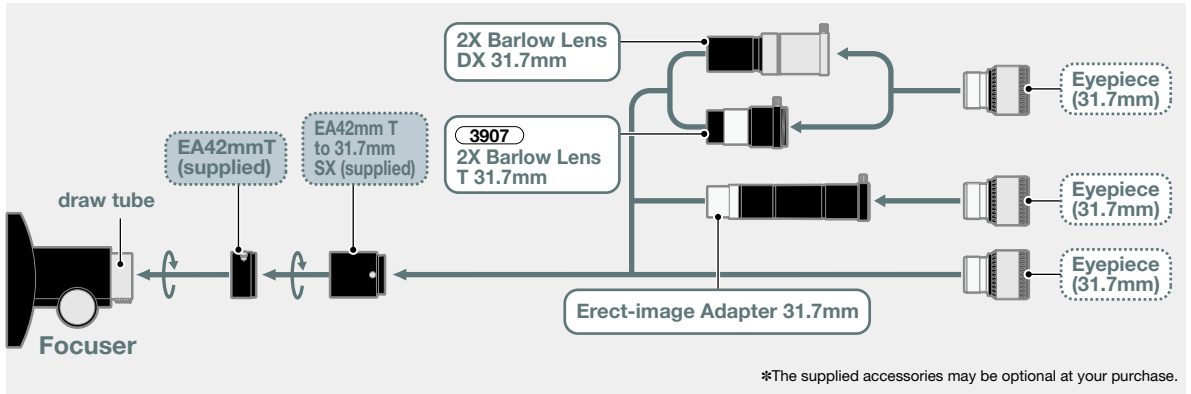
*The supplied accessories may be optional at your purchase.

Visual Back Guide

FL55SS Optical Tube

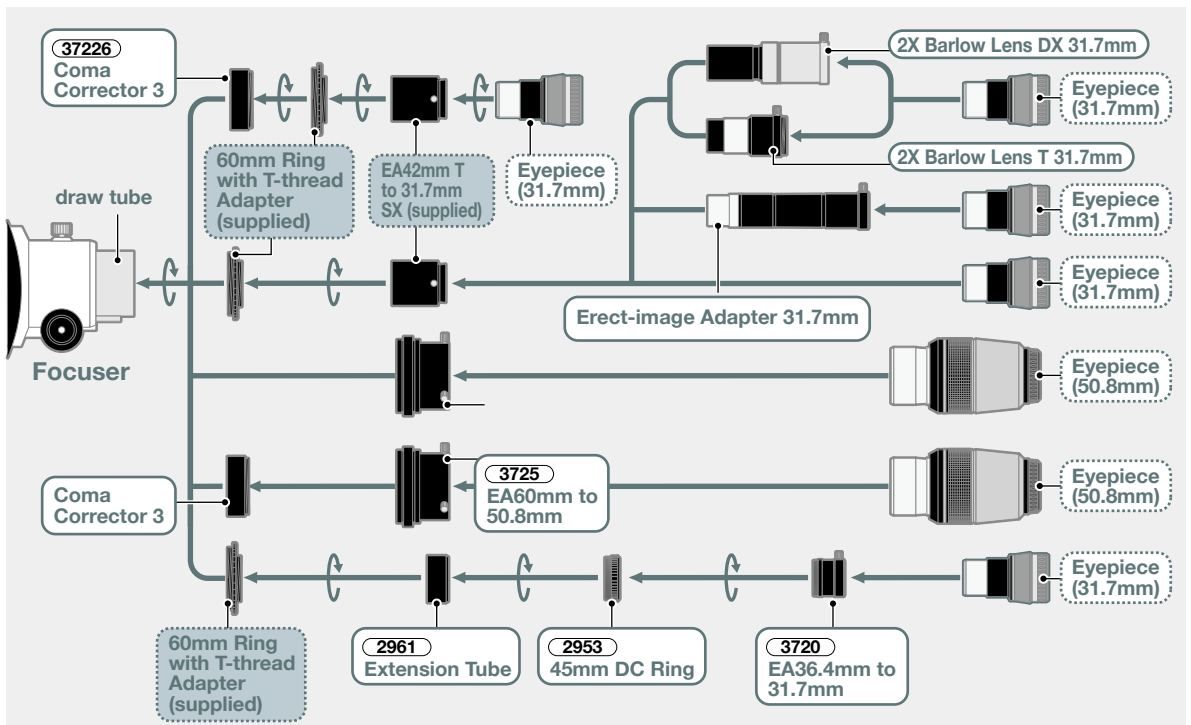


R130Sf Optical Tube

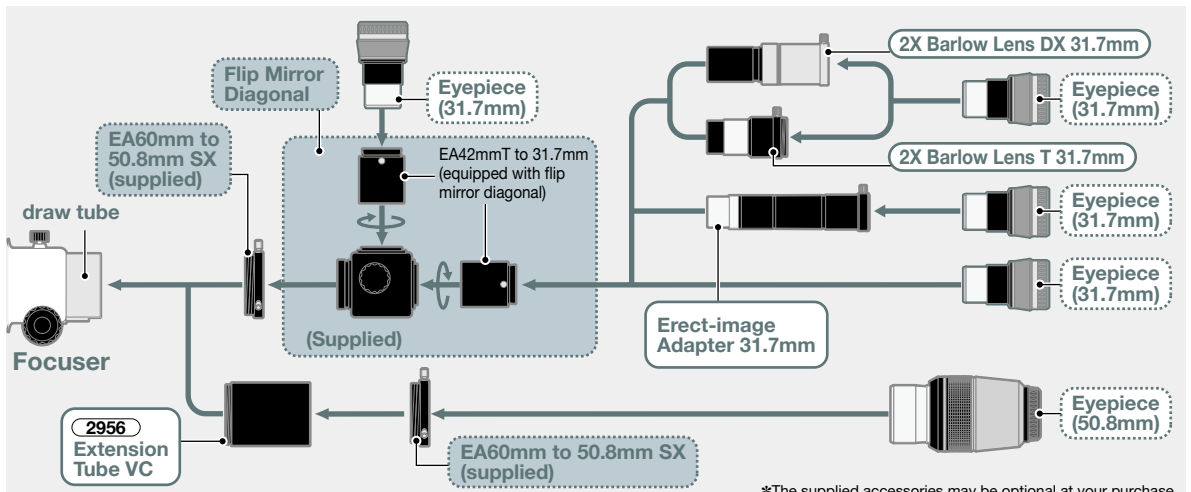


*The supplied accessories may be optional at your purchase.

R200SS Optical Tube



VC200L, VMC200L and VMC260L Optical Tubes



*The supplied accessories may be optional at your purchase.

Tripods

About the Unification of the Connection Specifications between Mounts and Tripods

Historically, Vixen GP Mounts and Sphinx Mounts have used different tripods. In March 2011, Vixen unified the connectivity of tripods and created an SXG tripod to fit all of these mounts. You With this modification, one single tripod is used for different types of mounts such as the GP equatorial and HF2 altazimuth fork mounts.

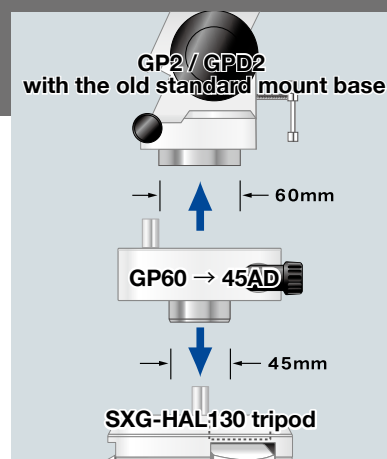
The mounting base of the GP2/GPD2 mounts which fits the tripod head of the SXG tripod was changed from 60mm to 45mm in diameter. The peg on the tripod head of the SXG tripod can be positioned in place according to the mount types used.



25169

GP60 to 45AD

- Needed to attach the former GP2/GPD2 mounts to the SXG tripod (or SXG Half Pillar).
- Weight: 775 g



Compatibility of Vixen Tripods and Pillars

Mount \ Tripod	ASG-CB90	APP-TL130	SXG Half Pillar	SXG-HAL130, SXG-P85DX
AP Excl. AP star tracker	○	⊙	○* <small>*Not compatible with APP-TL130</small>	○
SX (SX2WL, SXD2WL, SXP2)	⊙	×	⊙	⊙
AXJ	⊙	×	⊙	○
PORTA II	○	⊙	○	○
GP2 / GPD2 (For 45mm AD bottom only)	⊙	○** <small>**Not suitable for GPD2</small>	⊙	⊙



25164

ASG-CB90 Carbon Tripod

A pleasantly compact and lightweight tripod made from durable carbon fiber is ideal for a traveling astrophotographer.

- Tripod legs: 2-section carbon pipe legs, adjustable from 510mm to 815mm in height
- Self-standing space: 520mm in radius
- Length: Adjustable from 545mm to 900mm
- Weight: 3.4 kg



25161

SXG-HAL130 Aluminum Tripod

The leg-connected portion to the tripod head is so tight that it eliminates a twisted leg to increase stability.

- Tripod legs: 2-section aluminum hex-shaped legs, adjustable from 730mm to 1156mm in height
- Self-standing space: 706mm in radius
- Length: Adjustable from 807mm to 1299mm
- Weight: 5.5 kg



25172

SXG-P85DX Pillar

- Pillar dimensions: 114.3 dia. x 839.5mm long
- Pillar support legs: 450mm in radius, 3.5mm thick
- Weight: 19.5 kg



25191

APP-TL130 Aluminum Tripod

A highly lightweight tripod combines durability and ease of use. You can take it anywhere.

- Tripod legs: 3-section aluminum pipe legs, adjustable from 526mm to 1159mm in height
- Self-standing space: 710mm in radius
- Length: Adjustable from 570mm to 1296mm
- Weight: 3.0 kg



207 mm

21567

SXG Half Pillar

The half pillar has the advantage of creating fewer blind spots in the placement of the refractor telescope.

- Compatible with SX2WL, SXD2WL, SXP2, AXJ, GP2 and GPD2 Mounts
- Dimensions: 130mm dia. x 207mm long
- Weight: 1.8 kg

Barlow Lens



3907

2X Barlow Lens T 31.7mm

- 3.3x in combination with 3675 Prism Diagonal
- 31.7mm push-fit
- Threaded for T-ring
- Coated optics
- Weight: 80 g

Star Diagonal



3675

Prism Diagonal 31.7mm

- 31.7mm push-fit
- 64mm light pass
- Weight: 124 g
- Not usable for Newtonian reflectors.

Flip Mirror



2680

Flip Mirror Diagonal 31.7mm

- Fits to 50.8mm visual back
- 31.7mm push-fit
- Threaded for T-ring
- 119mm light pass
- Weight: 295 g

Finder Eyepiece



25203

Finder Eyepiece 100

- Fits to 31.7mm visual back
- 31.7mm push-fit
- Apparent field of view: 11 degrees
- Size: 50mm dia. x 186mm long
- Weight: 180 g
- An eyepiece of 100mm in focal length with crosshairs in the field of view for use as a finders cope.

Eyepiece Adapters



3720

EA36.4mm to 31.7mm

- Attached to 36.4mm thread, pitch 1.0mm
- 31.7mm push-fit
- 27mm light pass
- Weight: 29 g



2689

EA42mmT to 31.7mm SX

- Attached to 42mm male T-thread, pitch 0.75mm
- 31.7mm push-fit
- 55mm light pass
- Weight: 46 g



37292

EA42mmT to 50.8mm

- Attached to 42mm male T-thread, pitch 0.75mm
- 31.7mm push-fit
- 39mm light pass
- Weight: 60 g



3725

EA60mm to 50.8mm

- Attached to 60mm thread, pitch 0.75mm
- 50.8mm push-fit
- 13mm or 34mm light pass (When attached in a reversed direction.)
- Weight: 66 g
- Fits to R200SS. Usable together with a Coma Corrector 3.



37293

EA60mm to 50.8mm SX

- Attached to 60mm thread, pitch 0.75mm
- 50.8mm push-fit
- 10mm light pass
- Weight: 63 g



37291

EA50.8mm to 43mm

- Fits to 50.8mm visual back
- Changes to 43mm thread, pitch 1.0mm
- 10mm light pass
- Weight: 85 g



2961

Extension Tube R200SS

- Supplied with R200SS as standard accessory
- Changes 42mm T-thread (pitch 0.75mm) to 43mm thread (pitch 1.0mm)
- 20mm light pass
- Weight: 11 g



2954

60mm Ring with T-thread Adapter

- Supplied with R200SS as standard accessory
- A rotator to change an image orientation in photography
- Attached to 60mm thread, pitch 0.75mm
- Changes to 42mm T-thread, pitch 0.75mm
- 4mm light pass (The male thread part is excluded.)



2951

64mm DC Ring

- Changes 60mm thread to 53mm, pitch 1.0mm
- 4mm light pass
- Weight: 22 g



2952

55mm DC Ring

- Changes 53mm thread to 43mm, pitch 1.0mm
- 3mm light pass
- Weight: 19 g



2953

45mm DC Ring

- Changes 43mm thread to 36.4mm, pitch 1.0mm
- 8mm light pass
- Weight: 19 g

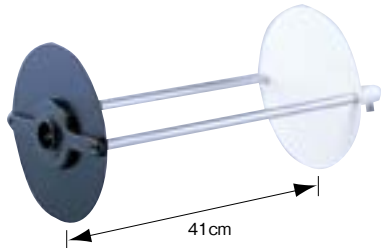


2956

Extension Tube VC

- Attached to 60mm thread, pitch 0.75mm
- 66mm light pass
- Weight: 115 g

Solar Observation Accessories



37223

Sun Projection Screen Set A

- Composed of: 24cm dia. sun projection white screen and sunshade, 45mm DC Ring and EA36.4mm to 31.7mm Adapter
- Weight: 914 g
- Usable for an A80Mf and FL55SS OTA only.



37224

Sun Projection Screen Set B

- Composed of: 24cm dia. sun projection white screen and sunshade, 64mm DC Ring, 55mm DC Ring, 45mm DC Ring and EA36.4mm to 31.7mm Adapter
- Weight: 980 g
- Usable for A81M, A105M II, SD81S, SD103S, SD115S or AX103S OTAs.

Mounting Blocks and Brackets



3796

Weight-shaft Camera Bracket

- Attachable to a counterweight bar having a diameter of 20mm or 25mm
- Used with a commercially available Ball head is recommended.
- With a 1/4" camera thread screw
- Weight: 302 g



3548

Tube-ring Accessory Plate

- With a 1/4" camera thread screw
- Attachable to a pair of Vixen tube rings to install a guide scope or photographic equipment on it.
- Size: 191mm x 48mm
- Weight: 276 g
- Not usable for A70Lf, A80Mf, R130Sf, VSD100F3.8, ED80Sf, ED81S II, SD81S, and FL55SS.



3562

Fine Adjustment Unit DX

- 1/4" camera thread screw pan head with tangent-screw slow motion controls
- Adjustable pan head within +/- 10 degrees vertically and horizontally
- With a 1/4" thread socket on the bottom
- Size: 87mm in height, 52mm x 40 mm (bottom)
- Weight: 340 g



3943

Camera-platform Adapter

- Attached to the tripod head of a Vixen tripod to install photographic equipment with a 1/4" thread socket on it.
- With a 1/4" camera thread screw
- Usable for a PORTA II tripod
- Weight: 380 g

Finders and Brackets



26502

XY Red Dot Finder II

- Rigid and durable Aluminum body
- Zero power aiming sight
- Adjustable dim red light
- With a 1/4" thread socket
- Supplied with a CR2032 battery for checking purpose
- Weight: 185 g



8616

7X50mm Finder with illuminated reticle

- Achromatic objective lens
- Kellner-type eyepiece
- 7.0 degrees real field of view
- With variable illuminated reticle
- Supplied with a CR2032 battery for checking purpose
- Weight: 365 g



2656

50mm Low-profile Finder Bracket (S)

- Attachable to Vixen's refractors and reflectors.
- Weight: 195 g
- Not usable for an A70Lf.



26552

50mm XY Finder Bracket II

- Attachable to Vixen's refractors and reflectors.
- A spring-loaded lock stud and two adjustment screws
- With a rubber O ring
- Weight: 170 g
- Not usable for an A70Lf.

Attachment Plate



2661

Dovetail Tube Plate

- Size: 190 x 43.5 x 20 mm (L x W x D)
- Weight: 160 g
- Usable with a Guide Mount XY.

Plate Holder



3810

Dovetail-plate Mounting Block

- Usable for a Dovetail-plate mounted optical tube
- Fits to the mount head of AXD2, AXJ, and SXP2 directly.
- Usable with an Accessory Plate DX or an AXD Large Accessory Plate.
- With 1/4" screw threaded holes and two M8 holes (span of 35mm).
- Weight: 220 g

Mounting Base Plate



2576

Accessory Plate DX

- Fits to the mount head of SX2, SXD2, SXP2, GP2, and GPD2 directly.
- Equipped with a Dovetail Slide Rail.
- Size: 330 x 120 x 12mm (L x W x D)
- Weight: 1275 g
- An optional Dovetail-plate Mounting Block is necessary when used for a VC or MVC OTA.

2654

Finder Bracket Shoe

- Weight: 96 g
- Usable for A80M, A81M, A105M, A105M II, NA140Sf, ED81S, ED103S, ED115S, and AX103S OTAs.

Dovetail Attachment Plates and Bars



2662

Universal Dovetail Plate

- Vixen's standard dovetail plate of 44mm in width.
- With 1/4" and 3/8" thread holes
- Size: 230 x 44 x 20 mm (L x W x D)
- Weight: 310 g
- Useful to balance an optical tube. Exchangeable in place of a Dovetail Tube Plate.



26631

Dovetail Slide Bar M

- Size: 211 x 50 x 21 mm (L x W x D)
- Weight: 270 g
- Useful to balance an optical tube. Exchangeable in place of a Dovetail Tube Plate.



25823

Dovetail Slide Bar PG

- Vixen's standard dovetail plate of 44mm in width with a sighting slot for Polar scope.
- With 4 x 1/4" screws, 2 x M6 threaded holes, and 4 x M6 threaded holes
- Size: 55 mm dia. x 260 mm long
- Weight: 390 g



35525

Dovetail Slide Bar DD

- Vixen's standard dovetail plate of 44mm in width designed for the use with a POLARIE.
- With 4 x 1/4" screws and 4 x 1/4" threaded holes
- Size: 182 x 44 x 20 mm (L x W x D)
- Weight: 200 g

Carry Cases and Bag



35655

Tube & Tripod Bag 100

- Usable for an optical tube or tripod less than 950mm long and less than 125mm wide.
- Available for A81M, A80Mf, A70Lf, SD103S, AX103S optical tube or others.



35661

Optical Tube Bag 200

- Available for R200SS, VC200L, or MVC200L optical tube.
- Size: 770 x 240 x 400mm (W x D x H)
- Material: Polyester
- Weight: 2.2 kg



3565

Parts Case

- Semitransparent plastic case used for storing eyepieces and adapters.
- Size: 305 x 80 x 215 mm



image

3880

VC200L Aluminum Case

- For VC200L or VMC200L optical tube
- Size: 670 x 270 x 335 mm (W x D x H)
- Weight: 6.2 kg



image

89226

SX Mount Case

- Lightweight but durable and shock absorbing polypropylene and an aluminum alloy frame.
- For SX2WL, SXD2WL, or SXP
- Counterweights and a SBT controller can be stored.
- Size: 505 x 220 x 390 mm (W x D x H)
- Weight: 3.3 kg



image

89225

SXP2 Mount Case

- Lightweight but durable and shock absorbing polypropylene and an aluminum alloy frame.
- For SXP2
- A SBT controller can be stored.
- Size: 490 x 225 x 475 mm (W x D x H)
- Weight: 4.1 kg



image

89224

AXJ Mount Case

- Lightweight but durable and shock absorbing polypropylene and an aluminum alloy frame.
- For AXJ
- A SBT controller can be stored.
- Size: 490 x 230 x 470 mm (W x D x H)
- Weight: 4.3 kg



image

89222

AXD Aluminum Case

- For AXD2
- A STAR BOOK TEN controller can be stored.
- Size: 540 x 240 x 450 mm (W x D x H)
- Weight: 6.7 kg



image

35658

AP Mount Case

- Available for AP, AP-SM or APZ mount.
- Size: 260 x 130 x 275 mm (W x D x H)
- Weight: 700 g



35659

Scope Carrier

- Useful for backpacking
- Waterproof material with soft texture.
- Size: 765 x 130 x 140 mm (L x W x D)
- Weight: 500 g



60142

Tripod Accessory Pouch

- The tripod accessory pouch fits perfectly to carry your POLARIE U star tracker. It can be attached to the tripod leg as an accessory holder to store equipment like a mobile battery and a remote shutter control while the POLARIE U is in action. It is made from neoprene, an efficient material for heat insulation and suitable for protection from shock. So, it enables you to bring your equipment safely anywhere. This pouch is useful for avoiding a voltage drop of mobile batteries on a cold night.
- Size: 120mm dia. x 130mm long
 - Weight: 105g



35654

Eyepiece Accessory Case

- Suggested accessories to store
- 4 to 6 SLV and/or NPL eyepieces (31.7mm)
 - 2 of LVW/ SLV eyepieces (50.8mm) and 1 or 2 SLV/ NPL eyepieces (31.7mm)
 - 1 of LVW/ SLV eyepieces (50.8mm) and 3 or 4 of SLV/ NPL eyepieces (31.7mm)
 - Size: 175mm x 255mm x 95mm
 - Weight: 345 g

Power Supply Cords, Battery Box and AC Adapter



8644

Cigarette-lighter Plug Cord - SX

- 2.1mm bore DC plug with center-plus polarity (5.5mm outer diameter)
- DC12V EIAJ RC5320A Class 4 plug
- Available for SX2WL, SXD2WL, SXP2, AXJ, AXD2, or others.

8643

Cigarette-lighter Plug Cord - Center-minus

- 2.1mm bore DC plug with center-minus polarity (5.5mm outer diameter)
- Available for Dew Heater 2, DD-2 controller, or others.

8619

Battery Box - Center-minus

- For 8x D-size batteries
- 2.1mm DC plug with center-minus polarity (5.5mm outer diameter)
- Available for Dew Heater 2, DD-2 controller, or others
- Size: 140 x 80 x 80 mm



2537

Polarity Conversion Cable - SX

- Converts a 5.5mm outer diameter plug with center-minus polarity to a EIAJ RC5320A Class 4 plug with center-plus polarity.
- This conversion cable is included in 3599 AC Adapter 12V 3A as a standard accessory.

3599

AC Adapter 12V 3A

- Input 100V to 240V
- Output 12V 3A
- Suitable for SX2WL, SXD2WL, SXP2, AXJ, AXD2, or DD-3 controller
- Complete with a conversion cable to change polarity
- Weight: 320 g

Heaters



37225

Dew Heater 2

- Water-resistant rubber heater
- 16.2 Ohm resistor (12V, 8.9W)
- 655mm long band heater with 2.2 m cord.
- 2.1mm jack with center-minus polarity
- With a battery box (for 8x S-size batteries)
- Operating duration: About 8 hours using Alkaline batteries at 20 degrees C ambient temperature.
- Weight: 120 g



35431

Camera Bag Inner Heater

- Partition heaters inside a tote bag.
- Protects cameras or other equipment from getting dew at night.
- Fabric heaters 5V 800mA 4W
- USB port with magnet contact
- Operating duration: About 3 to 5 hours by 5000mAh mobile battery.
- Size: 330 x 200 x 260 mm (W x D x H)
- Weight: 120 g



35418

Lens Heater 360 III

- Carbon-fiber heater, 20 x 250mm heating element, 5V 0.6A 3.0W
- 20cm curl cord (1m at fully stretched) with USB-Type C (Female) connector
- USB to USB Type-C adapter cable
- Operating duration: About 12 hours by 10000mAh mobile battery (At 20 degrees C ambient temperature).

Accessory for AXD



36918

AXD Large Accessory Plate

- Suitable for AXD2 or AXJ
- Available with Guide Mount XY and Dovetail-plate Mounting Block
- Size: 400 x 200 x 15 mm
- Weight: 2.9 kg

Guide Mount



35621

Guide Mount XY

- A low-profile mount for installing a guide scope (80mm or smaller aperture)
- 8mm dia. holes, and threaded holes for M6 screws
- Usable for Dovetail-plate Mounting Block, Accessory Plate DX, or AXD Large Accessory Plate
- Size: 100 x 79 x 160 mm
- Weight: 750 g

Miscellaneous Accessories



- Fits the focuser with metal focus knob.
- Fits the focuser with plastic focus knob shown below.
- X Does NOT fit the focuser with cylindrical plastic focus knob (a screw in its center).

37227

Dual Speed Focuser

- Two stage focusing with coarse and fine adjustments at a speed ratio of 1:7.
- Attachable to the focuser of the following models: A81M, A105M, A105M LL, ED81S II, ED103S, ED115S, SD81S, SD103S, SD115S, AX103S, FL55SS, VC200L, VMC200L, R200SS
- Not usable on VMC95L, VMC110L, VMC260L, VMC330L, ED80Sf, ED100Sf, A70Lf, A80Mf, R130Sf, VSD100F3.8
- Weight: 170 g



37222

Moon Glass ND 31.7mm

- Neutral density filter (ND4) for the bright moon
- 19mm effective aperture
- Fits into the thread of an eyepiece barrel 31.7mm
- Weight: 10 g



3732

Light Baffle Hood

- Blocks stray light incoming from the opening aperture.
- Available for VC200L, VMC200Ln or R200SS



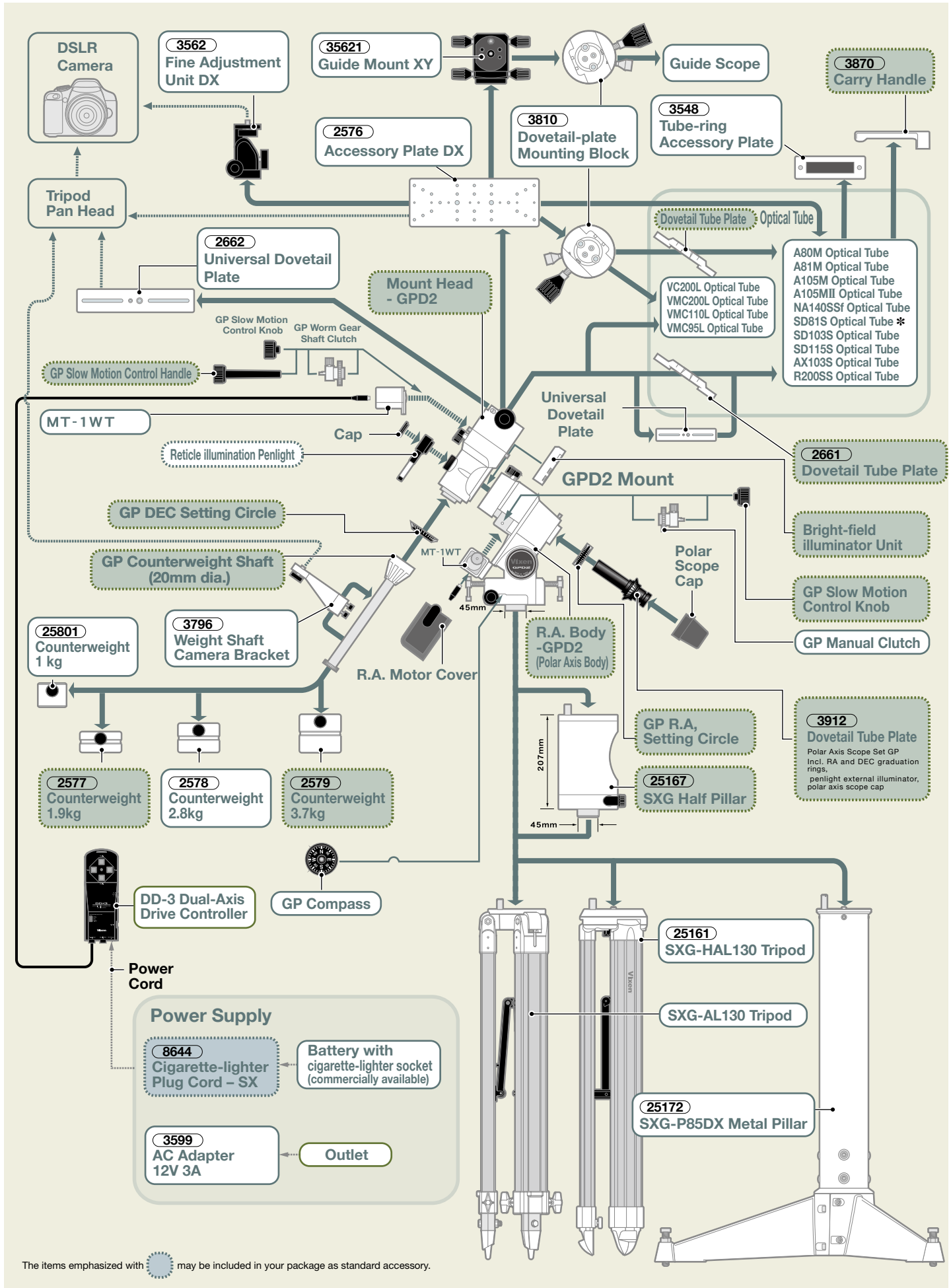
3870


Metal Carry Handle

- With M6 screws for installation.
- Not usable on A70Lf, A80Mf, R130Sf, ED80Sf, VSD100F3.8, NA140SSf, R200SS, VMC95L, VMC110L, VMC260L.

GPD2 (GP2) Mounts System Structure

The old GPD2 mount is shown here by way of an example. There may be some parts that are no longer available due to discontinuation.



The items emphasized with  may be included in your package as standard accessory.

Accessories

The Adaptation of Optional Accessories to Telescopes

S: Suppled ○: Suitable ○: Usable but excess magnification. ▲: Usable in a short time only due to no aperture reduction hole on the objective lens cap. ■: Usable but it stays unbalanced.

Page	Optional Parts and Accessories (Supplied or sold separately)	Eyepiece						Visual Observation Accessories						Solar Observation		Power Supply	Miscellaneous Accessories			Photographic Adapters		
		Eyepiece 31.7mm	Eyepiece 50.8mm	2X Barlow Lens 31.7mm T	Erect-Image Adapter 31.7mm (Discontinued)	45-degree Erect-Image Diagonal 31.7mm (Discontinued)	Prism Diagonal 31.7mm	Flip Mirror Diagonal 31.7mm	Sun Projection Screen Set A	Sun Projection Screen Set B	AC Adapter 12V 3A	Tube-ring Accessory Plate	Metal Carry Handle	Dual Speed Focuser	Eyepiece Projection Camera Adapter	Digital Camera Quick Bracket II (Discontinued)	Smartphone Camera Adapter					
P7	PORTA II A80Mf	○		○	○	○	○		○								○	○	○			
	PORTA II ED80Sf	○	③	○	○	⑥	⑥	S									○	○	○			
	PORTA II R130Sf	○		○	○												○	○	○			
P11	Mobile PORTA A70Lf	○		○	○	○	○										○	○	○			
P12	APZ-A80Mf	○		○	○	○	○		○								○	○	○			
P13	APZ-R130Sf	○		○	○												○	○	○			
P14	HF2-BT81S-A	①																	○			
	HF2-BT126SS-A	①																	○			
P18	AP-A80Mf	○		○	○	○	○		○								○	○	○			
	AP-A80Mf-SM	○		○	○	○	○		○								○	○	○			
	AP-ED80Sf	○	③	○	○	⑥	⑥	S									○	○	○			
	AP-ED80Sf-SM	○	③	○	○	⑥	⑥	S									○	○	○			
	AP-SD81SII	○	②	○	○	⑦	⑦	S		○		S	○	○	○	○	○	○	○			
	AP-SD81SII-SM	○	②	○	○	⑦	⑦	S		○		S	○	○	○	○	○	○	○			
	AP-R130Sf	○		○	○												○	○	○			
	AP-R130Sf-SM	○		○	○												○	○	○			
P21 P22	SX2WL-A80Mf	○		○	○	○	○		○		○						○	○	○			
	SX2WL-A105MII	○	②	○	○	⑦	⑦	S		○	○	S	○	○	○	○	○	○	○			
	SX2WL-SD81SII	○	②	○	○	⑦	⑦	S		○	○	S	○	○	○	○	○	○	○			
	SX2WL-SD103S	○	②	○	○	⑦	⑦	S		▲	○	S	○	○	○	○	○	○	○			
	SX2WL-VC200L	○	②	○	○	⑦	⑦	S			○	S	○	○	○	○	○	○	○			
	SX2WL-R200SS	○	④	○	○						○	○	○	○	○	○	○	○	○			
P25	SXD2WL-AX103S	○	⑤	○	○	⑦	⑦	S		▲	○	○	S	○	○	○	○	○	○			
	SXD2WL-SD103S	○	②	○	○	⑦	⑦	S		▲	○	○	S	○	○	○	○	○	○			
	SXD2WL-SD115S	○	②	○	○	⑦	⑦	S		▲	○	○	S	○	○	○	○	○	○			
	SXD2WL-VC200L	○	②	○	○	⑦	⑦	S			○		○	○	○	○	○	○	○			
	SXD2WL-R200SS	○	④	○	○						○	○	○	○	○	○	○	○	○			
			○	⑤	○	○	⑦	⑦	S		▲	○	○	S	○	○	○	○	○			
P29	SXP2-AX103S	○	⑤	○	○	⑦	⑦	S		▲	○	○	S	○	○	○	○	○	○			
	SXP2-SD103S	○	②	○	○	⑦	⑦	S		▲	○	○	S	○	○	○	○	○	○			
	SXP2-SD115S	○	②	○	○	⑦	⑦	S		▲	○	○	S	○	○	○	○	○	○			
	SXP2-VC200L	○	②	○	○	⑦	⑦	S			○		○	○	○	○	○	○	○			
	SXP2-R200SS	○	④	○	○						○	○	○	○	○	○	○	○	○			
P33	AXJ-AX103S	○	⑤	○	○	⑦	⑦	S		▲	○	○	S	○	○	○	○	○	○			
	AXJ-VMC260L(WT)	○	②	○	○	⑦	⑦	S			○		S	○	○	○	○	○				
P37	AXD2-AX103S	○	⑤	○	○	⑦	⑦	S		▲	○	○	S	○	○	○	○	○	○			
	AXD2-AX103S-P	○	⑤	○	○	⑦	⑦	S		▲	○	○	S	○	○	○	○	○	○			
	AXD2-VC260L(WT)	○	②	○	○	⑦	⑦	S			○		S	○	○	○	○	○	○			
	AXD2-VC260L(WT)-P	○	②	○	○	⑦	⑦	S			○		S	○	○	○	○	○	○			
P55	FL55SS Optical Tube	○	④	○	○	○	○	④	■								○	⑩	⑨	⑨		

① Eyepieces with high magnification are not usable.

② VC extension tube is needed.

③ EA42mmT to 50.8mm is needed. Vignetting generates slightly.

④ EA60mm to 50.8mm is needed.

⑤ VC extension tube and EA60mm to 50.8mm are needed.

⑥ EA50.8mm to 43mm, 45mm DC ring, and EA36.4mm to 31.7mm are needed.

⑦ 64mm DC ring, 55mm DC ring, 45mm DC ring, and EA36.4mm to 31.7mm are needed.

⑧ EA42mmT to 31.7mmSX is needed.

⑨ 31.7mm eyepieces are optional and are required separately.

⑩ 60mm ring with T-thread adapter and EA42mmT to 31.7mm SX are needed.□



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Catalog No. 2023