



Vixen®

*Astronomical
Telescopes*



Vixen's corporate philosophy is to bring emotional satisfaction to users of our products.

Everyone has heard that a team of reindeer pulls Santa Claus' sleigh full of toys on Christmas Eve night. In the 1822 poem composed by American scholar and poet Mr. Clement Clark Moore, Santa calls the reindeer by name and one of them is "Vixen". The Vixen company name derives from the joyous journey of this reindeer and implies the desire of our company to bring happiness to users of Vixen products. Vixen Co., Ltd., a comprehensive manufacturer of optical instruments such as astronomical telescopes, binoculars and microscopes, was founded in 1949. For more than half a century Vixen has succeeded in developing and supplying inspired products emblematic of Japanese manufacturing quality. Vixen introduced the world's first go-to astronomical telescopes for the consumer. Furthermore, the technology acquired from development of new astronomical telescopes is applied to the development of new binoculars and microscopes. Vixen has not only created unique, quality products, but also affords users new ideas on how to make optical instruments more enjoyable and exciting. For instance, Vixen offers a system to create photographic images through astronomical telescopes and microscopes with a digital camera. Vixen attaches the greatest importance to flexible ideas and continues the goal of technological advancement in pursuit of bringing happiness and satisfaction to the many users of Vixen products.

Vixen leads in technology with new ideas and adherence to performance and quality.

DESIGN



Product appearance is influential in the decision making process of customers engaged in all optical hobbies. Design engineers, manufacturing engineers, marketing staff and aesthetics designers work together to seamlessly integrate style with product function. This has enabled Vixen to launch many innovative products. The Japan Industrial Design Promotion Organization (JIDPO) appreciates original products, not obsessed with conforming to the conventional, with a fresh appearance matched by functionality. This is the only organization in Japan involved in the comprehensive promotion of design activities. The "Good Design Award" has been awarded by JIDPO to the following Vixen products so far.

- Field Scope GEOMA 65 (1994)
- Magnifiers AR65, AR75 and AR90 (1999)
- Binoculars FORESTA 8x42 BWCF and 10x42 BWCF (2001)
- Astronomical Telescope Equatorial Mount SPHINX (2003)
- Field Scope GEOMA PRO 67A (2003)

TECHNOLOGY

Computer Controlled GO-TO Telescope System

Computer control devices to automatically located objects in a sky full of stars were once only found in professional observatory telescopes. In 1984, Vixen was the first to successfully produce and sell a computer controlled GO-TO telescope system to the general consumer. Proud of the ground-breaking GO-TO telescope technology, Vixen released a more advanced system in 2003. This SPHINX system is an equatorial mount with integrated celestial navigation.

The STAR BOOK controller for the SPHINX features a star chart display. This is a great advancement over conventional character display devices.



Aluminum Vacuum Evaporation System

Vixen has created a unique aluminum vacuum evaporation system to produce extreme-precision mirror surfaces. More accurate than the error-prone process of grinding material to form a mirror surface, Vixen's revolutionary system works by controlled layering of aluminum film. The primary mirror of the long-popular 200mm Newtonian R200SS and the unique sixth-order aspheric Cassegrain primary mirror of the VC200L are produced with this aluminum vacuum evaporation system.

Dovetail-Plate Attachment System

Vixen was first to develop a dovetail-plate system for quick and easy mating of telescopes and mounts. This system was introduced on the GP equatorial mounts in 1992. While this simplified the attachment and removal of optical tubes, telescopes stay firmly positioned on the mount. This system has become an accepted world standard for telescope mounting and has been employed by many manufacturers.

The dovetail-plate attachment system allows detachment of an optical tube from the mount head easily and quickly. This system has been employed by many telescope manufacturers for attachment of optical tubes or finder scopes.



How to Select an Astronomical Telescope

TYPES OF MOUNTS

There are two types of telescope mounts: Altazimuth and Equatorial.

Altazimuth Mount

The altazimuth mount has simple vertical and horizontal motion controls designed to easily point a telescope to the object you wish to view.



- Can be assembled and handled easily due to its simple structure.
- Lightweight and portable.
- Can also be used to mount a terrestrial telescope.
- Not recommended for a long observation at powers higher than 100x.
- Not designed for long exposure astrophotography.

Equatorial Mount

Features the ability to track an object in accordance with the diurnal motion (rotation) of the earth.



- Allows tracking of an object over an extended period.
- Suitable for long observation at high powers or for astrophotography.
- A mount with various functions such as automatic object search and automatic tracking is also available.
- For beginning observers, usage of equatorial mounts is not as intuitive as that of altazimuth mounts. Beginners should read the manual thoroughly.
- Heavier than altazimuth mount.

Motor Drive

The motor drive lets you drive a telescope electrically.

- Auto-tracking mounts (GP2 mount + DD2, GPD2 mount + DD2) continue to track an object once it captures the object, which makes them a perfect model for extended astronomical observation or astrophotography.
- Go-To mounts (SX, SXD, NEW ATLUX, SKYPOD, GP2 + STRAR BOOK-S, GPD2 + STAR BOOK-S) locate and track target celestial objects automatically with the intuitive star charts screen displayed on the Go-To controller.



Explanation of Terms

Magnification

The magnification shows how much a telescope can magnify your viewing object. It is the size of the object you could view as if you come close to the object by the given magnification. Magnification = focal length of telescope ÷ focal length of eyepiece

Effective Diameter of objective lens or primary mirror

It is the effective size of the objective lens or primary mirror in diameter for collecting light. The larger the telescope's lens or mirror, the more light it collects. Also, the larger the diameter, the more detail it will resolve.

Focal Length

It is the length of the light path from the lens or primary mirror to the point of focus. The longer the focal length, the higher the magnification the telescope produces with any given eyepiece.

Focal Ratio

The number obtained by dividing the focal length by the effective diameter of the telescope's lens or mirror. With any given eyepiece, telescopes with a smaller number focal ratio offer a wider field of view. This allows for shorter exposure times for astrophotography.

Resolving Power

It shows how well a telescope resolves fine detail and it is expressed in arc seconds. The smaller the better, but actually it will be influenced by the atmospheric turbulence.


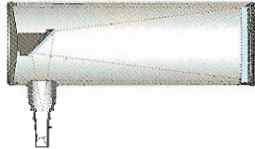


Magnitude Limit

It shows the faintest stellar magnitude that can be viewed through the given instrument.

Light Gathering Power

It shows how much light the telescope's lens or primary mirror collect light as compared to naked eyes.



Refracting Type	Reflecting Type	Catadioptric Type	
<p>Light is collected through an object lens.</p>  <ul style="list-style-type: none"> ⊙ Constantly stable field of view, suitable for observation of any astronomical object. ⊙ Features easy handling, storage and maintenance. △ Relatively expensive among other types of optical tubes with the same aperture size. △ Heavier than the other types of optical tubes due to the multiple lenses that are used. 	<p>Light is collected with a concave mirror (primary object mirror) to collect light.</p>  <ul style="list-style-type: none"> ⊙ Sharp central images, no chromatic aberration (no color is seen around images). ○ An optical tube even with large aperture is moderately priced. △ A large difference in temperature between outside and the tube could create air turbulence. The tube temperature must be adjusted to outside temperature before making any critical observation. △ Is not usable for observation of the Sun. 	<p>Advantages of refracting type and reflecting type are combined.</p> <p>■ VMC (Vixen Original Maksutov Cassegrain)</p>  <ul style="list-style-type: none"> ⊙ Both mirror surfaces in the optical system are spherical. This simplifies the production of the high-precision mirrors employed here to achieve an excellent cost-for-performance ratio. ⊙ The very compact and light weight design makes it convenient to transport to the observation site. ○ Chromatic aberration, coma aberration, spherical aberration, and field curvature are all well-corrected. △ A difference in temperature between outside and inside the tube could create air turbulence. The tube temperature should be adjusted to outside temperature before making any critical observation. △ Not applicable for observation of the Sun. 	<p>Advantages of refracting type and reflecting type are combined.</p> <p>■ VISAC (Vixen 6th-order Aspherical Catadioptric)</p>  <ul style="list-style-type: none"> ⊙ Chromatic aberration, coma aberration, spherical aberration, and field curvature are all corrected accurately. ○ Compact and convenient for carrying and observation. △ A difference in temperature between outside and inside the tube could create air turbulence. The tube temperature should be adjusted to outside temperature before making any critical observation. △ Not applicable for observation of the Sun.

Lens (Refractors)

There are two types of lens for the refractor optical tube: Achromatic lens and Apochromatic lens (ED lens).

- Achromatic lens is used for general refracting types of optical tubes and prevents chromatic aberration.
- Apochromatic lens makes use of ED glass (Extra-low Dispersion glass) which corrects chromatic aberration with a high degree of accuracy. The Apochromatic lens is suitable for serious astronomical photography.



Astronomical Photography

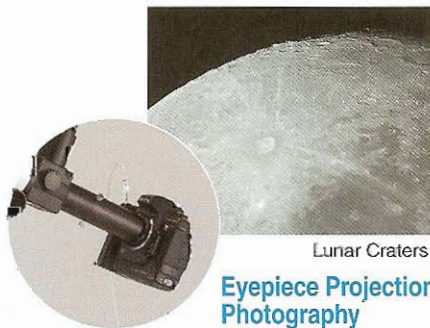
Photos of celestial objects can be taken with the camera connected to the telescope.



Orion Nebula

Prime Focus Photography

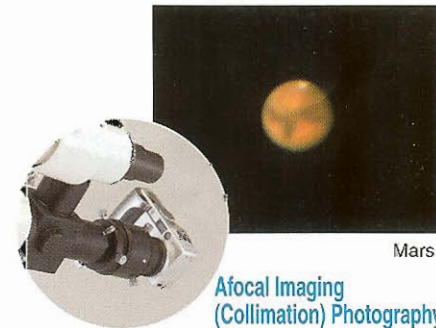
Prime focus photography technique uses a single lens reflex camera body or a CCD camera attached with adapters to an optical tube. Neither an eyepiece nor a camera lens is used. Though the object size is smaller than the eyepiece projection, the objects appear to be sharp. This method is suitable for photographing the entire moon, nebulae, or star clusters.



Lunar Craters

Eyepiece Projection Photography

Eyepiece projection photography uses a method which takes images of a magnified object through an eyepiece inserted between the optical tube and a single lens reflex camera body or CCD camera. The image taken with this technique appears larger than that taken with prime focus photography. It is also suitable for photographing an enlarged view of the moon or planets.



Mars

Afocal Imaging (Collimation) Photography

A method which uses direct photographing of an object magnified by an eyepiece. This is suitable for photographing an enlarged view of the moon or planets.

MAGNIFICATION AND APERTURE

Magnification and aperture of an astronomical telescope, along with the considerable effect of sky conditions, determine the image details seen through an eyepiece. The following tables give examples of what may be viewed for the given magnification and aperture.

	■ Moon The easiest object to observe; Suitable for beginners. It fills the whole field of view with 50x magnification.	Aperture	Low Powers (30x - 70x)	Middle Powers (70x - 140x)	High Powers (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 power to 200x or 250x.	Aperture	Low Powers (30x - 70x)	Middle Powers (70x - 140x)	High Powers (over 140x)
		~60mm	Saturn can be seen small in the field of view.	The 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.	Power 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 T-Ring can be observed distinctly.
	■ Jupiter At about 80x power a few cloud bands can be seen. As Jupiter is a bright object, it is possible to make observation even at the high power of about 300x.	Aperture	Low Powers (30x - 70x)	Middle Powers (70x - 140x)	High Powers (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 bands.	High powers can be used only when seeing is good
		80mm	same as above	Rough structure of cloud bands can be detected.	When making a sketch, a power of more than 150x is recommended.
		100mm	same as above	Detailed structure of cloud bands can be detected.	When making a sketch, a power of more than 200x is recommended.
		150mm~	Too bright to observe.	Suitable for observing the four largest satellites.	Detailed structure and changing of cloud bands can be observed.
	■ Venus & Mercury Suitable objects for beginners with telescope. These planets are observable only in the west at dusk or in the east just before dawn. (Photo on the left by Vixen)	Aperture	Low Powers (30x - 70x)	Middle Powers (70x - 140x)	High Powers (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.	Venus is easy to view when seeing is good. For Mercury, a lower power is recommended.
		80mm	same as above	same as above	Easily seen when they are at a high altitude.
		100mm	same as above	Should be used when seeing is not good.	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 the powers of 150x or more.	Aperture	Low Powers (30x - 70x)	Middle Powers (70x - 140x)	High Powers (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.	Easily seen in a good sky condition.
		80mm	same as above	Polar ice cap and a few contrasting surface patterns are visible.	Powers 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 powers greater 200x.
	■ Nebulae and Star Clusters Most of these objects are suitable with powers less than 50x. For Andromeda Nebula and Orion Nebulae, powers of 20x to 30x are enough for viewing. Larger aperture causes a brighter image. (Andromeda Nebula pictured left)				
	■ Multiple Stars, Various Stars, and Comets Many other celestial objects can be seen with a telescope by a novice observer. A comet is too faint to see when it is far away from the Sun. It becomes an expanded object like a nebula as it approaches the Sun. (Comet Hyakutake pictured left)				
	■ Sun Never look directly at the sun with a telescope. For observation of the sun, use a sun projection screen. The sun projection screen can be used with a refractor, but it cannot be used with reflecting or catadioptric type telescopes.				

● Magnification is not the only factor!

Telescope magnification can be increased to any high power theoretically, however, it does not necessarily make the image clearer. It is essential to view at an appropriate power. An immoderately high power causes the image to lose clarity.

Incorrect: High magnification=High performance

The maximum appropriate power is 2.5 times the objective's "effective diameter" in millimeters. For example, the maximum appropriate power of a telescope with the effective diameter of 60mm is 150(=2.5X60). A power higher than this value makes the image blurred and indistinct.



Image at an appropriate power



Image at an excessively high power

● Results of different effective diameter of objective lens (or primary mirror) on image quality

The larger the effective diameter, the higher the light gathering power and resolving power of the telescope. Therefore, a telescope with large aperture yields a bright and high contrast image. It is perfect for observation of faint nebulas or star clusters.

The larger the diameter of the objective lens or primary mirror, the better the optical performance of the telescope as shown below in the pictures. The image quality is also affected by optical performance of the objective lens, eyepiece lens or primary mirror.



Image seen with a large aperture at a high power



Image seen with a small aperture at a high power

How to Select an Astronomical Telescope and Mount

Style

Enjoy night-sky observation casually

Start astronomy as a hobby

For serious

Lightweight and easy-to-handle telescope for beginners. It is also recommended as a gift for children. He/she can be exposed to the mystery of the universe and view lunar craters and Saturn's rings with the supplied eyepiece.

Telescope Mount for beginners which has been highly popular since its release in 2005. The excellent functionality and very stable tripod let you enjoy a stable and comfortable observation of night sky. The optical tube can also be used with an upgraded mount.

Mount that works with go-to system. The telescope will automatically search for and track the target celestial object. The controller cable fit neatly in the mount body. A new-type stylish and compact telescope.

Standard type equatorial mount. A plenty of optional accessories like motors and polar axis scope will allow you to customize and enjoy visual observation and astro-photography according to your own astronomical interests.

Go-to telescope mount equipped with a celestial navigation system. The LCD screen that displays stellar map, planet commentary, mythology (Japanese language only), and other useful information for enjoying a starry night sky.

Model

STAR PAL

PORTA

SKYPOD

GP2

SX



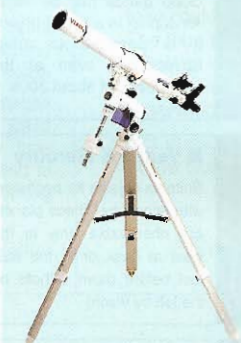
STAR PAL-50L



PORTA A80Mf



SKYPOD VMC110L



GP2-A80M (N)



SXC-A80SS



STAR PAL-60L



PORTA R130Sf



SKYPOD R130Sf



GP2-R200SS (N)



SXW-VC200L

Optical Tube	Optical system	Refracting	Refracting, reflecting, catadioptric	Refracting, reflecting, catadioptric	Refracting, reflecting, catadioptric	Refracting, reflecting, catadioptric
	Aperture	Small aperture	Small/Middle aperture	Small/Middle aperture	Small/Middle aperture	Middle/large aperture
	Lens (Refracting)	Achromatic	Achromatic	Achromatic, apochromatic	Achromatic, apochromatic	Achromatic, apochromatic
Mount	Type	Altazimuth	Altazimuth	Altazimuth	Equatorial	Equatorial
	Motor drive	Not equipped	Not equipped	Standard	Standard/Option	Standard/Option

Photography and long-time observation

High-performance equatorial mount suitable for serious astronomical observation and photography. It provides one level higher performance and sturdiness and is recommended for those who wish to enjoy astronomy for a long time.	Upgraded type of SX equatorial mount. It is a portable equatorial mount with celestial navigation system that boasts outstanding preciseness and superior sturdiness. Performance makes it perfect for long observing sessions or astro-photography.	Large equatorial mount which can support an optical tube with large aperture. Works as a portable equatorial mount if placed on a tripod or as a permanent telescope if placed on a pillar in an observation dome or facility.
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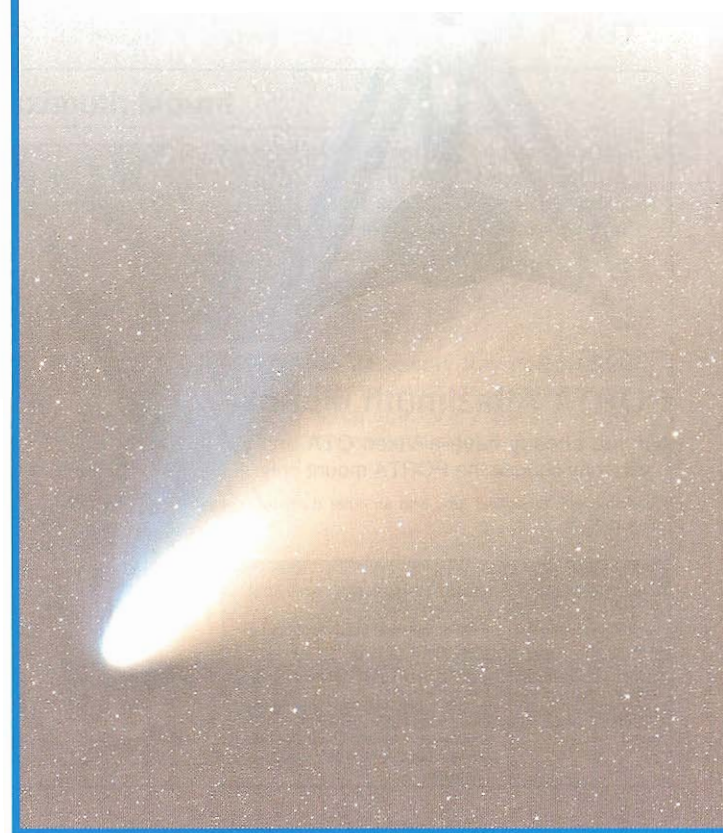
GPD2	SXD	NEW ATLUX
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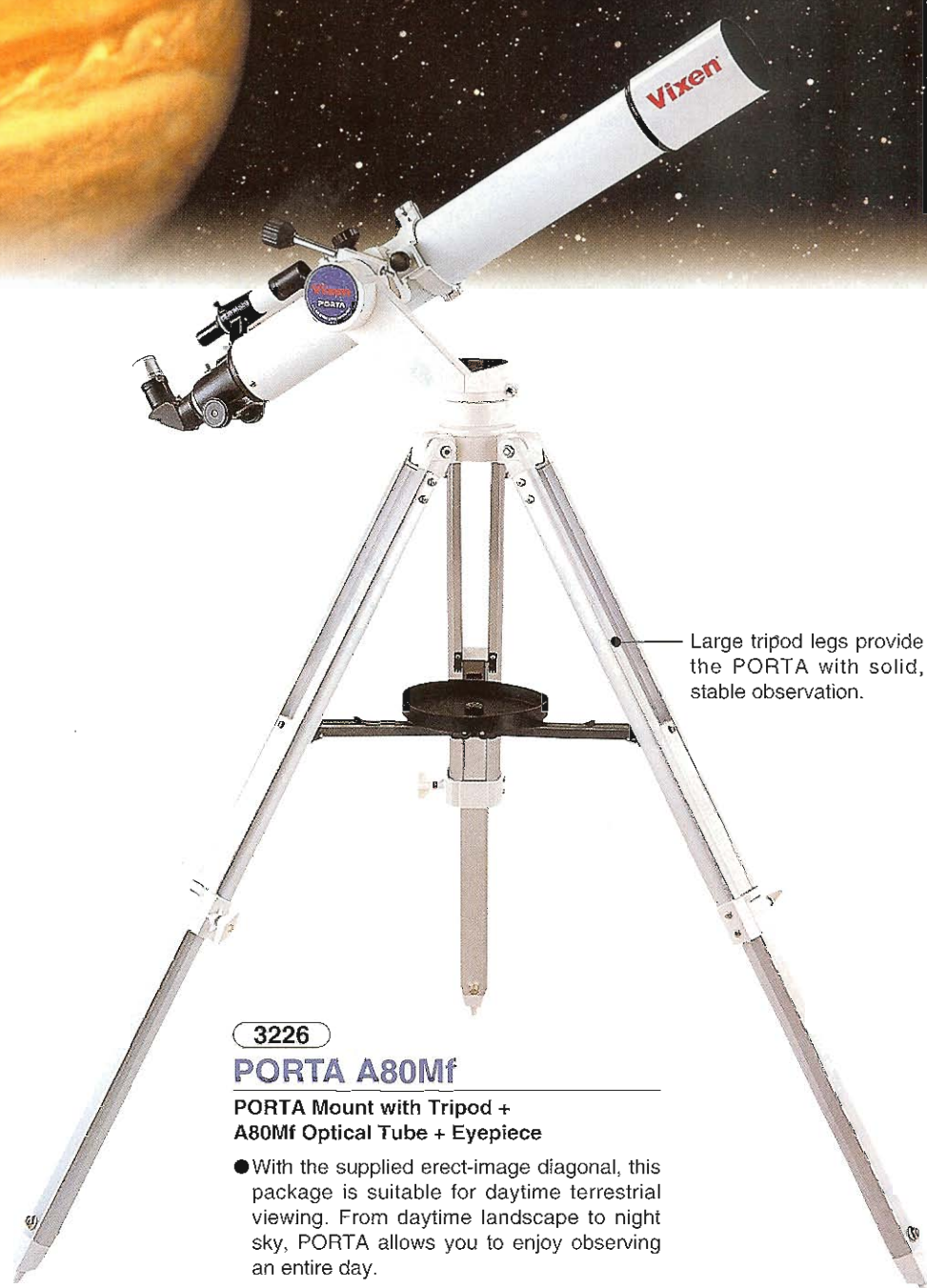
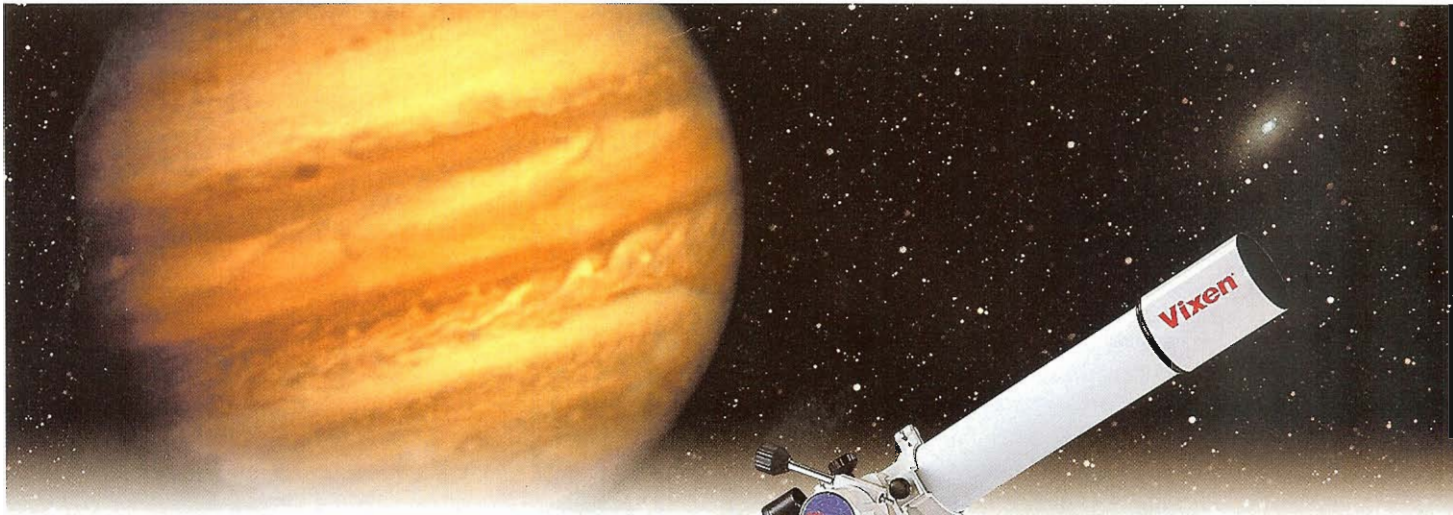
Refracting, reflecting, catadioptric	Refracting, reflecting, catadioptric	Refracting, catadioptric
Middle/large aperture	Middle/large aperture	Middle/large aperture
Achromatic, apochromatic	Achromatic, apochromatic	Achromatic, apochromatic
Equatorial	Equatorial	Equatorial
Standard/Option	Standard	Standard

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PORTA PORTA Series



3992
PORTA Altazimuth Mount

● If you already have a Vixen OTA unit (*), you may choose the PORTA mount only.

*Available with an optical tube with an outer diameter less than 160mm.

Specifications	PORTA Altazimuth Mount
Mount	Altazimuth mount
Vertical and horizontal slow motion	120-tooth wheel gears whole-circle movement
Optical tube setting up	Dovetail-plate attachment system
Maximum loading weight	About 5 kg (11 lb)
Weight	5.5 kg (12.1 lb) including tripod.
Tripod	Aluminum 2-section adjustable tripod, legs adjustable from 90cm to 130cm in length

3226
PORTA A80Mf

PORTA Mount with Tripod + A80Mf Optical Tube + Eyepiece

● With the supplied erect-image diagonal, this package is suitable for daytime terrestrial viewing. From daytime landscape to night sky, PORTA allows you to enjoy observing an entire day.

Model	PORTA A80Mf
Effective aperture	80mm
Focal length (Focal ratio)	910mm (F11.4)
Resolving power, limiting magnitude	1.45 arc sec., 11.3
Light gathering power	131x
Tube size & weight	(OD) 90mm x (L) 860mm, 2.5 kg (5.5 lb)
Finder scope	6x30mm, Field of view 7 degrees
Adapter thread / visual back	42mm for T-ring / 31.7mm push-fit
Eyepiece (Magnification)	PL20 (46x), PL6.3 (144x)
Other accessory	31.7mm Erect-image diagonal
Total weight (w/o eyepiece)	8.8 kg (19.4 lb)

A New Style Altazimuth Mount built for Simplicity and Versatility

- The PORTA allows you to swing the telescope in the vertical and horizontal directions while maintaining position with simple friction. Simple friction holds the axes in the final position.
- The PORTA comes equipped with two fine adjustment handles for whole-circle slow motion in both directions. It is useful for fine motion used in searching and tracking of celestial objects.
- The "world-standard" dovetail attachment system on PORTA originated with Vixen. This allows the PORTA to accept various dovetail mounted optical tubes.

Photograph the moon with PORTA!



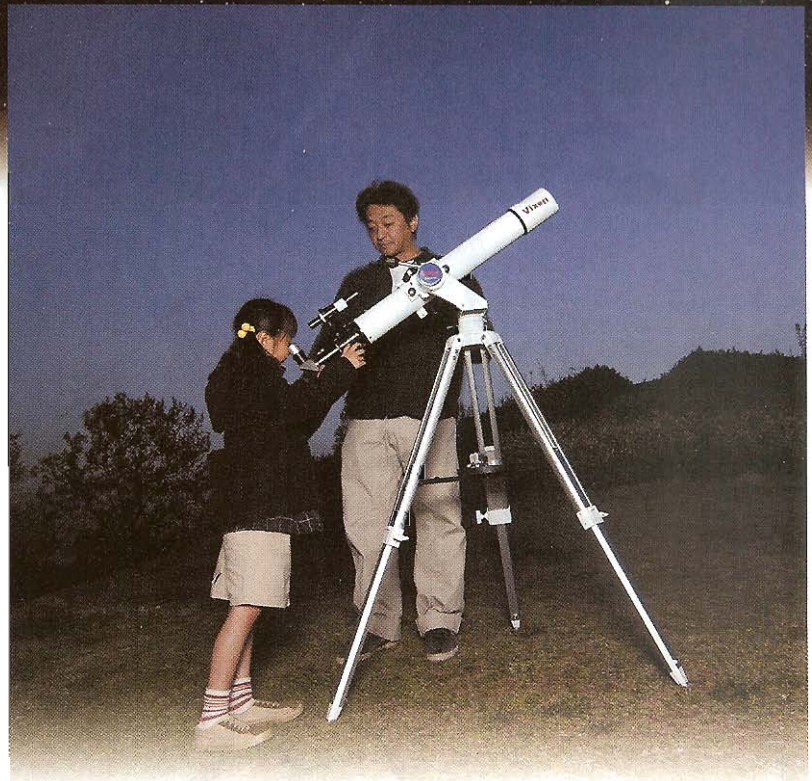
Lunar Craters (Taken by a compact digital camera)

Equipment

Telescope / PORTA A70Lf

Camera / Nikon COOLPIX 4300

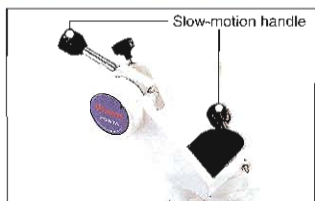
Optional Parts / LV25mm eyepiece and Universal Digital Camera Adapter



Features of PORTA Altazimuth Mount

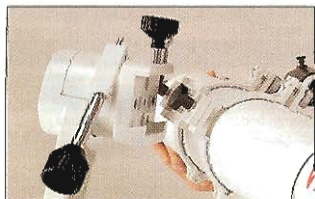


Optical tube can be moved freely by hand and the friction holds its position anywhere you stop it. It allows you to manually point the telescope at target celestial objects you wish to view.

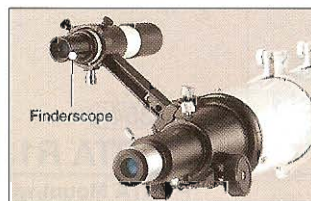


Slow-motion handle

Unlike a sectional movement, where the range of slow motion control is restricted, the whole-circle slow motion movement of the PORTA provides smooth telescope operation at every pointing angle. Handle positions of both altitude and azimuth 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.

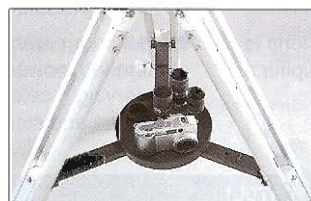


With Vixen's renowned dovetail-plate system, many optical tubes, up to 160mm in outer diameter, can easily be swapped on and off the mount. The Vixen optical tubes packaged with the PORTA are compatible with the SPHINX, SKYPOD, GPD2 and GP2 mounts for future upgrades.



Finder scope

All the optical tubes packaged with the PORTA come with a finder scope or a red dot finder. This makes it much easier to find a target celestial object.



An accessory tray holds small pieces such as a camera or eyepiece. Very useful when observing at night.



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

PORTA PORTA Series



Introducing the fun of astronomy. Vixen's new f series telescopes are the result of our desire to make astronomical gear fun and easy to operate for beginners and experienced hobbyists.



3225
PORTA A70Lf

PORTA Mount with Tripod + A70Lf Optical Tube + Eyepiece

- A refractor with a 70mm achromatic lens is good for observing lunar craters, Jupiter's surface and other celestial objects.

3354
PORTA R130Sf

PORTA Mount with Tripod + R130Sf Optical Tube + Eyepiece

- A 130mm parabolic mirror with great light gathering power is the most suitable for observing celestial objects such as nebulae and star clusters.

33531
PORTA ED80Sf

PORTA Mount with Tripod + ED80Sf Optical Tube + Eyepiece

- The ED (extra-low dispersion glass) lens corrects the chromatic aberration at an extremely high level and delivers a high contrast image. Complete with Aluminum case for ED80Sf optical tube.

Model	PORTA A70Lf	PORTA R130Sf	PORTA ED80Sf
Effective aperture	70mm	130mm	80mm
Focal length (Focal ratio)	900mm (F12.9)	650mm (F5.0)	600mm (F7.5)
Resolving power, limiting magnitude	1.66 arc sec., 11.0	0.89 arc sec., 12.3	1.45 arc sec., 11.3
Light gathering power	100x	345x	131x
Tube size & weight	(OD) 76mm x (L) 865mm, 1.9 kg (4.2 lb)	(OD) 160mm x (L) 672mm, 4.0 kg (8.8 lb)	(OD) 100mm x (L) 570mm, 3.4 kg (7.5 lb)
Finder scope	6x24mm finder, Field of view 5 degrees	6x30mm finder, Field of view 7 degrees	9x50mm finder, Field of view 4.8 degrees
Adapter thread / visual back	42mm for T-ring / 31.7mm push-fit		42mm for T-ring / 50.8mm, 31.7mm push-fit
Eyepiece (Magnification)	PL20 (45x), PL6.3 (143x)	PL20 (33x), PL6.3 (103x)	NPL20 (30x), NPL6 (100x)
Other accessory	31.7mm Erect-image diagonal	—	31.7mm Flip mirror diagonal, Aluminum case
Total weight (w/o eyepiece)	8.0 kg (17.6 lb)	10.8 kg (23.8 lb)	10.3 kg (22.7 lb)



33530
PORTA VMC110L

PORTA Mount with Tripod + VMC110L Optical Tube + Eyepiece

- Compact optical tube with a 110mm aperture is convenient for a remote observing site.

3227
PORTA A80M

PORTA Mount with Tripod + A80M Optical Tube + Eyepiece

- A high performance achromatic refractor equipped with quality rack-and-pinion focuser.

Model	PORTA VMC110L	PORTA A80M
Effective aperture	110mm	80mm
Focal length (Focal ratio)	1,035mm (F9.4)	910mm (F11.4)
Resolving power, limiting magnitude	1.05 arc sec., 12.0	1.45 arc sec., 11.3
Light gathering power	247x	131x
Tube size & weight	(OD) 119mm x (L) 360mm, 2.1 kg (4.6 lb)	(OD) 90mm x (L) 915mm, 2.5 kg (5.5 lb)
Finder scope	Red dot finder	
Adapter thread / visual back	42mm for T-ring / 31.7mm push-fit	60mm, 42mm for T-ring / 50.8mm, 31.7mm push-fit
Eyepiece (Magnification)	NPL20 (52x), NPL6 (173x)	NPL20 (46x), NPL6 (152x)
Other accessory	—	31.7mm Flip mirror diagonal
Total weight (w/o eyepiece)	7.8 kg (17.2 lb)	9.0 kg (19.8 lb)

Optional Parts

Optional Parts expand your enjoyment in using the telescope; please take a look at page 42 – page 48.



3942
Camera Tripod Adapter for PORTA

The adapter is for PORTA altazimuth mount on a camera tripod. (1/4 inch thread)



8800
Flexible Handle 300mm

The long flexible slow-motion handle that enables you to operate the PORTA comfortably. It is also recommended for children who may have a difficulty reaching standard PORTA handles.



38011
PORTA Multi-plate

The plate to hold a field scope or a large binocular on the PORTA mount.

SKYPOD SKYPOD Series

Have fun with the latest astronomical navigation system!

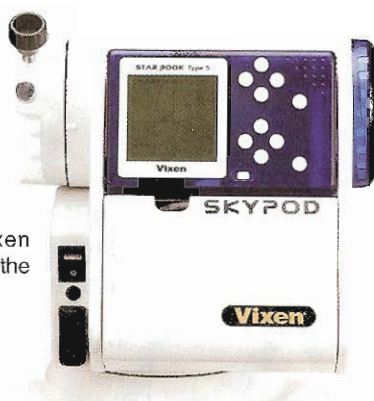
- Standard equipped with an advanced Go-To system with screen navigation.
- Stylish and compact design. The controller cable can be stored inside the mount body.
- The "world-standard" dovetail attachment system on SKYPOD originated with Vixen. This allows the SKYPOD to accept various dovetail mounted optical tubes.



27522 SKYPOD Altazimuth Mount

- If you already have a Vixen OTA unit, you may choose the SKYPOD mount only.

*Shown with tabletop tripod sold separately.



Tripods for SKYPOD

25120 Aluminum Tripod AL130-SP

- Legs: Adjustable from 90cm to 130cm in length
- Weight: 3.7 kg (8.15 lb)

2511 Tabletop Tripod

- Breadth: 37cm
- Weight: 1.4 kg (3.08 lb)

Specifications	SKYPOD Altazimuth Mount
Mount	Altazimuth mount
Vertical and horizontal slow motion	70-toothwheel gears whole-circle movement, Motor driven only and no manual operation
Controller	STAR BOOK-S
Power source	DC 12 volts
Maximum loading weight	About 5 kg (11 lb)
Size (Body)	19cm (H) x 21cm (W) x 20cm (L)
Weight	2.8 kg (6.17 lb), without batteries and without counterweight
Counterweight	Optional

25005 SKYPOD VMC110L

SKYPOD Mount + VMC110L Optical Tube + Tabletop Tripod + Eyepiece

- Compact optical tube with a 110mm aperture let you go anywhere and the easily operated STAR BOOK-S.



New VMC110L optical tube employs newly designed curvature spider, which reduces the effect of light diffraction viewing.

Model	SKYPOD VMC110L
Effective aperture	110mm
Focal length (Focal ratio)	1,035mm (F9.4)
Resolving power, limiting magnitude	1.05 arc sec., 12.0
Light gathering power	247x
Tube size & weight	(OD) 119mm x (L) 360mm, 2.1 kg (4.6 lb)
Finder scope	Red dot finder
Adapter thread / visual back	42mm for T-ring / 31.7mm push-fit
Eyepiece (Magnification)	NPL25 (41x)
Tripod	Tabletop type
Total weight (w/o eyepiece)	6.5 kg (14.3 lb)

The counterweight 1.0 kg (2.2 lb) is not included in the SKYPOD VMC110L package.

Features of SKYPOD

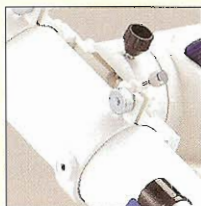
● Star Chart Go-To and Tracking

With star charts on the screen of the STRA BOOK-S you can slew the telescope automatically to your target celestial object and tracking begins as soon as it is centered in your telescope's field of view.

● Dovetail-Plate Attachment

The world standard, "dovetail-plate system" originally developed by Vixen makes optical tube swapping easy.

*Optical tube with dovetail plate and weight up to 5 kg (11 lb). For optical tube over 2.5 kg (5.5 lb), the counterweight is needed.



● Self-Contained Batteries + STAR BOOK-S Storage

Motors are built in and the controller with its connection cable can be put away in the mount for storage. You can operate the STAR BOOK-S while docked or holding it in your hand.



Features of STAR BOOK-S for SKYPOD

1 LCD Screen

2.6 inch monochrome screen (160x160 pixels)

2 Intuitive Operations

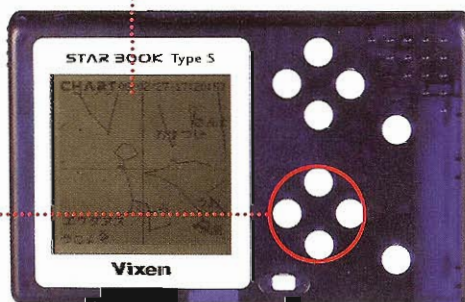
Operation is easy, like on a "Game boy". The function of each button will be displayed on the screen.

3 Mount Motion linked to Star Chart

The star chart displayed on the screen is linked to the telescope's motor speed. Zooming in the star chart will slow the motor speed for fine adjustments.

4 Built in Speaker

Confirmation of Go-To and other operations are by signal tones.



5 LAN Connection Port

The STAR BOOK-S is readily upgradeable to the latest firmware version through a PC. For the connection, a crossover LAN cable is required.

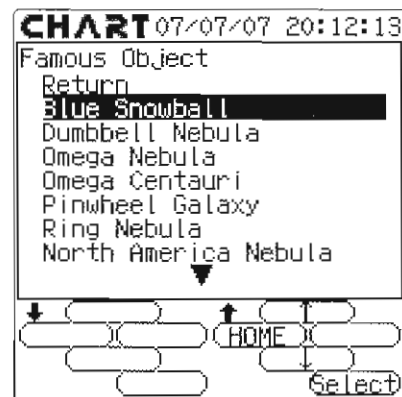
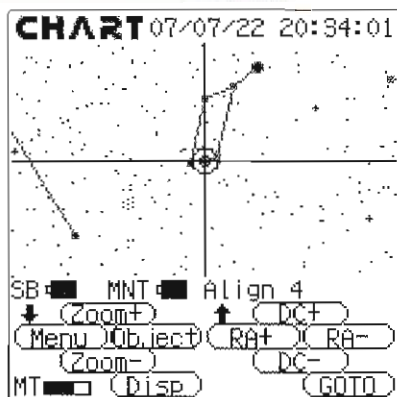
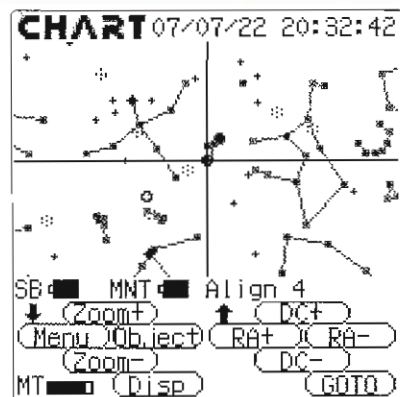
6 Usable as a Stand-alone Unit

It works as a stand-alone 'night sky' simulator or a planisphere for observing planning. It uses four (4) AA batteries.

7 Multi-languages

Interaction with STAR BOOK-S is available in English, German, French, Italian, Spanish and Japanese languages.

Navigation with STAR BOOK-S



Search for Objects by Star Chart

The STAR BOOK-S stores a total of over 22,000 celestial objects (There are 22,725 objects including 110 Messier objects and 4,980 NGC/IC objects) in its memory.

The STAR BOOK-S will display objects which are in the sky for the current time and location. To begin with, choose an interesting object on the screen. Your telescope will start slewing to your target object automatically by hitting a Go-To button.

Search by a List of Well-known Objects

The STAR BOOK-S has a list of well-known deep sky objects in its database, including Andromeda Galaxy, Hyades and Pleiades (Subaru in Japanese). It is very useful for a quick search by name.

SKYPOD SKYPOD Series



25001

SKYPOD A70Lf

SKYPOD Mount + A70Lf Optical Tube + Tripod + Eyepiece

- For those who want to start exploring the starry sky with a Go-To system.

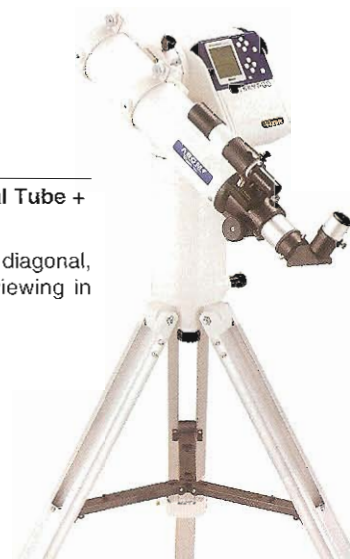


25002

SKYPOD A80Mf

SKYPOD Mount + A80Mf Optical Tube + Tripod + Eyepiece

- With the supplied erect-image diagonal, you can use it for terrestrial viewing in the daytime.



25004

SKYPOD R130Sf

SKYPOD Mount + R130Sf Optical Tube + Tripod + Eyepiece

- A 130mm parabolic mirror with great light gathering power is the most suitable for observing celestial objects such as nebulae and star clusters.



25003

SKYPOD ED80Sf

SKYPOD Mount + ED80Sf Optical Tube + Tripod + Eyepiece

- The ED (extra-low dispersion glass) lens corrects the chromatic aberration at an extremely high level and delivers a high contrast image. Complete with Aluminum case for ED80Sf optical tube.

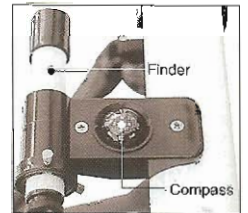


Model	SKYPOD A70Lf	SKYPOD A80Mf	SKYPOD R130Sf	SKYPOD ED80Sf
Effective aperture	70mm	80mm	130mm	80mm
Focal length (Focal ratio)	900mm (F12.9)	910mm (F11.4)	650mm (F5.0)	600mm (F7.5)
Resolving power, limiting magnitude	1.66 arc sec., 11.0	1.45 arc sec., 11.3	0.89 arc sec., 12.3	1.45 arc sec., 11.3
Light gathering power	100x	131x	345x	131x
Tube size & weight	(OD) 76mm x (L) 865mm, 1.9 kg (4.2 lb)	(OD) 90mm x (L) 860mm, 2.5 kg (5.5 lb)	(OD) 160mm x (L) 572mm, 4.0 kg (8.8 lb)	(OD) 100mm x (L) 570mm, 3.4 kg (7.5 lb)
Finder scope	6x24mm finder, Field of view 5 degrees	6x30mm finder, Field of view 7 degrees		9x50mm finder, Field of view 4.8 degrees
Adapter thread / visual back	42mm for T-ring / 31.7mm push-fit			
Eyepiece (Magnification)	PL20 (45x), PL6.3 (143x)	PL20 (46x), PL6.3 (144x)	PL20 (33x), PL6.3 (103x)	NPL20 (30x), NPL6 (100x)
Other accessory	31.7mm Erect-image diagonal, Half pillar, Counterweight 1.0 kg (2.2 lb)		Half pillar, Counterweight 1.0 kg (2.2 lb)	
Tripod	Legs adjustable from 90cm to 130cm in length			
Total weight (w/o eyepiece)	11.8 kg (26.0 lb)	12.6 kg (27.8 lb)	14.6 kg (32.2 lb)	14.1 kg (31.1 lb)

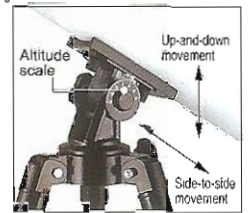
★ STAR-PAL STAR PAL Series

The First Telescope for the Family

- The STAR PAL 50L and 60L are simple to set up, and suitable for the first telescope for the family.
- T Altazimuth mount with compass and altitude scale allows you to point to your target celestial object very easy.



Built-in compass on the finder bracket guides you in the direction of your target.



The altitude scale tells you the elevation of your target.

33101
STAR PAL-50L

T Altazimuth Mount with Tripod + 50L Optical Tube + Eyepiece

33102
STAR PAL-60L

T Altazimuth Mount with Tripod + 60L Optical Tube + Eyepiece

Model	STAR PAL-50L	STAR PAL-60L
Effective aperture	50mm	60mm
Focal length (Focal ratio)	800mm (F16)	910mm (F15)
Resolving power, limiting magnitude	2.32 arc sec., 10.3	1.93 arc sec., 10.7
Light gathering power	51x	73x
Tube size & weight	(OD) 54mm x (L) 743mm, 646 g (22.8 oz)	(OD) 68mm x (L) 867mm, 950 g (33.8 oz)
Finder scope	5x20mm finder with compass	6x30mm finder with compass
Visual back	31.7mm push-fit	
Eyepiece (Magnification)	H20 (40x), H6 (133x)	H20 (46x), H6 (152x)
Other accessory	31.7mm Mirror diagonal	
Steel tripod	Legs adjustable from 74cm to 121cm in length	Legs adjustable from 82cm to 137cm in length
Total weight (w/o eyepiece)	2.5 kg (5.5 lb)	3.9 kg (8.6 lb)

Telescope and Equatorial Mount Combination Packages

SX / SXD / GP2 / GPD2

- The Vixen equatorial mount packages, using the SX, SXD, GP2 or GPD2 mount, introduce an interchangeable system that enables you to swap optical tubes or combine with different parts. You can choose a telescope package according to your observing style and budget.
- The package consists of optical tube, mount, tripod and eyepiece in a well-balanced combination. A wide variety of photographic accessories are available.



Vixen Equatorial Mount Unit

Mount



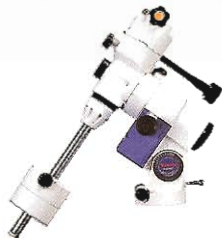
SX Mount

Comes with innovative STAR BOOK astronomical navigation hand controller. Automatic Go-To slewing and tracking are possible.



SXD Mount

Upgraded version of the SX Mount. It employs solid steel and precision bearings on the RA and DCE axes to accept the maximum loading weight of 15 kg (33 lb) apart from the supplied counterweights. It comes standard with the SX Polar axis scope.



GP2 Mount

A relatively lightweight and easy-to-set up mount. The motor drive and a various optional accessories can be added later.

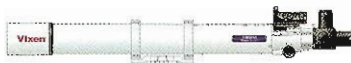


GPD2 Mount

Upgraded version of the GP2 mount with astrophotography in mind. It excels in accuracy, durability and stability.

Optical Tube Vixen Optical Tube Unit

Refracting



Achromatic Refractor

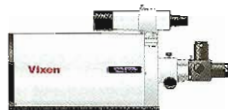
Vixen standard achromatic refractors feature stable and high contrast images.



ED Apochromatic Refractor

Vixen ED refractors feature sharp and clear images virtually free of false color. Recommended for astrophotography.

Catadioptric



VMC Catadioptric

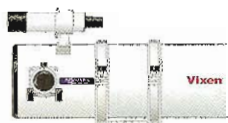
Vixen's original 'modified' Cassegrain optics produces sharp and high contrast images. It is a compact and easy-to-use telescope for both visual observing and astrophotography.



VC200L Catadioptric

Vixen's original high precision Sixth order Aspherical Cassegrain (VSAC) system produces an ideal photographic field without coma and without curvature of field. Highly recommended for serious astrophotography.

Reflecting



Newtonian Reflector

Vixen Newtonian reflectors feature high performance at a faster focal ratio with the introduction of advanced high precision mirror formation technologies.

Controller Motor Drive Hand Controllers



STAR BOOK

The most advanced astronomical navigation hand controller for use with the SPHINX (SX or SXD) mount. It features user-friendly star chart Go-To and intuitive operation.



STAR BOOK-S

The monochrome LCD display version of the STAR BOOK with the reduced size. Usable with the GP2 or GPD2 if equipped with the dedicated motors, and provided with the SKYPOD mounts.



DD-2 (Dual-axis controller)

Optional hand controller designed for use with the GP2 or GPD2. It drives each of the motors installed the RA and DEC axes on the mount for tracking celestial objects.



SPHINX SX Equatorial Mount

Advanced Astronomical Navigation with SPHINX

The Vixen SPHINX mount is crammed with leading-edge innovations, garnered from many decades of experience designing and building German equatorial mounts. SPHINX comes with STAR BOOK, the most advanced astronomical navigation hand controller available. This equatorial mount is highly recommended for anyone, beginners to serious observers, who are interested in exploring night sky celestial wonders.



Specifications	SXW Mount Unit	SXC Mount Unit
R.A. slow motion axis	180-tooth wheel gears whole circle movement	
DEC slow motion axis	180-tooth wheel gears whole circle movement	
R.A. coordinates display	On the screen of STAR BOOK, 0.1 min. increments	
DEC coordinates display	On the screen of STAR BOOK, 1.0 arc min. increments	
Polar axis scope	Optional	
Altitude adjustment	0 degree to 70 degrees, (Fine adjustment with tangent screw: +/- 15 degrees, 3-step elevation)	0 degree to 70 degrees, (Tangent screw fine adjustment: +/- 15 degrees, 3-step elevation)
Azimuth adjustment	Double-screw fine adjustment	
Telescope controller	STAR BOOK	
Power source	DC12 volts, 0.4 to 1.7 amperes	
Maximum loading weight	12 kg (26.5 lb) approx., excluding counterweight	
Counterweight	1.9 kg (4.2 lb) x 1	None
Size (Body)	36cm (H) x 12cm (W) x 36cm (L)	
Weight	6.8 kg (15.0 lb), without counterweight	5.9 kg (13.0 lb)

Tripod for SPHINX

25151

SX-HAL130 Aluminum Tripod

- Legs: Adjustable from 81cm to 130cm in length
- Weight: 5.5 kg (12.1 lb)

2511

Tabletop Tripod

- Breadth: 37cm
- Weight: 1.4 kg (3.08 lb)



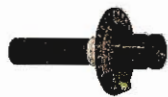
2502
SXW Mount

2501
SXC Mount

Usable with Tabletop Tripod SX Counterweight shaft unit, 1.9 kg counterweight and SX DEC clamp optional accessories and not included

Optional Parts

Optional Parts expand your enjoyment in using the telescope; please take a look at page 42 – page 48.



25151

SX Polar Axis Scope

- Weight: 180g (6.35 oz)



2529

STAR BOOK Screen Sheet

STAR Book's LCD screen can be darkened by covering with a smoke film sheet. (2 sheets in cluded)



2697

SX Aluminum Case

For storing an SX equatorial mount.

Features of SPHINX

● High Speed and Precise Automatic Go-To Slewing

The short profile declination head and internal motors greatly improve balance and motion around the RA axis. This innovative, lightweight design achieves energy savings, high slewing speed and very precise motor control.

● Built-in Motors

Internal motors mean no cable tangle, very easy setup and a smart-looking exterior styling.

● Unique Motor Layout

Placing the RA and DEC motors internal to the declination body allows the two motors to act as built-in counterweights; a small telescope requires no additional heavy counterweights to balance.

● Retractable Counterweight Shaft (SXW Mount)

The counterweight shaft is made of durable, corrosion resistance stainless steel. It retracts into declination body for storage. To prepare the shaft for counterweights, pull out the counterweight shaft from the declination body and engage the shaft lock.

● Ready Polar Axis Scope (Optional)

An optional internal polar axis scope can be installed on the RA body by simply screwing it into a pre-position. No additional adjustment is required for installation. A variable intensity illuminator is pre-installed in the mount to evenly illuminate the alignment reticle in the polar axis scope. The alignment reticle offers precise polar alignment.



● Sturdy Aluminum Tripod

Rigid and strong SX-HAL130 aluminum tripod for SPHINX mount offers stable observations free from vibrations.

Features of STAR BOOK for SPHINX

1 Large Color LCD screen

STAR BOOK has a large 4.7 inch color LCD screen (320x240 pixels)

2 Intelligent Button Operation

Simple yet ergonomic layout of the control buttons makes operation easy, like on a 'Game Boy'. As you move through the STAR BOOK menus, the function of each button is graphically indicated on the display. New users quickly adapt to the intuitive STAR BOOK operation.

3 Mount Motion linked to Star Chart

In Scope Mode, where telescope motion is controlled in real-time, manual motor corrections and slewing is scaled to the zoom setting on the star chart. Motion is fast when the chart displays wide fields and becomes progressively finer when zoomed to narrower fields.

4 Built-in Speaker

Confirmation of Go-To and other operations are by signal tones.

5 LAN Port

The latest firmware update is downloadable to PC and transferred to STAR BOOK through a LAN port.

6 Usable as a Stand-alone Unit

A 12V DC power can be supplied to the STAR BOOK directly without attaching it to the SPHINX mount. It enables the STAR BOOK to work as a stand-alone 'night sky' simulator for observation planning.

7 Autoguider

Applicable for the Vixen AGA-1 auto-guide adapter or autoguider that is compatible with the SBIG's in pin layout.

8 Altazimuth Mount Mode

It is possible to move the mount in vertical or horizontal directions, as on an altazimuth mount, with a single key press.

9 Comet Searching

With downloads of orbital elements for comets from your PC or Vixen's website, you can point the telescope to the comets automatically, and track them on the screen of STAR BOOK.

10 Multi-languages

Interaction with STAR BOOK is available in English, German, French, Italian, Spanish and Japanese languages.



Patent pending



Navigation with STAR BOOK



Search for Objects by Star Chart

The STAR BOOK stores a total of over 22,000 celestial objects (There are 22,725 objects including 110 Messier objects and 4,980 NGC/IC objects) in its memory.

The STAR BOOK will display objects which are in the sky for the current time and location. To begin with, choose an interesting object on the screen. Your telescope will start slewing to your target object automatically by hitting a Go-To button.



Search by a List of Well-known Objects

The STAR BOOK has a list of well-known deep sky objects in its database, including Andromeda Galaxy, Hyades and Pleiades (Subaru in Japanese). It is very useful for a quick search by name.

SPHINX SX Equatorial Mount Series



Paired with Vixen's Achromatic Refractor Telescopes

- Multi-coated achromatic lenses produce clear images while reducing chromatic aberrations to a minimum.



2706
SXW-A80M

SXW Mount + A80M Optical Tube + SX-HAL130 Tripod + Eyepiece

2707
SXW-A102M

SXW Mount + A102M Optical Tube + SX-HAL130 Tripod + Eyepiece

2701
SXC-A80SS

SXC Mount + A80SS Optical Tube + Tabletop Tripod + Eyepiece

Model	SXW-A80M	SXW-A102M	SXC-A80SS
Effective aperture	80mm	102mm	80mm
Focal length (Focal ratio)	910mm (F11.4)	1000mm (F9.8)	400mm (F5.0)
Resolving power, limiting magnitude	1.45 arc sec., 11.3	1.14 arc sec., 11.8	1.45 arc sec., 11.3
Light gathering power	131x	212x	131x
Tube size & weight	(OD) 90mm x (L) 915mm, 2.5 kg (5.5 lb)	(OD) 115mm x (L) 1,060mm, 3.8 kg (8.4 lb)	(OD) 90mm x (L) 362mm, 2.3 kg (5.1 lb)
Finder scope	Red dot finder		
Adapter thread / visual back	60mm, 42mm for T-ring / 50.8mm, 31.7mm push-fit		
Eyepiece (Magnification)	NPL20 (46x), NPL6 (152x)	NPL20 (50x), NPL6 (167x)	PL8 (50x)
Other accessory	31.7mm Flip mirror diagonal, SX Half pillar2, Counterweight 1.9 kg (4.2 lb)		31.7mm Flip mirror diagonal, 2x Barlow lens.
Tripod (SX-HAL130)	Legs adjustable from 81cm to 130cm in length, 5.5 kg (12.1 lb)		Tabletop type
Total weight (w/o eyepiece)	19.9 kg (43.9 lb)	21.2 kg (46.7 lb)	10.5 kg (23.2 lb)

SPHINX SX Equatorial Mount Series

ED ED Apochromatic

Paired with Vixen's Premier ED refractor Telescopes

- Apochromatic refractors with an extra-low dispersion lens (ED lens) eliminate residual chromatic aberration and produces sharp and high contrast images.



2708

SXW-ED81S

SXW Mount + ED81S Optical Tube + SX-HAL130 Tripod + Eyepiece

2709

SXW-ED103S

SXW Mount + ED103S Optical Tube + SX-HAL130 Tripod + Eyepiece.

Model	SXW-ED81S	SXW-ED103S
Effective aperture	81mm	103mm
Focal length (Focal ratio)	625mm (F7.7)	795mm (F7.7)
Resolving power, limiting magnitude	1.43 arc sec., 11.3	1.13 arc sec., 11.8
Light gathering power	134x	217x
Tube size & weight	(OD) 90mm x (L) 600mm, 2.3 kg (5.1 lb)	(OD) 115mm x (L) 820mm, 3.6 kg (7.9 lb)
Finder scope	Red dot finder	7x50mm finder, Field of view 7 degrees
Adapter thread/ visual back	60mm, 42mm for T-ring / 50.8mm, 31.7mm push-fit	
Eyepiece (Magnification)	NLV20 (31x), NLV5 (125x)	NLV20 (40x), NLV5 (159x)
Other accessory	31.7mm Flip mirror diagonal, Counterweight 1.9 kg (4.2 lb)	31.7mm Flip mirror diagonal, SX Half pillar2, Counterweight 1.9 kg (4.2 lb)
SX Tripod	Legs adjustable from 81cm to 130cm in length, 5.5 kg (12.1 lb)	
Total weight (w/a eyepiece)	18.1 kg (39.9 lb)	21.8 kg (48.1 lb)

Optional Parts

Optional Parts expand your enjoyment in using the telescope; please take a look at page 42 – page 48.

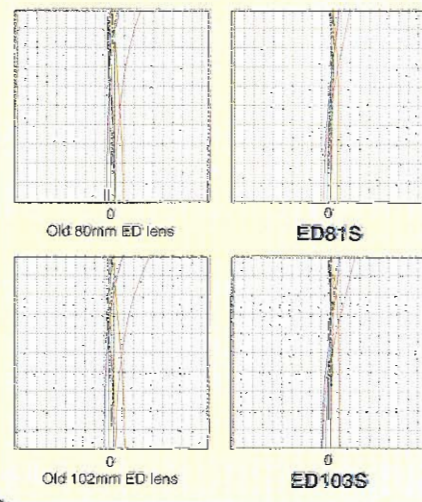


Afocal imaging photography with a compact digital camera

Features of ED Refractors

- Newly designed high definition ED lenses provide excellent optical performance with comparatively short optical tubes for easy handling.
- The bright F7.7 ED lenses capture crisp, pinpoint star images. Its compact optical tube is easy to handle and contributes toward steady observation.
- The lenses are made of environment-friendly technologies free of hazardous lead (Pb) and thus designed to consider our global environment.
- The optical tubes come equipped with a metal carry handle for easy one-hand carrying.

The new ED lenses focus visible rays of light from the C-ray (red), d-ray (yellow), e-ray (green), F-ray (blue) to g-ray (purple) at nearly the very same position, as compared with our previous models, as shown in the figure below. It verifies that the new ED lenses are almost free of chromatic aberration in all colors and have superb optics. They are especially excellent in depressing the short g-ray (purple) to nearly zero. Thus the ED telescopes can obtain high contrast images for astrophotography.

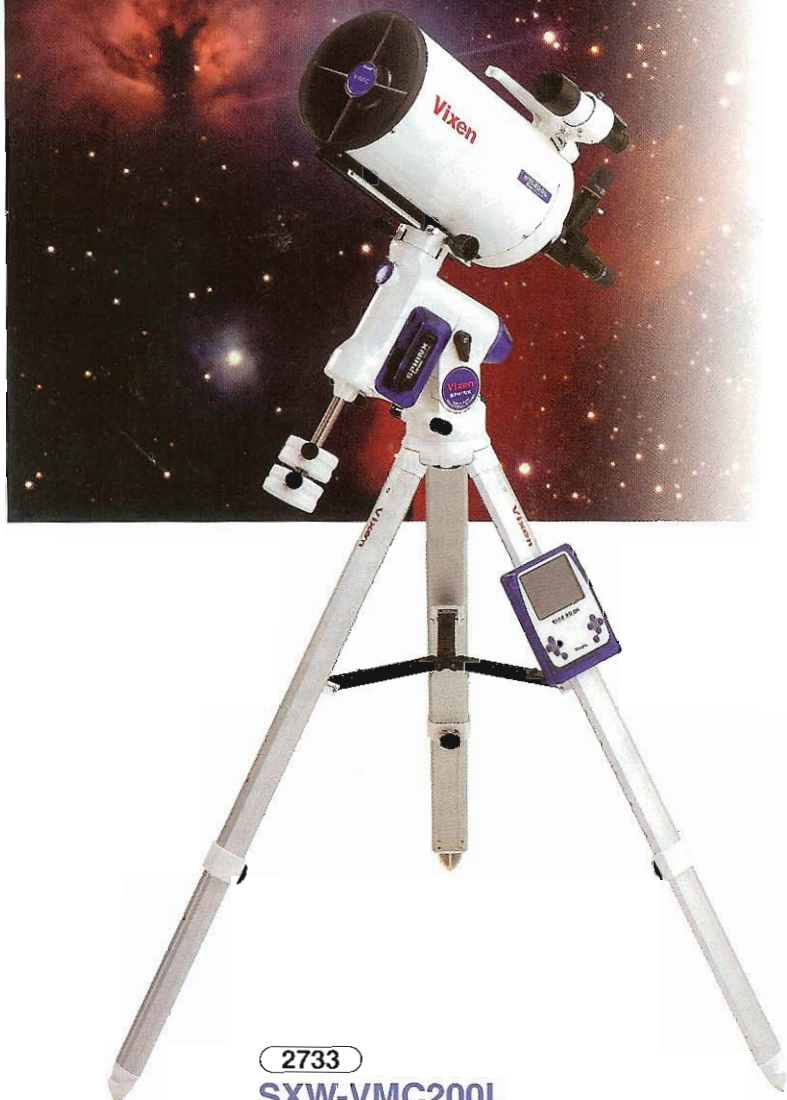


SPHINX SX Equatorial Mount Series

VMC Catadioptric

Paired with Vixen's Catadioptric Telescopes

● A modified Cassegrain design from Vixen features a meniscus lens in front of the secondary mirror in addition to the configuration of two high precision spherical mirrors.



2733
SXW-VMC200L
 SXW Mount + VMC200L Optical Tube + SX-HAL130 Tripod + Eyepiece



27012
SXC-VMC110L
 SXC Mount + VMC110L Optical Tube + Tabletop Tripod + Eyepiece

Optional Parts

Optional Parts expand your enjoyment using the telescope; please take a look page 42 – page 48.



3871
VMC Reducer
 Usable on both VMC200L and VMC260L for wide-field astrophotography. Not usable for visual observation. Does not work on VMC110L.



3732
Light Baffle Hood
 Wrapped on a VMC200L, VC200L or R200SS optical tube to eliminate nearby light.



3880
VC200L OTA Aluminum Case
 Usable for a VMC200L or VC200L optical tube.

Model	SXC-VMC110L	SXW-VMC200L
Effective aperture	110mm	200mm
Focal length (Focal ratio)	1,035mm (F9.4)	1,950mm (F9.75)
Resolving power, limiting magnitude	1.05 arc sec., 12.0	0.58 arc sec., 13.3
Light gathering power	247x	816x
Tube size & weight	(OD) 119mm x (L) 360mm, 2.1 kg (4.6 lb)	(OD) 232mm x (L) 535mm, 5.9 kg (13 lb)
Finder scope	Red dot finder	7x50mm finder, Field of view 7 degrees
Adapter thread / visual back	42mm for T-ring / 31.7mm push-fit	60mm, 42mm for T-ring / 50.8mm, 31.7mm push-fit
Eyepiece (Magnification)	NPL20 (52x), NPL6 (173x)	NLV20 (98x), NLV9 (217x)
Other accessory	—	31.7mm Flip mirror diagonal, Counterweights 1.9 kg (4.2 lb) x2
Tripod	Tabletop type	Legs adjustable from 81cm to 130cm in length, 5.5 kg (12.1lb)
Total weight (w/o eyepiece)	10.0 kg (22.1 lb)	23.3 kg (51.4 lb)

SPHINX SX Equatorial Mount Series

VISAC Catadioptric (VISAC)



Paired with Vixen's Premier VISAC Catadioptric Telescope

● Vixen's unique Catadioptric design, 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 viewing field and offers exceptionally outstanding performance in astrophotography.

2732
SXW-VC200L

SXW Mount + VC200L Optical Tube + SX-HAL130 Tripod + Eyepiece

Optional Parts

Optional Parts expand your enjoyment in using the telescope; please take a look at page 42 – page 48.



3868
Reducer VC200L

For wide-field astrophotography only. Not usable for visual observation.



Eyepiece projection photography with a SLR camera



39361
Eyepiece Projection Camera Adapter



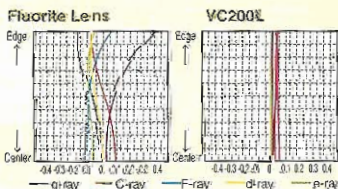
For Nikon

T-Ring

For eyepiece projection photography with the optional SX camera adapter, choose a T-ring that is appropriate to your SLR camera.

Features of VISAC

The VISAC (Vixen's Sixth-order Aspherical Catadioptric) design achieves a photographic field virtually free of aberration. As coma, spherical and curvature of field are perfectly corrected, images captured are stunningly sharp. Star images are less than 15 microns across all the way to the very edge of the 42mm image circle. It is a telescope truly designed for both visual observation and astrophotography.



A comparison that shows extremely minute chromatic aberration, in very small five hundredth millimeters units, clearly shows that the aberration in the VISAC is far less than on a fluorite refractor. – which itself provides exceptional color correction.

Types of Telescope and Correction of Optical Aberration

Type	Spherical aberration	Coma aberration	Field curvature
Cassegrain	○	—	—
Dall-Kirkham	○	—	—
Ritchy-Chretien	○	—	—
Schmidt-Cassegrain	○	○	—
VISAC	○	○	○

Model	SXW-VC200L
Effective aperture	200mm
Focal length (Focal ratio)	1,800mm (F9.0)
Resolving power, limiting magnitude	0.58 arc sec., 13.3
Light gathering power	816x
Tube size & weight	(OD) 232mm x (L) 620mm, 6.0 kg (13.2 lb)
Finder scope	7x50mm finder, Field of view 7 degrees
Adapter thread / visual back	60mm, 42mm for T-ring / 50.8mm, 31.7mm push-fit
Eyepiece (Magnification)	NLV20 (90x), NLV9 (200x)
Other accessory	31.7mm Flip mirror diagonal, Counterweights 1.9 kg (4.2 lb) x2
Tripod (SX-HAL130)	Legs adjustable from 91cm to 130cm in length, 5.5 kg (12.1 lb)
Total weight (w/o eyepiece)	23.4 kg (51.6 lb)

SPHINX SX Equatorial Mount Series

N Newtonian

Paired with Vixen's Newtonian Telescopes

● Thanks to its high precision 200mm F4 parabolic mirror by means of Vixen's unique mirror formation technologies, the R200SS has established a long and popular reputation for its excellent performance at reasonable cost.



2741
SXW-R150S

SXW Mount + R150S Optical Tube + SX-HAL130 Tripod + Eyepiece



2742
SXW-R200SS

SXW Mount + R200SS Optical Tube + SX-HAL130 Tripod + Eyepiece

Optional Parts

Optional Parts expand your enjoyment in using the telescope; please take a look at page 42 – page 48.



3631
Tele-Extender R150S

Usable on R150S for both visual observation and astrophotography.



3746
Coma Corrector 2 R200SS

Usable for both visual observation and astrophotography.



3839
Tele-Extender R200SS

Extends the focal length to apply for high magnification.



3732
Light Baffle Hood

Wrapped on a VMC200L, VC200L or R200SS optical tube to cut out a nuisance light.

Model	SXW-R150S	SXW-R200SS
Effective aperture	150mm	200mm
Focal length (Focal ratio)	750mm (F5.0)	800mm (F4.0)
Resolving power, limiting magnitude	0.77 arc sec., 12.7	0.58 arc sec., 13.3
Light gathering power	459x	816x
Tube size & weight	(OD) 176mm x (L) 715mm, 4.8 kg (10.6 lb)	(OD) 232mm x (L) 700mm, 5.3 kg (11.7 lb)
Finder scope	Red dot finder	7x50mm finder, Field of view 7 degrees
Adapter thread / visual back	36.4mm / 31.7mm push-fit	60mm, 42mm for T-ring / 31.7mm push-fit
Eyepiece (Magnification)	NPL20 (38x), NPL6 (125x)	NLV20 (40x), NLV5 (160x)
Other accessory	Counterweight 1.9 kg (4.2 lb)	Counterweights 1.9 kg (4.2 lb) x2
Tripod (SX-HAL130)	Legs adjustable from 81cm to 130cm in length, 5.5 kg (12.1 lb)	
Total weight (w/o eyepiece)	20.7 kg (45.6 lb)	23.7 kg (52.3 lb)

SPHINX-DELUXE SXD Equatorial Mount

The Ultimate Model of the Compact yet Sturdy SPHINX

Materials and manufacturing processes have been reviewed to improve the rigidity and precision of the original SX Mount. The newly introduced SXD model, equipped with thrust bearings, achieves an increased loading capacity of 15 kg (33 lb) as well as smooth motion of the RA and DEC axes. It is recommended for any level of astronomer who wish to enjoy both visual observation and astrophotography.

Specifications	SXD Mount Unit
R.A. slow motion axis	180-tooth wheel gears whole circle movement
DEC slow motion axis	180-tooth wheel gears whole circle movement
R.A. coordinates display	On the screen of STAR BOOK, 0.1 min. increments
DEC coordinates display	On the screen of STAR BOOK, 1.0 arc min. increments
Polar axis scope	Optional
Altitude adjustment	0 deg. to 70 deg., (Fine adjustment with tangent screw: +/-15 degrees, 3-stop elevation)
Azimuth adjustment	Double-screw fine adjustment
Telescope controller system	STAR BOOK
Power source	DC12 volts, 0.4 to 1.7 amperes
Maximum loading weight	15kg (33 lb) approx., excluding counterweight
Counterweight	1.9 kg (4.2lb) x 1 and 3.7 kg (8.15 lb) x 1
Size (Body)	36cm (H) x 12cm (W) x 36cm (L)
Weight	8.8 kg (19.4 lb), without counterweight



Tripod for SXD

25151

SX-HAL130 Aluminum Tripod

- Legs: Adjustable from 81cm to 130cm in length
- Weight: 5.5 kg (12.1 lb)

2511

Tabletop Tripod

- Breadth: 37cm
- Weight: 1.4 kg (3.08 lb)

STAR BOOK for SXD

The STAR BOOK is compatible with the SX and SXD Mounts.



Power supply: DC 12 volts

Electricity consumption: 0.25 watts (Max.)

Dimensions: 19.5 cm x 14.5 cm x 2.8 cm

Weight: 400 g (0.88 oz)

Feature of SXD

● Upgrade model

SXD Mount has all of the functions that are provided with SX Mount.

The SXD Mount comes as standard with the SX Polar axis scope.

● Built-in bearings

The bearings are used for the RA and DEC axes to reduce load of the motors and to make the motion of the axes smooth.

● Thick steel

Precisely machined thick steel provides rigid and accurate RA and DEC axes for the SXD Mount.

● Precision worm screw gear

The worm gears are made with high precision processing. Smooth movement is obtained through the whole circle lapping of the worm screw and wheel gears.

Comparison of SXD and SXW

Specifications	SXD	SXW
Max. loading weight	15 kg (33 lb), excluding counterweight	12 kg (26.5 lb), excluding counterweight
RA & DEC Worm wheel	E3 brass wheel	Aluminum wheel
Polar axis scope	Supplied	Optional
Counterweights	1.9 kg (4.2 lb) x1, 3.7 kg (8.15 lb) x1	1.9 kg (4.2 lb) x1
Weight	8.8 kg (19.4 lb)	6.8 kg (15.0 lb)

SPHINX-DELUXE SXD Equatorial Mount Series



25032

SXD-ED81S

SXD Mount + ED81S Optical Tube +
SX-HAL130 Tripod + Eyepiece

25033

SXD-ED103S

SXD Mount + ED103S Optical Tube +
SX-HAL130 Tripod + Eyepiece

Model	SXD-ED81S	SXD-ED103S
Effective aperture	81mm	103mm
Focal length (Focal ratio)	625mm (F7.7)	795mm (F7.7)
Resolving power, limiting magnitude	1.43 arc sec., 11.3	1.13 arc sec., 11.8
Light gathering power	134x	217x
Tube size & weight	(OD) 90mm x (L) 600mm, 2.3 kg (5.1 lb)	(OD) 115mm x (L) 820mm, 3.6 kg (7.9 lb)
Finder scope	Red dot finder	7x50mm finder, Field of view 7 degrees
Adapter thread / visual back	60mm, 42mm for T-ring / 50.8mm, 31.7mm push-fit	
Eyepiece (Magnification)	NLV20 (31x), NLV5 (125x)	NLV20 (40x), NLV5 (159x)
Other accessory	31.7mm Flip mirror diagonal, Counterweights 1.9 kg (4.2 lb) and 3.7 kg (8.15 lb)	31.7mm Flip mirror diagonal, SX Half pillar/2, Counterweights 1.9 kg (4.2 lb) and 3.7 kg (8.15 lb)
SX Tripod	Legs adjustable from 81cm to 130cm in length, 5.5 kg (12.1lb)	
Total weight (w/o eyepiece)	23.8 kg (52.5 lb)	27.5 kg (60.6 lb)



25034

SXD-ED115S

SXD Mount + ED115S Optical Tube +
SX-HAL130 Tripod + Eyepiece

25036

SXD-R200SS

SXD Mount + R200SS Optical Tube +
SX-HAL130 Tripod + Eyepiece

25035

SXD-VC200L

SXD Mount + VC200L Optical Tube +
SX-HAL130 Tripod + Eyepiece

Model	SXD-ED115S	SXD-R200SS	SXD-VC200L
Effective aperture	115mm	200mm	200mm
Focal length (Focal ratio)	890mm (F7.7)	800mm (F4.0)	1,800mm (F9.0)
Resolving power, limiting magnitude	1.01 arc sec., 12.1	0.58 arc sec., 13.3	
Light gathering power	270x	816x	
Tube size & weight	(OD) 125mm x (L) 940mm, 4.4 kg (9.7 lb)	(OD) 232mm x (L) 700mm, 5.3 kg (11.7 lb)	(OD) 232mm x (L) 820mm, 6.0 kg (13.2 lb)
Finder scope	7x50mm finder, Field of view 7 degrees		
Adapter thread / visual back	60mm, 42mm for T-ring / 50.8mm, 31.7mm push-fit	60mm, 42mm for T-ring / 31.7mm push-fit	60mm, 42mm for T-ring / 50.8mm, 31.7mm push-fit
Eyepiece (Magnification)	NLV20 (45x), NLV5 (178x)	NLV20 (40x), NLV5 (160x)	NLV20 (90x), NLV9 (200x)
Other accessory	31.7mm Flip mirror diagonal, SX Half-Pillar2, Counterweights 1.9 kg (4.2 lb) and 3.7 kg (8.15 lb)	Counterweights 1.9 kg (4.2 lb) and 3.7 kg (8.15 lb)	31.7mm Flip mirror diagonal, Counterweights 1.9 kg (4.2 lb) and 3.7 kg (8.15 lb)
SX Tripod	Legs adjustable from 81cm to 130cm in length, 5.5 kg (12.1 lb)		
Total weight (w/o eyepiece)	28.3 kg (62.3 lb)	27.5 kg (60.6 lb)	27.2 kg (60.0 lb)

GP2 GP2 Equatorial Mount

Customize your own stargazing style

The excellent operating characteristics of the Vixen GP2 equatorial mount include accurate tracking and smooth operations. This is a platform for serious astronomical observation.

A wide selection of optional accessories, to meet your observation needs, is available for the GP2 mount. The GP2 equatorial mount series is an excellent choice for anyone desiring a simple, yet sturdy mount to start exploring a starry night's sky.

Specifications	GP2 Mount Unit
R.A. slow motion axis	144-tooth wheel gears whole circle movement
DEC slow motion axis	144-tooth wheel gears whole circle movement
R.A. graduations	Optional (included in Polar axis scope set)
DEC graduations	Optional (included in Polar axis scope set)
Polar axis scope	Optional
Altitude adjustment	0 degree to 62 degrees, (2-degree increments)
Azimuth adjustment	Double-screw fine adjustment
Motor drive	Optional, with STAR BOOK-S set or D2M motor drive set
Maximum loading weight	7kg (15.4 lb) approx., excluding counterweight
Counterweight	3.7 kg (8.15 lb) x 1
Weight	4.0 kg (8.8 lb), without counterweight

Features of GP2



Motor-driven possible

● STAR BOOK-S system for Go-To slewing or celestial tracking can be installed on the mount.



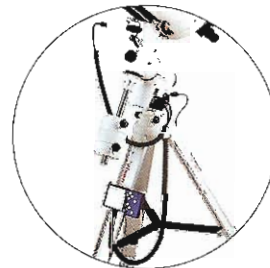
Simple polar alignment

● The 2-degree incremental altitude scale and an optional compass let you know the direction of the celestial North Pole (or South Pole).

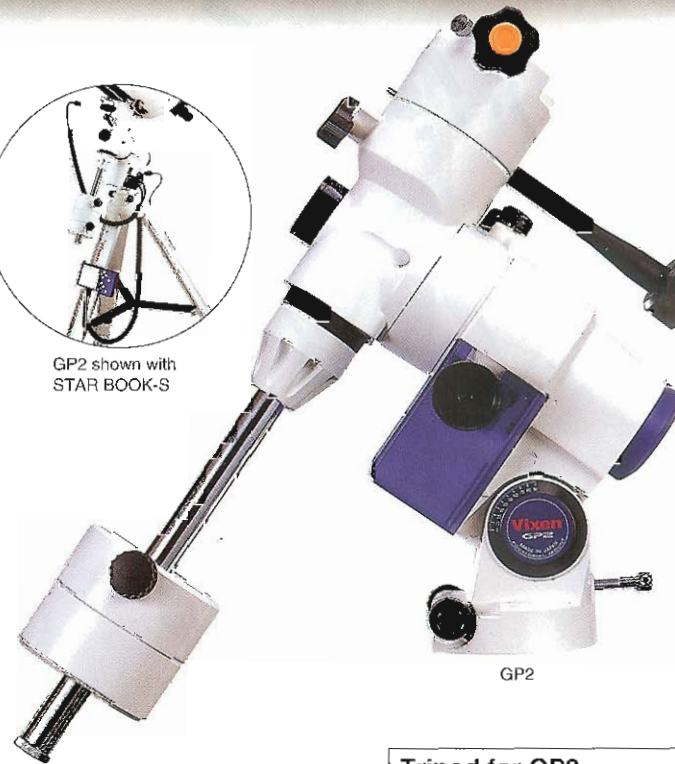


Dovetail-plate attachment

● The dovetail-plate attachment system allows you detachment or attachment of an optical tube from the mount head easily and quickly.



GP2 shown with STAR BOOK-S



GP2

Tripod for GP2



25141

HAL-130 Tripod

- Legs: Adjustable from 80 to 130cm in length
- Weight: 5.5 kg (12.1 lb)

3990

GP2 Mount

39903

GP2 Mount with SBS

(SBS = STAR BOOK-S Set)

NEW

Optional Parts

Optional Parts expand your enjoyment in using the telescope; please take a look at page 42 – page 48.

3912

Polar Axis Scope Set

- 6x20mm finder scope with scale for both northern and southern hemispheres
- With penlight external illuminator and RA & DEC graduation rings



3909

GP2 Half Pillar

- Weight: 1.5 kg (3.3 lb)
- For GP2 / GPD2



3881

GP Aluminum Case

- Weight: 4.4 kg (9.7 lb)
- For GP2 / GPD2



7331

GP Compass

- Weight: 2 g (0.07 oz)

STAR BOOK-S Go-To Set for GP2 (Optional)

STAR BOOK-S astronomical navigation Go-To system can be installed on a GP2 Mount or a GPD2 Mount. You can choose a factory pre-installed model if you intend to use

the Go-To system or PEC. A different size of Allen wrenches is needed when you install the motors by yourself.



GP2-VMC200L-SBS



2522
STAR BOOK-S Set
 Consisting of a STAR BOOK-S hand controller, two motors, RA motor housing with circuit board, cables and a battery box.

Specifications	STAR BOOK-S	Motors
Electricity consumption	0.2 ampere (max.)	0.8 ampere (max.)
Voltage	DC 6 volts	DC 12 volts
Batteries	4 x AA-size batteries (Not included)	8 x D-size batteries (Not included)
Continuous operation duration	About 8 hours at 20 °C (68F) with alkaline batteries	About 6 hours at 20 °C (68F) with alkaline batteries
Operation temperature	0 to 40 deg. C (32 to 104 deg. F)	
Applicable models	GP2, GPD2, GP, GP-DX (GPD), GP-E	

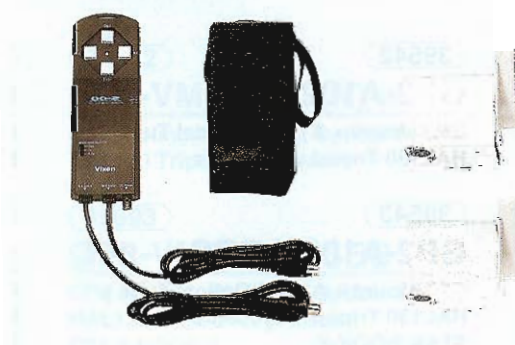
D2M Motor Drive Set for GP2 (Optional)

A DD-2 dual-axis hand controller is available for a GP2 Mount or a GPD2 Mount. With the installation of the

supplied MT-1WT motors on the RA and DEC axes, the mount can automatically track celestial objects.



GP2 shown with D2M set installed



3941
Dual-axis Motor Drive D2M Set
 Consisting of a DD-2 controller, two MT-1WT motors and a battery box. Each part is available separately.

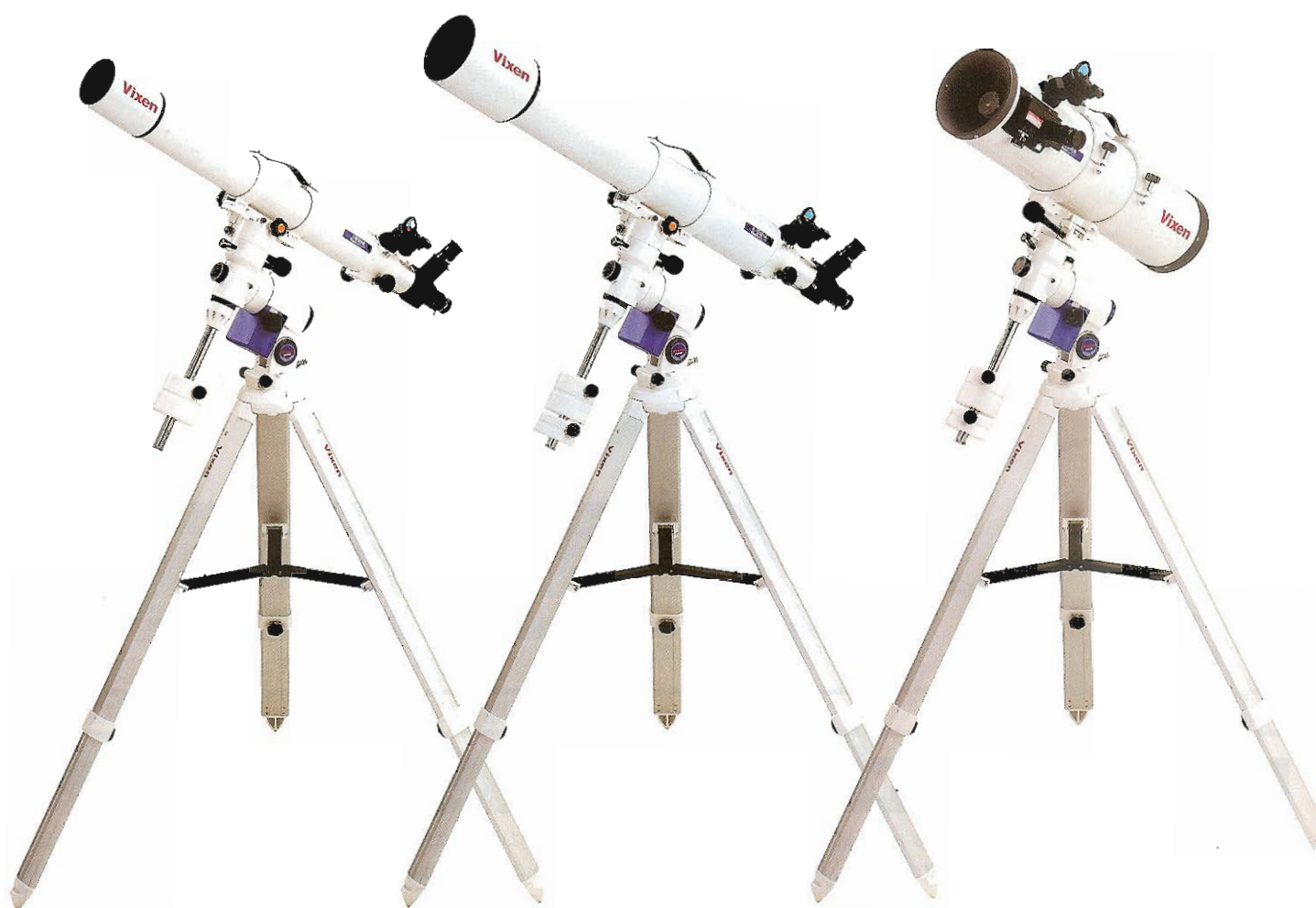
3752
MT-1WT Motor
 • Weight: 350 g (12.35 oz)

3790
DD-2 Dual-axis controller
 • Weight: 220 g (7.76 oz)

3828
Manual Operation Clutch – GP
 • Not compatible with STAR BOOK-S set.
 • Weight: 91 g (3.21 oz)

Specifications	DD-2
Drive speed	Sidereal rate, 1.5x, 2x and 32x, pause and reverse motions
Electricity consumption	0.8 ampere (max.)
Voltage	DC 7.5 to 12 volts
Batteries	8 x D-size batteries (Not included)
Continuous operation duration	About 20 hours at 20 degrees C (at 68 degrees F) with alkaline batteries
Operation temperature	-10 to 50 deg. C (14 to 122 deg. F)
Applicable models	GP2, GPD2, GP, GP-DX (GPD), GP-E

GP2 GP2 Equatorial Mount Series



39532

GP2-A80M (N)

GP2 Mount + A80M Optical Tube + HAL130 Tripod + Eyepiece

39542

GP2-A102M (N)

GP2 Mount + A102M Optical Tube + HAL130 Tripod + Eyepiece

39622

GP2-R150S (N)

GP2 Mount + R150S Optical Tube + HAL130 Tripod + Eyepiece

39533

GP2-A80M-SBS**NEW**

GP2 Mount + A80M Optical Tube + HAL130 Tripod + Eyepiece + STAR BOOK-S

39543

GP2-A102M-SBS**NEW**

GP2 Mount + A102M Optical Tube + HAL130 Tripod + Eyepiece + STAR BOOK-S

39623

GP2-R150S-SBS**NEW**

GP2 Mount + R150S Optical Tube + HAL130 Tripod + Eyepiece + STAR BOOK-S

Model	GP2-A80M (N)	GP2-A102M (N)	GP2-R150S (N)
Effective aperture	80mm	102mm	150mm
Focal length (Focal ratio)	910mm (F11.4)	1,000mm (F9.8)	750mm (F5.0)
Resolving power, limiting magnitude	1.45 arc sec., 11.3	1.14 arc sec., 11.8	0.77 arc sec., 12.7
Light gathering power	131x	212x	459x
Tube size & weight	(OD) 90mm x (L) 915mm, 2.5 kg (5.5 lb)	(OD) 115mm x (L) 1,060mm, 3.8 kg (8.4 lb)	(OD) 176mm x (L) 715mm, 4.8 kg (10.6 lb)
Finder scope	Red dot finder		
Adapter thread / visual back	60mm, 42mm for T-ring / 50.8mm, 31.7mm push-fit		36.4mm / 31.7mm push-fit
Eyepiece (Magnification)	NPL20 (46x), NPL6 (152x)		NPL20 (38x), NPL6 (125x)
Other accessory	31.7mm Flip mirror diagonal, Counterweight 3.7 kg (8.15 lb)	31.7mm Flip mirror diagonal, Counterweights 1.9 kg (4.2 lb) and 3.7 kg (8.15 lb)	Counterweights 1.9 kg (4.2 lb) and 3.7 kg (8.15 lb)
Tripod (HAL130)	Legs adjustable from 81cm to 130cm in length, 5.5 kg (12.1 lb)		
Total weight (w/o eyepiece)	16.7 kg (36.8 lb)	19.9 kg (43.9 lb)	21.2 kg (46.7 lb)



39632

GP2-R200SS (N)

GP2 Mount + R200SS Optical Tube + HAL130 Tripod + Eyepiece

39633

GP2-R200SS-SBS NEW

GP2 Mount + R200SS Optical Tube + HAL130 Tripod + Eyepiece + STAR BOOK-S

39692

GP2-VMC110L (N)

GP2 Mount + VMC110L Optical Tube + HAL130 Tripod + Eyepiece

39693

GP2-VMC110L-SBS NEW

GP2 Mount + VMC110L Optical Tube + HAL130 Tripod + Eyepiece + STAR BOOK-S

39702

GP2-VMC200L

GP2 Mount + VMC200L Optical Tube + HAL130 Tripod + Eyepiece

39703

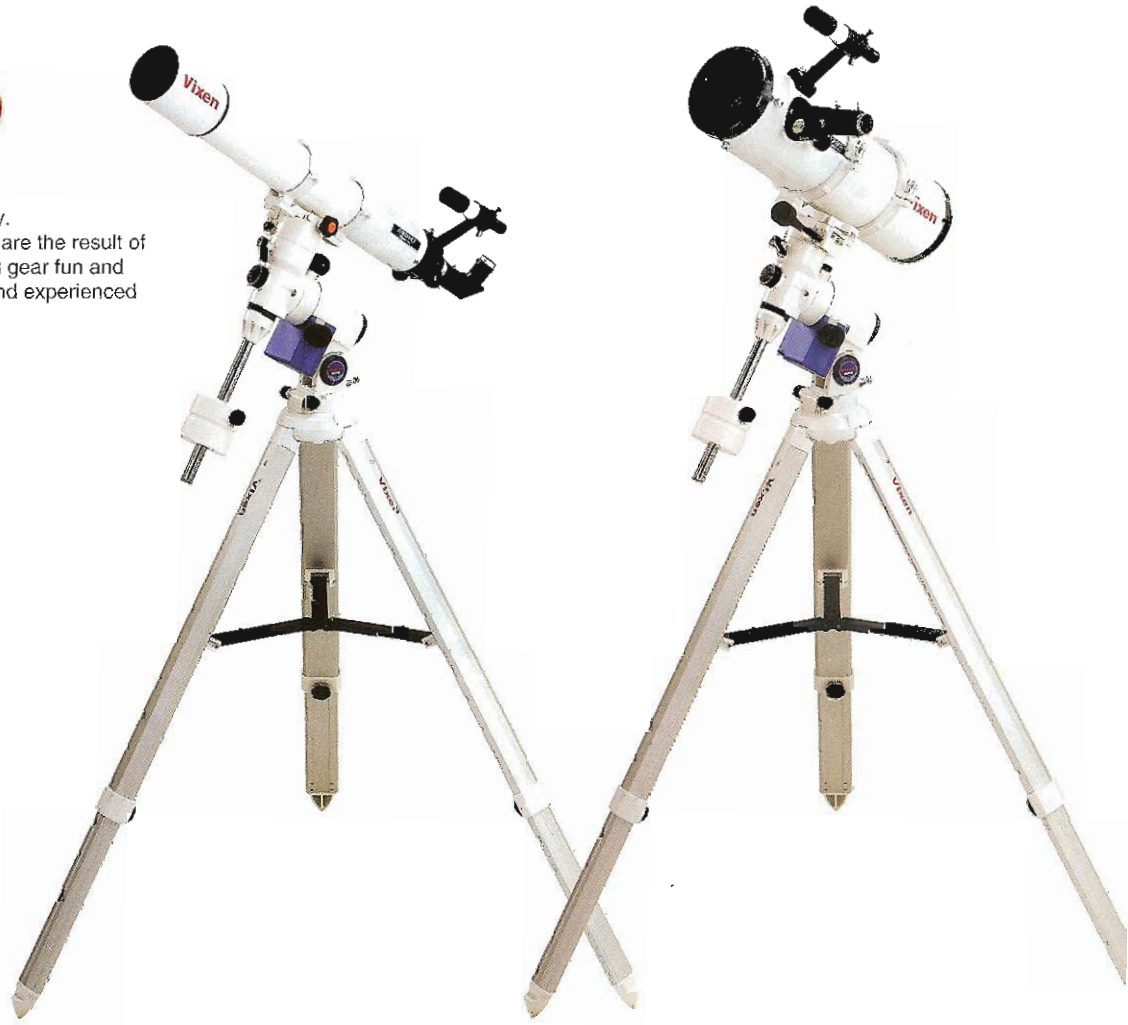
GP2-VMC200L-SBS NEW

GP2 Mount + VMC200L Optical Tube + HAL130 Tripod + Eyepiece + STAR BOOK-S

Model	GP2-R200SS (N)	GP2-VMC110L (N)	GP2-VMC200L (N)
Effective aperture	200mm	110mm	200mm
Focal length (Focal ratio)	800mm (F4.0)	1,035mm (F9.4)	1,950mm (F9.75)
Resolving power, limiting magnitude	0.58 arc sec., 13.3	1.05 arc sec., 12.0	0.58 arc sec., 13.3
Light gathering power	816x	247x	816x
Tube size & weight	(OD) 232mm x (L) 700mm, 5.3 kg (11.7 lb)	(OD) 119mm x (L) 360mm, 2.1 kg (4.6 lb)	(OD) 232mm x (L) 535mm, 5.9 kg (13 lb)
Finder scope	7x50mm finder, Field of view 7 degrees	Red dot finder	7x50mm finder, Field of view 7 degrees
Adapter thread / visual back	60mm, 42mm for T-ring / 31.7mm push-fit	42mm for T-ring / 31.7mm push-fit	60mm, 42mm for T-ring / 50.8mm, 31.7mm push-fit
Eyepiece (Magnification)	NLV20 (40x), NLV5 (160x)	NPL20 (52x), NPL6 (173x)	NLV20 (98x), NLV9 (217x)
Other accessory	Counterweights 1.9 kg (4.2 lb) and 3.7 kg (8.15 lb)		31.7mm Flip mirror diagonal, Counterweights 1.9 kg (4.2 lb) and 3.7 kg (8.15 lb)
Tripod (HAL130)	Legs adjustable from 81cm to 130cm in length, 5.5 kg (12.1 lb)		
Total weight (w/o eyepiece)	22.3 kg (49.2 lb)	17.4 kg (38.4 lb)	21.9 kg (48.3 lb)

GP2**GP2 Equatorial Mount Series and Vixen's *f* series telescopes****f series**

Introducing the fun of astronomy. Vixen's new *f* series telescopes are the result of our desire to make astronomical gear fun and easy to operate for beginners and experienced hobbyists.

**39502****GP2-A80Mf (N)**

GP2 Mount + A80Mf Optical Tube +
HAL130 Tripod + Eyepiece

39503**GP2-A80Mf-SBS** **NEW**

GP2 Mount + A80Mf Optical Tube +
HAL130 Tripod + Eyepiece +
STAR BOOK-S

39592**GP2-R130Sf (N)**

GP2 Mount + R130Sf Optical Tube +
HAL130 Tripod + Eyepiece

39593**GP2-R130Sf-SBS** **NEW**

GP2 Mount + R130Sf Optical Tube +
HAL130 Tripod + Eyepiece +
STAR BOOK-S

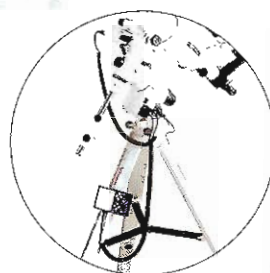
Model	GP2-A80Mf (N)	GP2-R130Sf (N)
Effective aperture	80mm	130mm
Focal length (Focal ratio)	910mm (F11.4)	650mm (F5.0)
Resolving power, limiting magnitude	1.45 arc sec., 11.3	0.89 arc sec., 12.3
Light gathering power	131x	345x
Tube size & weight	(OD) 90mm x (L) 860mm, 2.5 kg (5.5 lb)	(OD) 160mm x (L) 572mm, 4.0 kg (8.8 lb)
Finder scope	6x30mm finder, Field of view 7 degrees	
Adapter thread / visual back	42mm for T-ring / 31.7mm push-fit	
Eyepiece (Magnification)	NPL20 (46x), NPL6.3 (144x)	NPL20 (33x), NPL6.3 (103x)
Other accessory	31.7mm Erect-Image diagonal, Counterweight 3.7 kg (8.15 lb)	Counterweight 3.7 kg (8.15 lb)
Tripod (HAL130)	Legs adjustable from 81cm to 130cm in length, 5.5 kg (12.1 lb)	
Total weight (w/o eyepiece)	16.5 kg (36.4 lb)	18.5 kg (40.8 lb)

GPD2 GPD2 Equatorial Mount

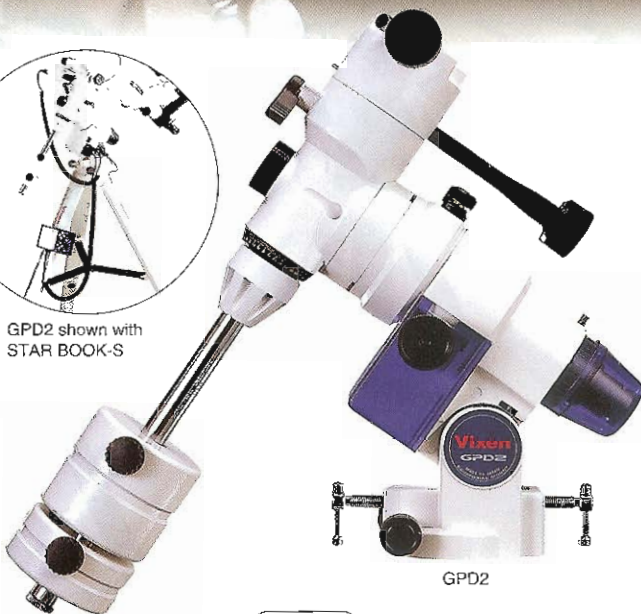
A high precision equatorial mount suitable for long exposure astrophotography.

The GPD2 equatorial mount has the appearance of the compact and portable GP2 mount, but has greater performance and sturdiness. The RA and DEC axes are made of steel and the worm wheels are made of brass for durability. Both the RA and DEC worm screw gears are machined to a very precise tolerance. The mount comes equipped with polar axis scope with a built-in variable intensity illuminator. The GPD2 is truly a versatile German-type equatorial mount that is legendary as a platform for serious astrophotography.

Specifications	GPD2 Mount Unit
R.A. slow motion axis	144-tooth wheel gears whole circle movement
DEC slow motion axis	144-tooth wheel gears whole circle movement
R.A. graduations	10 minutes increments
DEC graduations	2 degrees increments
Polar axis scope	6x20mm, wide 8 degrees field of view
Altitude adjustment	0 degree to 62 degrees, (2-degree increments)
Azimuth adjustment	Double-screw fine adjustment
Motor drive	Optional, with STAR BOOK-S set or D2M motor drive set
Maximum loading weight	10 kg (22.1 lb) approx., excluding counterweight
Counterweight	1.9 kg (4.2 lb) x 1 and 3.7 kg (8.15 lb) x 1
Weight	8.5 kg (18.7 lb), without counterweight



GPD2 shown with STAR BOOK-S



GPD2

STAR BOOK-S Set for GPD2

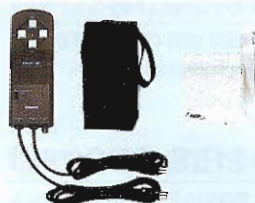


It consists of a STAR BOOK-S Go-To hand controller, two motors, RA motor housing with circuit board, cables and a battery box.

2522 **NEW**
STAR BOOK-S Set

Dual-axis Motor Drive D2M Set

It consists of a DD-2 dual-axis controller, two MT-1WT motors and a battery box.



3941
Dual-axis Motor Drive D2M Set

3752
MT-1WT Motor
• Weight: 350 g (12.35 oz)

3790
DD-2 Dual-axis Controller
• Weight: 220 g (7.76 oz)

3828
Manual Operation Clutch – GP
• Not compatible with STAR BOOK-S set.
• Weight: 91 g (3.21 oz)

3991
GPD2 Mount

39913 **NEW**
GPD2 Mount with SBS
(SBS = STAR BOOK-S Set)

Tripod for GPD2



25141
HAL-130 Tripod
• Legs: Adjustable from 81cm to 130cm in length
• Weight: 5.5 kg (12.1 lb)

Optional Parts

Optional Parts expand your enjoyment in using the telescope; please take a look at page 42 – page 48.



3909
GP2 Half Pillar



3881
GP Aluminum Case



7331
Compass GP

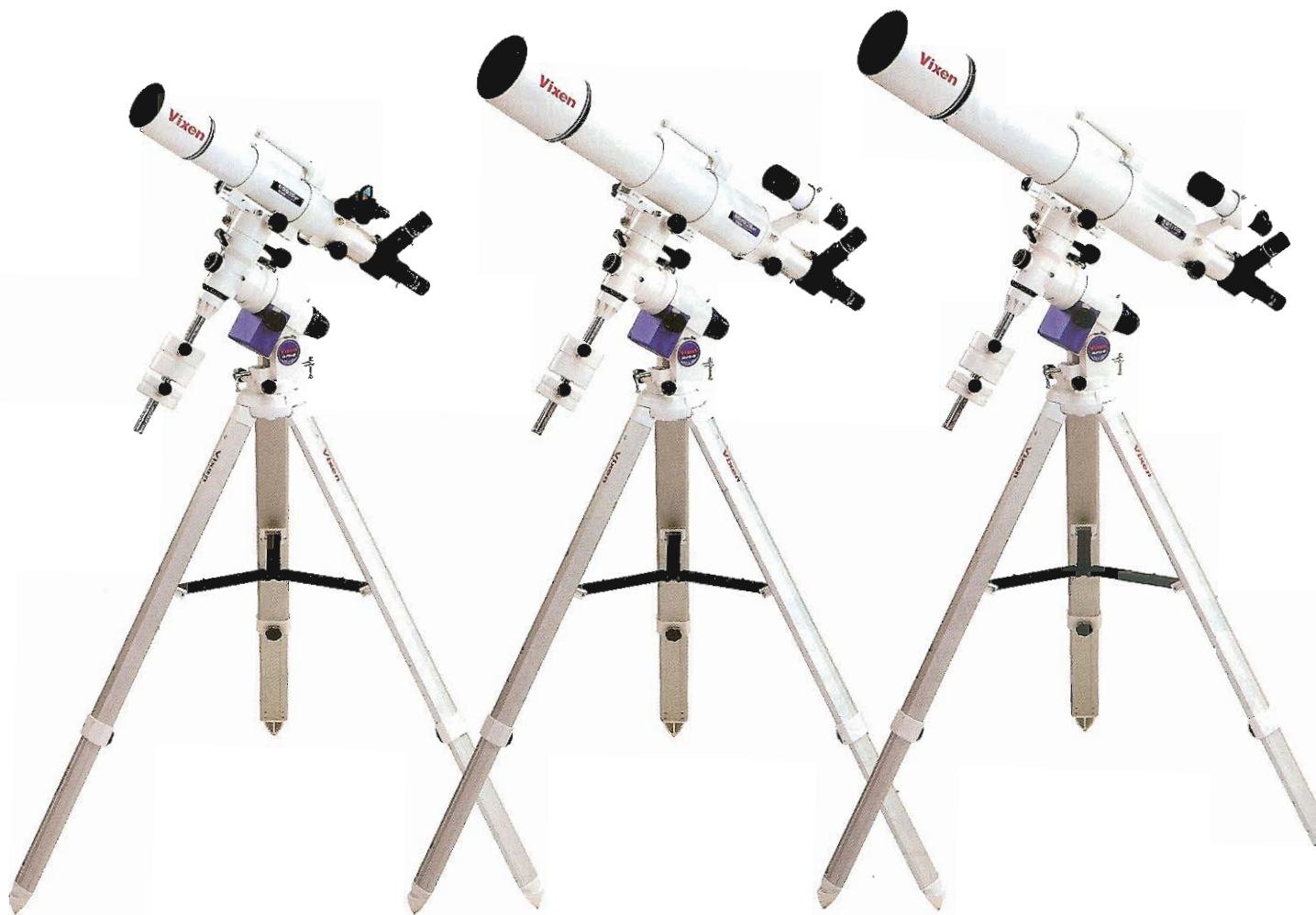


• By simply setting the data graduation circle to the hour graduation circle, the position indicator for Ppolar is set in the field of view of the polar axis scope.

• 6x20mm Polar axis scope, Usable for both the northern and southern hemispheres.

• Built-in variable intensity illuminator for polar axis scope.

GPD2 Equatorial Mount Series



39782
GPD2-ED81S (N)
 GPD2 Mount + ED81S Optical Tube + HAL130 Tripod + Eyepiece

39783
GPD2-ED81S-SBS **NEW**
 GPD2 Mount + ED81S Optical Tube + HAL130 Tripod + Eyepiece + STAR BOOK-S

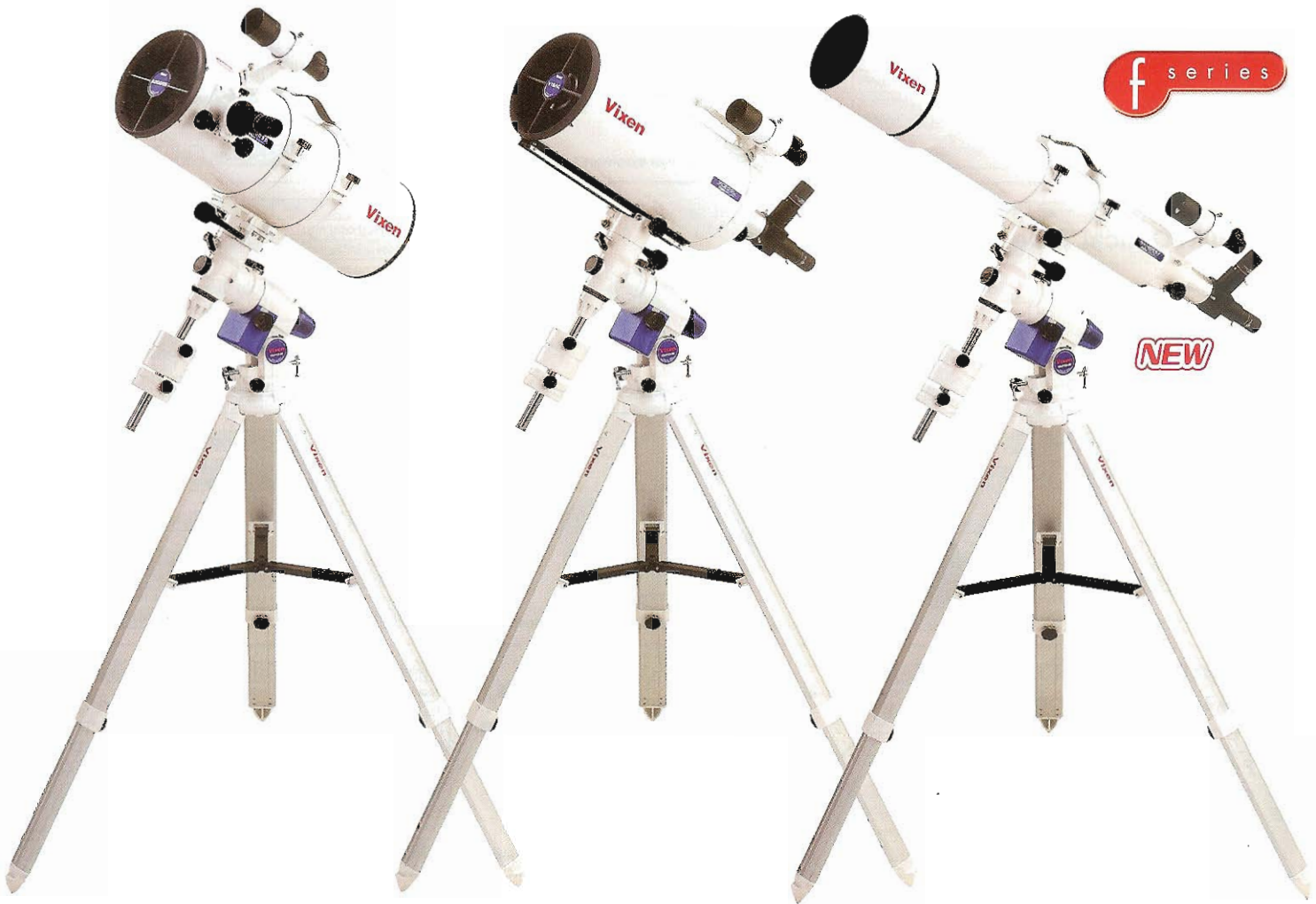
39792
GPD2-ED103S (N)
 GPD2 Mount + ED103S Optical Tube + HAL130 Tripod + Eyepiece

39793
GPD2-ED103S-SBS **NEW**
 GPD2 Mount + ED103S Optical Tube + HAL130 Tripod + Eyepiece + STAR BOOK-S

39802
GPD2-ED115S (N)
 GPD2 Mount + ED115S Optical Tube + HAL130 Tripod + Eyepiece

39803
GPD2-ED115S-SBS **NEW**
 GPD2 Mount + ED115S Optical Tube + HAL130 Tripod + Eyepiece + STAR BOOK-S

Model	GPD2-ED81S (N)	GPD2-ED103S (N)	GPD2-ED115S (N)
Effective aperture	81mm	103mm	115mm
Focal length (Focal ratio)	625mm (F7.7)	795mm (F7.7)	890mm (F7.7)
Resolving power, limiting magnitude	1.43 arc sec., 11.3	1.13 arc sec., 11.8	1.01 arc sec., 12.1
Light gathering power	134x	217x	270x
Tube size & weight	(OD) 90mm x (L) 600mm, 2.3 kg (5.1 lb)	(OD) 115mm x (L) 820mm, 3.8 kg (7.9 lb)	(OD) 125mm x (L) 940mm, 4.4 kg (9.7 lb)
Finder scope	Red dot finder	7x50mm finder, field of view 7 degrees	
Adapter thread / visual back	60mm, 42mm for T-ring / 50.8mm, 31.7mm push-in		
Eyepiece (Magnification)	NLV20 (31x), NLV5 (125x)	NLV20 (40x), NLV5 (159x)	NLV20 (45x), NLV5 (178x)
Other accessory	31.7mm Flip mirror diagonal, Counterweights 1.9 kg (4.2 lb) and 3.7 kg (8.15 lb)		
Tripod (HAL130)	Legs adjustable from 81cm to 130cm in length, 5.5 kg (12.1 lb)		
Total weight (w/o eyepiece)	23.1 kg (50.9 lb)	25.0 kg (55.1 lb)	25.8 kg (56.9 lb)



39842

GPD2-R200SS (N)

GPD2 Mount + R200SS Optical Tube + HAL130 Tripod + Eyepiece

39843

GPD2-R200SS-SBS **NEW**

GPD2 Mount + R200SS Optical Tube + HAL130 Tripod + Eyepiece + STAR BOOK-S

39852

GPD2-VC200L (N)

GPD2 Mount + VC200L Optical Tube + HAL130 Tripod + Eyepiece

39853

GPD2-VC200L-SBS **NEW**

GPD2 Mount + VC200L Optical Tube + HAL130 Tripod + Eyepiece + STAR BOOK-S

26262

GPD2-NA140SSf (N)

GPD2 Mount + NA140SSf Optical Tube + HAL130 Tripod + Eyepiece

26263

GPD2-NA140SSf-SBS **NEW**

GPD2 Mount + NA140SSf Optical Tube + HAL130 Tripod + Eyepiece + STAR BOOK-S

Model	GPD2-R200SS (N)	GPD2-VC200L (N)	GPD2-NA140SSf (N)
Effective aperture	200mm		140mm
Focal length (Focal ratio)	800mm (F4.0)	1,800mm (F9.0)	800mm (F5.7)
Resolving power, limiting magnitude	0.58 arc sec., 13.3		0.82 arc sec., 12.5
Light gathering power	816x		400x
Tube size & weight	(OD) 232mm x (L) 700mm, 5.3 kg (11.7 lb)	(OD) 232mm x (L) 620mm, 6.0 kg (13.2 lb)	(OD) 140mm x (L) 1,024mm, 6.5 kg (14.3 lb)
Finder scope	7x50mm finder, Field of view 7 degrees		
Adapter thread / visual back	60mm, 42mm for T-ring / 31.7mm push-fit		
Eyepiece (Magnification)	NLV20 (40x), NLV5 (160x)	NLV20 (90x), NLV9 (200x)	NLV20 (40x), NLV5 (160x)
Other accessory	Counterweights 1.9 kg (4.2 lb) and 3.7 kg (8.15 lb)	31.7mm Flip mirror diagonal, Counterweights 1.9 kg (4.2 lb) and 3.7 kg (8.15 lb)	
Tripod (HAL130)	Legs adjustable from 81cm to 130cm in length, 5.5 kg (12.1 lb)		
Total weight (w/o eyepiece)	26.8 kg (59.1 lb)	26.5 kg (58.4 lb)	27.9 kg (61.5 lb)

Optical Tubes

2601

A80SS Optical Tube Unit

Package

SXC-A80SS



Shown with eyepieces sold separately.

Objective lens	80mm achromatic, multi-coated
Focal length (Focal ratio)	400mm (F5.0)
Resolving power, limiting magnitude	1.45 arc sec., 11.3
Light gathering power	131x
Tube size & weight	(OD) 90mm x (L) 362mm, 2.3 kg (5.1 lb)
Finder scope	Red dot finder
Adapter thread / visual back	60mm, 42mm for T-ring / 50.8mm*, 31.7mm push-fit, with Flip mirror diagonal
Other accessory	Dovetail mounting plate
Photography**	Prime focus, Eyepiece projection and Afocal imaging

2606

A80M Optical Tube Unit

Packages

PORTA A80M
SXW-A80M
GP2-A80M (N) / -SBS



Shown with eyepieces sold separately.

Objective lens	80mm achromatic, multi-coated
Focal length (Focal ratio)	810mm (F11.4)
Resolving power, limiting magnitude	1.45 arc sec., 11.3
Light gathering power	131x
Tube size & weight	(OD) 90mm x (L) 915mm, 2.5 kg (5.5 lb)
Finder scope	Red dot finder
Adapter thread / visual back	60mm, 42mm for T-ring / 50.8mm*, 31.7mm push-fit, with Flip mirror diagonal
Other accessory	Dovetail-plate, Tube rings and Carry strap
Photography**	Prime focus, Eyepiece projection and Afocal imaging

2607

A102M Optical Tube Unit

Packages

SXW-A102M
GP2-A102M (N) / -SBS



Shown with eyepieces sold separately.

Objective lens	102mm achromatic, magnesium fluoride coating
Focal length (Focal ratio)	1,000mm (F9.8)
Resolving power, limiting magnitude	1.14 arc sec., 11.8
Light gathering power	212x
Tube size & weight	(OD) 115mm x (L) 1,080mm, 3.8 kg (8.4 lb)
Finder scope	Red dot finder
Adapter thread / visual back	60mm, 42mm for T-ring / 50.8mm*, 31.7mm push-fit, with Flip mirror diagonal
Other accessory	Dovetail-plate, Tube rings and Carry strap
Photography**	Prime focus, Eyepiece projection and Afocal imaging

26260

NA140SSf Optical Tube Unit

Packages

GPD2-NA140SSf (N) / -SBS
NEW ATLUX NA140SSf
NEW ATLUX NA140SSf-P



Shown with eyepieces sold separately.

Objective lens	140mm Neo-achromatic, multi-coated
Focal length (Focal ratio)	800mm (F5.7)
Resolving power, limiting magnitude	0.82 arc sec., 12.5
Light gathering power	400x
Tube size & weight	(OD) 140mm x (L) 1,024mm, 6.5 kg (14.3 lb)
Finder scope	7x50mm finder, field of view 7 degrees
Adapter thread / visual back	60mm, 42mm for T-ring / 50.8mm*, 31.7mm push-fit, with Flip mirror diagonal
Other accessory	Dovetail-plate and Tube rings and Carry strap
Photography**	Prime focus, Eyepiece projection and Afocal imaging

2617

ED80Sf Optical Tube Unit

Packages

PORTA ED80Sf
SKYPOD ED80Sf



Shown with eyepieces sold separately.

Objective lens	80mm ED Apochromatic, multi-coated
Focal length (Focal ratio)	600mm (F7.5)
Resolving power, limiting magnitude	1.45 arc sec., 11.3
Light gathering power	131x
Tube size & weight	(OD) 100mm x (L) 570mm, 3.4 kg (7.5 lb)
Finder scope	9x50mm finder, field of view 4.8 degrees
Adapter thread / visual back	42mm for T-ring / 50.8mm*, 31.7mm push-fit, with Flip mirror diagonal
Other accessory	Dovetail-plate, Tube rings and Aluminum case
Photography**	Prime focus, Eyepiece projection and Afocal imaging

2608

ED81S Optical Tube Unit

Packages

SXW-ED81S
SXD-ED81S
GPD2-ED81S (N) / -SBS



Shown with eyepieces sold separately.

Objective lens	81mm ED Apochromatic, multi-coated
Focal length (Focal ratio)	625mm (F7.7)
Resolving power, limiting magnitude	1.43 arc sec., 11.3
Light gathering power	134x
Tube size & weight	(OD) 90mm x (L) 600mm, 2.3 kg (5.1 lb)
Finder scope	Red dot finder
Adapter thread / visual back	60mm, 42mm for T-ring / 50.8mm*, 31.7mm push-fit, with Flip mirror diagonal
Other accessory	Dovetail-plate, Tube rings and Metal carry handle
Photography**	Prime focus, Eyepiece projection and Afocal imaging

2609

ED103S Optical Tube Unit

Packages

SXW-ED103S
SXD-ED103S
GPD2-ED103S (N) / -SBS



Shown with eyepieces sold separately.

Objective lens	103mm ED Apochromatic, multi-coated
Focal length (Focal ratio)	795mm (F7.7)
Resolving power, limiting magnitude	1.13 arc sec., 11.8
Light gathering power	217x
Tube size & weight	(OD) 115mm x (L) 820mm, 3.6 kg (7.9 lb)
Finder scope	7x50mm finder, field of view 7 degrees
Adapter thread / visual back	60mm, 42mm for T-ring / 50.8mm*, 31.7mm push-fit, with Flip mirror diagonal
Other accessory	Dovetail-plate, Tube rings and Metal carry handle
Photography**	Prime focus, Eyepiece projection and Afocal imaging

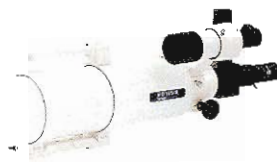
* A 50.8mm Mirror diagonal or a 50.8mm Extension tube is needed to use a 50.8mm eyepiece. ** Optional photographic accessories are needed.

2616

ED115S Optical Tube Unit

Packages

SXD-ED115S
GPD2-ED115S (N) / -SBS



Shown with eyepieces sold separately.

Objective lens	115mm ED Apochromatic, multi-coated
Focal length (Focal ratio)	890mm (F7.7)
Resolving power, limiting magnitude	1.01 arc sec., 12.1
Light gathering power	270x
Tube size & weight	(OD) 125mm x (L) 940mm, 4.4 kg (9.7 lb)
Finder scope	7x50mm finder, field of view 7 degrees
Adapter thread / visual back	60mm, 42mm for T-ring / 50.8mm*, 31.7mm push-fit, with Flip mirror diagonal
Other accessory	Dovetail-plate, Tube rings and Metal carry handle
Photography**	Prime focus, Eyepiece projection and Afocal imaging

2605

VMC110L Optical Tube Unit

Packages

PORTA VMC110L
SKYPOD VMC110L
SXC-VMC110L
GP2-VMC110L (N) / -SBS



Shown with eyepieces sold separately.

Objective lens	110mm precision spherical mirror, multi-coated
Focal length (Focal ratio)	1,035mm (F9.4)
Resolving power, limiting magnitude	1.05 arc sec., 12.0
Light gathering power	247x
Tube size & weight	(OD) 119mm x (L) 360mm, 2.1 kg (4.6 lb)
Finder scope	Red dot finder
Adapter thread / visual back	42mm for T-ring / 31.7mm push-fit
Other accessory	Dovetail mounting plate
Photography**	Prime focus, Eyepiece projection and Afocal imaging

2633

VMC200L Optical Tube Unit

Packages

SXW-VMC200L
GP2-VMC200L (N) / -SBS



Shown with eyepieces sold separately.

Objective lens	200mm precision spherical mirror, multi-coated
Focal length (Focal ratio)	1,950mm (F9.75)
Resolving power, limiting magnitude	0.58 arc sec., 13.3
Light gathering power	816x
Tube size & weight	(OD) 232mm x (L) 535mm, 5.9 kg (13 lb)
Finder scope	7x50mm finder, field of view 7 degrees
Adapter thread / visual back	60mm, 42mm for T-ring / 50.8mm*, 31.7mm push-fit, with Flip mirror diagonal
Other accessory	Dovetail mounting and Metal carry handle
Photography**	Prime focus, Eyepiece projection and Afocal imaging

2637 For NEW ATLUX

2638 For SXD

VMC260L Optical Tube Unit

Packages

SXD-VMC260L
NEW ATLUX VMC260L
NEW ATLUX VMC260L-P



Shown with eyepieces sold separately.

Objective lens	260mm precision spherical mirror, multi-coated
Focal length (Focal ratio)	3,000mm (F11.5)
Resolving power, limiting magnitude	0.45 arc sec., 13.8
Light gathering power	1,380x
Tube size & weight	(OD) 304mm x (L) 650mm, 10 kg (22.1 lb)
Finder scope	7x50mm finder, field of view 6.8 degrees
Adapter thread / visual back	60mm, 42mm for T-ring / 50.8mm*, 31.7mm push-fit, with Flip mirror diagonal
Other accessory	Dovetail mounting and Metal carry handle
Photography**	Prime focus, Eyepiece projection and Afocal imaging

2632

VC200L Optical Tube Unit

Packages

SXW-VC200L
SXD-VC200L
GPD2-VC200L (N) / -SBS



Shown with eyepieces sold separately.

Objective lens	200mm VISAC aspherical mirror, multi-coated
Focal length (Focal ratio)	1,800mm (F9.0)
Resolving power, limiting magnitude	0.58 arc sec., 13.3
Light gathering power	816x
Tube size & weight	(OD) 232mm x (L) 620mm, 6.0 kg (13.2 lb)
Finder scope	7x50mm finder, field of view 7 degrees
Adapter thread / visual back	60mm, 42mm for T-ring / 50.8mm*, 31.7mm push-fit, with Flip mirror diagonal
Other accessory	Dovetail mounting and Metal carry handle
Photography**	Prime focus, Eyepiece projection and Afocal imaging

2641

R150S Optical Tube Unit

Packages

SXW-R150S
GP2-R150S (N) / -SBS



Shown with eyepieces sold separately.

Objective lens	150mm parabolic mirror, multi-coated
Focal length (Focal ratio)	750mm (F5.0)
Resolving power, limiting magnitude	0.77 arc sec., 12.7
Light gathering power	459x
Tube size & weight	(OD) 176mm x (L) 715mm, 4.8 kg (10.6 lb)
Finder scope	Red dot finder
Adapter thread / visual back	36.4mm / 31.7mm push-fit, with Flip mirror diagonal
Other accessory	Dovetail plate, Tube rings and Carry strap
Photography**	Prime focus, Eyepiece projection and Afocal imaging

2642

R200SS Optical Tube Unit

Packages

SXW-R200SS
SXD-R200SS
GP2-R200SS (N) / -SBS
GPD2-R200SS (N) / -SBS



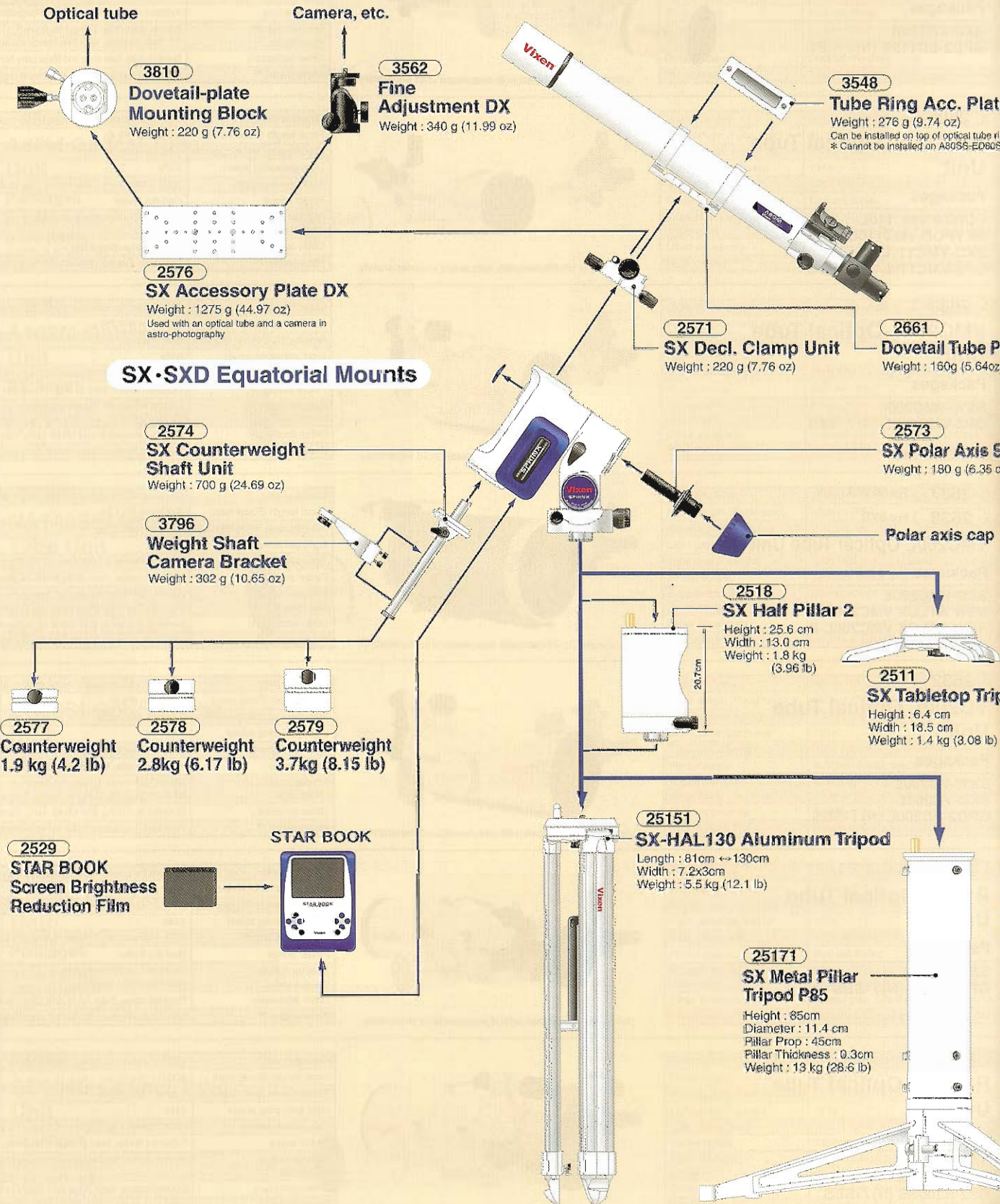
Shown with eyepieces sold separately.

Objective lens	200mm parabolic mirror, multi-coated
Focal length (Focal ratio)	800mm (F4.0)
Resolving power, limiting magnitude	0.58 arc sec., 13.3
Light gathering power	816x
Tube size & weight	(OD) 232mm x (L) 700mm, 5.3 kg (11.7 lb)
Finder scope	7x50mm finder, field of view 7 degrees
Adapter thread / visual back	60mm, 42mm for T-ring / 31.7mm push-fit
Other accessory	Dovetail plate, Tube rings and Carry strap
Photography**	Prime focus, Eyepiece projection and Afocal imaging

* A 50.8mm Mirror diagonal or a 50.8mm Extension tube is needed to use a 50.8mm eyepiece. ** Optional photographic accessories are needed.

SX, SXD, GP2 & GPD2 Equatorial Mounts Compositi

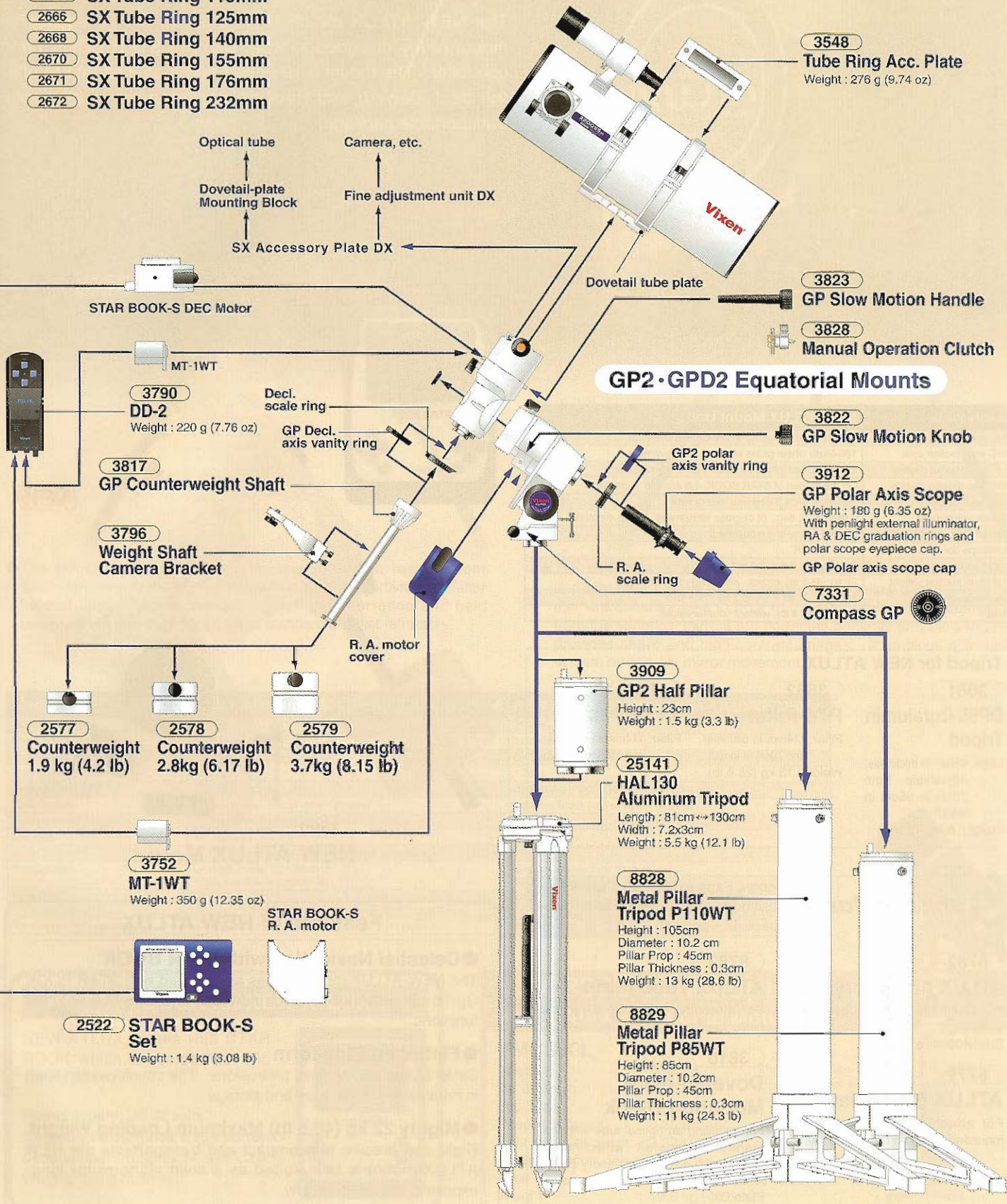
The followings are the system structure diagrams for SX and GP2 Equatorial Mounts. SXD and GPD2 Equatorial Mounts have the same structures as shown in the diagrams for SX and GP2 Equatorial Mounts respectively. The attachment parts and optional parts sold separately are also shown in the system structure diagrams.



Chart

Tube Rings

- 2664 SX Tube Ring 90mm
- 2665 SX Tube Ring 115mm
- 2666 SX Tube Ring 125mm
- 2668 SX Tube Ring 140mm
- 2670 SX Tube Ring 155mm
- 2671 SX Tube Ring 176mm
- 2672 SX Tube Ring 232mm



3548 Tube Ring Acc. Plate
Weight : 276 g (9.74 oz)

3823 GP Slow Motion Handle

3828 Manual Operation Clutch

GP2·GPD2 Equatorial Mounts

3822 GP Slow Motion Knob

3912 GP Polar Axis Scope
Weight : 180 g (6.35 oz)
With penlight external illuminator, RA & DEC graduation rings and polar scope eyepiece cap.

7331 Compass GP

3909 GP2 Half Pillar
Height : 23cm
Weight : 1.5 kg (3.3 lb)

25141 HAL130 Aluminum Tripod
Length : 81cm↔130cm
Width : 7.2x3cm
Weight : 5.5 kg (12.1 lb)

8828 Metal Pillar Tripod P110WT
Height : 105cm
Diameter : 10.2 cm
Pillar Prop : 45cm
Pillar Thickness : 0.3cm
Weight : 13 kg (28.6 lb)

8829 Metal Pillar Tripod P85WT
Height : 85cm
Diameter : 10.2cm
Pillar Prop : 45cm
Pillar Thickness : 0.3cm
Weight : 11 kg (24.3 lb)

3752 MT-1WT
Weight : 350 g (12.35 oz)

STAR BOOK-S R. A. motor

2522 STAR BOOK-S Set
Weight : 1.4 kg (3.08 lb)

3790 DD-2
Weight : 220 g (7.76 oz)

3817 GP Counterweight Shaft

3796 Weight Shaft
Camera Bracket

2577 Counterweight
1.9 kg (4.2 lb)

2578 Counterweight
2.8kg (6.17 lb)

2579 Counterweight
3.7kg (8.15 lb)

Optical tube
Dovetail-plate Mounting Block
SX Accessory Plate DX

Camera, etc.
Fine adjustment unit DX

STAR BOOK-S DEC Motor

MT-1WT

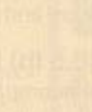
Decl. scale ring
GP Decl. axis vanity ring

GP2 polar axis vanity ring

R. A. scale ring

R. A. motor cover

Dovetail tube plate



NEW ATLUX
EQUATORIAL MOUNT

NEW ATLUX Equatorial Mount Series

A Superior German Equatorial Mount for Advanced Astronomers!

The NEW ATLUX mount is a midsized Go-To equatorial mount newly designed to work with the STAR BOOK hand controller. The mount is designed and manufactured to offer the best slewing and tracking performance in an easily transportable package.



Specifications	NEW ATLUX Mount Unit
R.A. slow motion axis	180-tooth wheel gears whole circle movement
DEC slow motion axis	180-tooth wheel gears whole circle movement
R.A. coordinates display	On the screen of STAR BOOK, 0.1 min. increments
DEC coordinates display	On the screen of STAR BOOK, 1.0 arc min. increments
Polar axis scope	6x20mm, wide 8 degrees field of view
Altitude adjustment	0 deg. to 72 deg., (2 degrees increments, 3-step elevation)
Azimuth adjustment	Double-screw fine adjustment
Telescope control system	STAR BOOK
Power source	DC12 volts, 0.4 to 1.7 amperes
Maximum loading weight	22 kg (48.5 lb) approx., excluding counterweight
Counterweight	3.5 kg (7.71 lb) x 1 and 7 kg (15.4 lb) x 1
Weight	19.7 kg (43.4 lb), without counterweight

Tripod for NEW ATLUX

3661 DP95 Duralumin Tripod Legs: 45mm in thickness, adjustable from 70cm to 95cm in length Weight: 8 kg (17.6 lb)	3662 P70 Pillar Pillar: 114mm in diameter and 70cm in length Weight: 13 kg (28.6 lb)	5603 P110 Pillar Pillar: 114mm in diameter and 110cm in length
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Optional Parts

Optional Parts expand your enjoyment in using the mount; please take a look at page 42 – page 48.

8782 ATLUX Accessory Plate For attaching Guide scopes and/or Tube rings Size: 400mm x 195mm	8783 ATLUX Tube Plate For attaching the SX / GP Tube rings.
8779 ATLUX Base Plate For attaching the Dovetail-plate mounting piece on the mount head.	3810 Dovetail-plate Mounting Block For installing an optical tube with the standard dovetail attachment. Usable with ATLUX Accessory Plate, ATLUX Base Plate or SX Accessory Plate DX.

Features of NEW ATLUX

- **Celestial Navigation with STAR BOOK**
The NEW ATLUX mount comes as standard with STAR BOOK Go-To hand controller, which now offers PEC and Autoguider functions.
- **Flattened Side-form**
Clean styling with minimal protrusions. The counterweight shaft is retractable for transport and storage.
- **Mighty 22 kg (48.5 lb) Maximum Loading Weight**
Rigid and precise yet compact and transportable the NEW ATLUX mount is best suited as a solid platform for long-exposure astrophotography.

NEW

36694
NEW ATLUX NA140SSf

NEW ATLUX Mount + NA140SSf Optical Tube + DP95 Tripod



NEW ATLUX NA140SSf shown with optional eyepieces.

36693
NEW ATLUX NA140SSf-P

NEW ATLUX Mount + NA140SSf Optical Tube + P70 Pillar

● The NA (Neo Achromatic) refractors feature a two-element secondary lens at the rear of the optical tube that provides a flatter field of view (Petzval design). Spherical aberration and field curvature are less than 1/3 to 1/5 of standard doublet refractors.

NEW

36692
NEW ATLUX VMC260L

NEW ATLUX Mount + VMC260L Optical Tube + DP95 Tripod



NEW ATLUX VMC260L shown with optional eyepieces.

36691
NEW ATLUX VMC260L-P

NEW ATLUX Mount + VMC260L Optical Tube + P70 Pillar

● The VMC260L features a large 260mm aperture yet is a compact and light weight 10 kg (22.1 lb) catadioptric optical design. With two-element corrector lens in front of the secondary mirror, aberrations from the spherical mirrors are corrected perfectly and the VMC260L provides sharp and high-contrast images. It employs a focusing system by primary mirror movement.

Model	NEW ATLUX NA140SSf	NEW ATLUX NA140SSf-P	NEW ATLUX VMC260L	NEW ATLUX VMC260L-P
Effective aperture	140mm		260mm	
Focal length (Focal ratio)	800mm (F5.7)		3,000mm (F11.5)	
Resolving power, limiting magnitude	0.82 arc sec., 12.5		0.45 arc sec., 13.8	
Light gathering power	400x		1,380x	
Tube size & weight	(OD) 140mm x (L) 1,024mm, 6.5 kg (14.3 lb)		(OD) 304mm x (L) 650mm, 10 kg (22.1 lb)	
Finder scope	7x50mm finder, field of view 7 degrees		7x50mm finder, field of view 7 degrees	
Adapter thread / visual back	60mm, 42mm for T-ring / 50.8mm, 31.7mm push-fit			
Eyepiece	Not supplied			
Other accessory	31.7mm Flip mirror diagonal, Counterweights 3.5 kg (7.7 lb) and 7 kg (15.4 lb)			
Tripod (DP95)	Legs adjustable from 70cm to 95cm in length, 3 kg (17.6 lb)	---	Legs adjustable from 70cm to 95cm in length, 8 kg (17.6 lb)	---
Pillar (P70)	---	114mm in diameter and 70cm in length, 13 kg (28.6 lb)	---	114mm in diameter and 70cm in length, 13 kg (28.6 lb)
Total weight (w/o eyepiece)	47.4 kg (104.5 lb)	52.4 kg (115.4 lb)	50.6 kg (111.6 lb)	55.6 kg (122.6 lb)

STAR BOOK for NEW ATLUX

NEW ATLUX comes with STAR BOOK which is compatible with SX / SXD.

Power supply: DC 12 volts
Electricity consumption: 0.25 watts (Max.)
Dimensions: 19.5cm x 14.5cm x 2.8cm
Weight: 400 g (0.88 oz)



VMC330L Catadioptric with GAIA Equatorial Mount

VMC330L

Aperture : 330mm
Focal length : 4,300mm
Focal ratio : F13
Resolving power : 0.35 arc sec.
Light gathering power : 2,222x
Limiting magnitude : 14.4
Tube size : (OD) 390mm x (L) 933mm
Weight : 19.8 kg (43.6 lb)

Shown with the GAIA, Vixen's greatest equatorial mount, made to order.



Using Premium Vixen Eyepieces

NLV Series Eyepieces

NEW



The Vixen NLV series eyepieces feature comfortable long 20mm eye-relief, simple twist-up eyecup for adjusting the best eye-point and high-grade Lanthanum glasses for clear and high contrast viewing. Fully multi-coated optics.

No.	Description	Size	Apparent FOV*	Eye-relief	Weight
37101	NLV2.5mm	31.7mm	45°	20mm	157 g (5.54 oz)
37102	NLV4mm	31.7mm	45°	20mm	152 g (5.36 oz)
37103	NLV5mm	31.7mm	45°	20mm	149 g (5.26 oz)
37104	NLV6mm	31.7mm	45°	20mm	149 g (5.26 oz)
37106	NLV9mm	31.7mm	50°	20mm	158 g (5.57 oz)
37107	NLV10mm	31.7mm	50°	20mm	153 g (5.4 oz)
37108	NLV12mm	31.7mm	50°	20mm	152 g (5.36 oz)
37109	NLV15mm	31.7mm	50°	20mm	140 g (4.94 oz)
37112	NLV20mm	31.7mm	50°	20mm	131 g (4.62 oz)
37113	NLV25mm	31.7mm	50°	20mm	128 g (4.51 oz)
37114	NLV40mm	31.7mm	42°	32mm	139 g (4.90 oz)

*FOV = Field of view

NPL Series Eyepieces

NEW



The 2-group 4-element Plossl design of the NPL series eyepieces offer flat and clear images with good color-correction. Among others the NPL20, NPL25, NPL30 and NPL40 eyepieces feature twist-up eyecup. Fully multi-coated optics.

No.	Description	Size	Apparent FOV	Eye-relief	Weight
39202	NPL6mm	31.7mm	50°	3mm	70 g (2.47 oz)
39204	NPL10mm	31.7mm	50°	6.5mm	80 g (2.82 oz)
39205	NPL15mm	31.7mm	50°	11mm	100 g (3.53 oz)
39206	NPL20mm	31.7mm	50°	15mm	110 g (3.88 oz)
39207	NPL25mm	31.7mm	50°	19.5mm	130 g (4.59 oz)
39208	NPL30mm	31.7mm	50°	24mm	120 g (4.23 oz)
39209	NPL40mm	31.7mm	40°	36mm	120 g (4.23 oz)

- 1) A 32mm long eye-relief for NLV40 eyepiece.
- 2) Not usable with the following optional parts:- Camera Adapter SX (3931), Camera Adapter 36.4(3911), Digital Camera Adapter DG-LV DX(3918) and Universal Digital Camera Adapter(3919).
- 3) Lanthanum glass is not used for NLV40 eyepiece.

LVW Series Eyepieces

The Vixen LVW series eyepieces feature comfortable long 20mm eye-relief, wide 65 degrees apparent field of view and high-grade Lanthanum glasses for clear and high contrast viewing. Fully multi-coated optics (Multi-coated for LVW42).

No.	Description	Size	Apparent FOV	Eye-relief	Weight
3856	LVW3.5mm	31.7mm	65°	20mm	510 g (17.99 oz)
3857	LVW5mm	31.7mm	65°	20mm	500 g (17.64 oz)
3895	LVW8mm	31.7mm	65°	20mm	495 g (17.46 oz)
3896	LVW13mm	31.7mm	65°	20mm	460 g (16.23 oz)
3897	LVW17mm	31.7mm	65°	20mm	440 g (15.52 oz)
3898	LVW22mm	31.7mm	65°	20mm	430 g (15.17 oz)
3727	LVW42mm	50.8mm	65°	20mm	545 g (19.22 oz)

● 50.8mm Eyepieces

No.	Description	Apparent FOV	Eye-relief	Weight
3759	LV30mm	60°	20mm	440 g (15.52 oz)
3745	LV50mm	45°	20mm	500 g (17.64 oz)
3914	SV42mm	45°	22mm	375 g (13.23 oz)
3915	SV50mm	42°	22mm	390 g (13.76 oz)



● 31.7mm Eyepiece with illuminated reticle

No.	Description	Apparent FOV	Eye-relief	Weight
3660	OR12.5mm with illuminated reticle	32°	10.8mm	158 g (5.57 oz)

● 31.7mm Zoom Eyepiece

No.	Description	Apparent FOV	Eye-relief	Weight
3777	LV8~24mm	60°~40°	19mm	215 g (7.58 oz)

Barlow Lenses

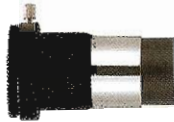
Diagonals

Filter



3674
2X Barlow Lens DX 31.7mm

Weight: 140 g (4.94 oz)
• 3-element lens design
• Fully multi-coated
• For telescopes with fast focal ratio



3907
2X Barlow Lens T 31.7mm

Weight: 80 g (2.82 oz)
• Thread for T-ring
• Coated optics



3675
Diagonal Prism 31.7mm

Weight: 124 g (4.37 oz)
• Not usable on reflectors



2680
Flip Mirror

Weight: 295 g (10.4 oz)
• Thread for T-ring
• 50.8mm push-fit
• For 31.7mm eyepiece



3702
Moon Glass 31.7mm

Weight: 10 g (0.35 oz)
• 19mm effective aperture

Eyepiece Adapters

Terrestrial Viewing Adapters



3720
EA36.4mm to 31.7mm

Weight: 29 g (1.02 oz)
• 36.4mm thread



37291
EA50.8mm to 43mm

Weight: 85 g (3.00 oz)



3725
EA60mm to 50.8mm

Weight: 66 g (2.33 oz)
• 60mm thread



8791
45° Erect-image Diagonal 31.7mm

Weight: 124 g (4.37 oz)
• Not usable on reflectors



3847
Erect-image Adapter 31.7mm

Weight: 190 g (6.70 oz)
• Usable on both refractors and reflectors
• Coated optics

Extension Tubes and Rings



2956
Extension Tube VC

Weight: 115 g (4.06 oz)
• 60mm thread
• 66mm in length



2957
Extension Tube 43mm

Weight: 37 g (1.31 oz)
• 43mm thread
• 41mm in length



2951
64mm DC Ring

Weight: 22 g (0.78 oz)
• Convert 60mm thread to 53mm thread
• 4mm in thickness (exclusive of the threaded outside)



2952
55mm DC Ring

Weight: 19 g (0.67 oz)
• Convert 53mm thread to 43mm thread
• 3mm in thickness (exclusive of the threaded outside)



2953
45mm DC Ring

Weight: 19 g (0.67 oz)
• Convert 43mm thread to 36.4mm thread
• 8mm in thickness (exclusive of the threaded outside)



2961
Extension Tube R200SS

Weight: 11 g (0.39 oz)
• 42mm T-thread and 43mm thread
• 20mm in length

Visual / Photographic Accessories

Item	Tele-Extender R	Tele-Extender R200SS	Focal Reducer for ED	Focal Reducer for VC200L	Focal Reducer for VMC	Coma Corrector 2 R200SS
No.	3631	3639	3666	3668	3871	3746
Usable with	R150S	R200SS	ED81S ED103S ED115S	VC200L	VMC200L VMC260L	R200SS
Function	Extends focal length by 2x 750mm to 1,500mm	Extends focal length by 1.9x 800mm to 1,520mm	Reduces focal length by 0.67x 825mm to 419mm (F6.2) for ED81S 795mm to 533mm (F5.2) for ED103S 890mm to 596mm (F5.2) for ED115S	Reduces focal length by 0.71x 1,800mm to 1,278mm (F6.4)	Reduces focal length by 0.62x 1,950mm to 1,209mm (F6) for VMC200L 3,000mm to 1,860mm (F7.1) for VMC260L	Reduces coma aberration around the edge of field of view. The focal length is not changed.
Prime focus photography	T-ring is needed	T-ring is needed	Wide photo adapter 60mm and T-ring is needed	T-ring and Wide photo adapter 60mm or Camera Adapter 43 DX is needed.	Wide photo adapter 60mm and T-ring is needed	T-ring is needed
Eyepiece projection	×	○ (Optional Camera adapter 43 DX and extension tube is needed.)	×	×	×	×
Visual observation	○	○ (EA36.4 to 31.7 is needed). Not usable with Coma Corrector together.	×	×	×	○
Weight	155 g (5.47 oz)	99 g (3.49 oz)	174 g (6.14 oz)	85 g (3.0 oz)	183 g (6.46 oz)	100 g (3.53 oz)

Finder Scopes

NEW



2650
XY Red Dot Finder

Weight: 160 g (5.64 oz)



8616
7x50 Finder Scope with built-in illuminated reticle

Weight: 365 g (12.87 oz)
• Field of view 7 degrees



2656
50mm Finder bracket (short-legged)

Weight: 195 g (6.88 oz)



2658
50mm Finder bracket (long-legged)

Weight: 270 g (9.52 oz)



2654
Finder Bracket Shoe

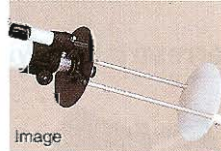
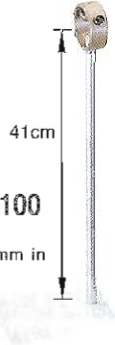
Weight: 96 g (3.39 oz)

Solar Observation Accessories



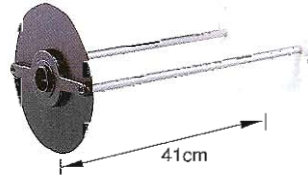
3594
Sun Projection Screen 100

Weight: 360 g (12.7 oz)
• For drawtubes smaller than 45mm in diameter
• Screen size: 130x110mm



3544
Sun Projection Screen 150

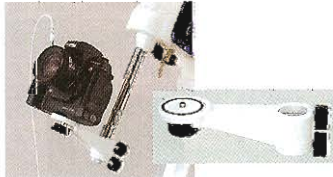
Weight: 860 g (30.34 oz)
• Attached to 36.4mm thread
• Screen size: 205mm in diameter



2690
Sun Projection Screen SX Attachment Kit

• For attaching Sun projection screen 150 to the drawtube of a refractor.
• Consisting of 64mm DC Ring, 55mm DC Ring, 45mm DC Ring, Extension Tube 36.4mm and EA36.4mm to 31.7mm.

Mounting Bracket, Photographic Aid



3796
Weight-shaft Camera Bracket

Weight: 302 g (10.65 oz)



3562
Fine Adjustment Unit DX

Weight: 340 g (11.99 oz)
• Piggyback a 1/4"-20 unit
• With X-Y positioning (+/- 10 deg.)



3548
Tube-ring Accessory Plate

Weight: 276 g (9.74 oz)
• For mounting a guide scope or etc. on the optical tube.
• With a 1/4"-20 screw



3943
Camera-platform Adapter-HAL Tripod

Weight: 380 g (13.4 oz)
• For mounting a camera or a photographic piece on the SX-HAL130 and HAL130 tripod.
• With a 1/4"-20 screw

Half Pillars



2662
Universal Dovetail Plate

Weight: 310 g (10.93 oz)
• For balancing a telescope
• 230mm in length
• With 1/4"-20 thread



SX Half Pillar2

2518
SX Half Pillar2

Weight: 1.8 kg (3.96 lb)
• For SX, SXD, SKYPOD

NEW

3909
GP2 Half Pillar

Weight: 1.5 kg (3.3 lb)
• For GP2, GPD2

Mounting Bracket, Photographic Aid



3810
Dovetail-plate Mounting Block

Weight: 220g (7.73 oz)
• For optical tubes in SX, SXD, GP2, GPD2 series.



2576
SX Accessory Plate DX

Weight: 1,275 g (44.97 oz)
• For SX, SXD, GP2, GPD2
• Size: 330mm x 120mm x 12mm
• Not usable with VC and VMC optical tubes.



3541
Dew Heater

Weight: 100 g (3.53 oz)
• Water resistant heater
• 665mm in length
• With battery box (for 8 x D-size)



3565
Accessory Case

Size: 215mm x 30.5mm x 80mm
• For eyepiece, adapter rings and etc.

Bags and Cases for Storage

NEW



26961
HAL130 Tripod Carrying Bag
 Size: 850mm x 175mm
 • For SX-HAL130 and HAL130 tripods
 • Holds a Half pillar



2696
HAL110 Tripod Carrying Bag
 Size: 760mm x 175mm
 • For HAL110 and DP95 tripods
 • Holds a Half pillar also.



3880
VC200L / VMC200L Aluminum Case
 Weight: 5.2 kg (11.4 lb)
 Size: 335mm x 670mm x 270mm



2697
SPHINX Aluminum Case
 Weight: 6.1 kg (13.4 lb)
 Size: 470mm x 500mm x 220mm



3881
GP Aluminum Case
 Weight: 4.4 kg (9.7 lb)
 Size: 470mm x 500mm x 220mm

Battery Boxes and AC Adapter



8619
Battery Box
 Weight: 150g (5.29 oz)
 • For DD-2 controller



3599
AC Adapter 12V 3A
 Weight: 320 g (11.29 oz)
 Input: 100V to 240V
 Output: 12V 3.3A



8644
Cigarette-lighter Plug Cord - SX
 • For SX, SXD, SKYPOD and STAR BOOK-S controller

2536
SX Battery Box
 Weight: 150g (5.29 oz)
 • For SX, SXD, SKYPOD and STAR BOOK-S controller

8643
Cigarette-lighter Plug Cord - GP
 • For DD-2 controller

Accessories for NEW ATLUX



8782
ATLUX Accessory Plate
 For attaching Guide scopes and/or Tube rings
 Size: 400mm x 195mm



8779
ATLUX Base Plate
 For attaching the Dovetail-plate mounting piece on the ATLUX mount head.



8783
ATLUX Tube Plate
 For attaching the SX / GP Tube rings.

Other Convenient Parts / Accessories



2954
60mm Ring w/T-thread Adapter
 Weight: 26 g (0.92 oz)
 • Dislocation ring. Same parts supplied with the R200SS focuser. Use to change an image orientation in photography.



3732
Light Baffle Hood
 • Wrapping hood for VC200L, VMC200L and R200SS
 • 20cm in length



7331
Compass GP
 Weight: 2 g (0.07 oz)
 • For GP2, GPD2

3703
Illuminated Guiding Adapter GA-4 31.7mm
 Weight: 312 g (11.2 oz)
 • Battery: LR44 x 2 (supplied)

Specifications

- 1 Dark-field illuminated reticle
- 2 3x Barlow lens
- 3 Eyepiece holder adjustment/lock ring

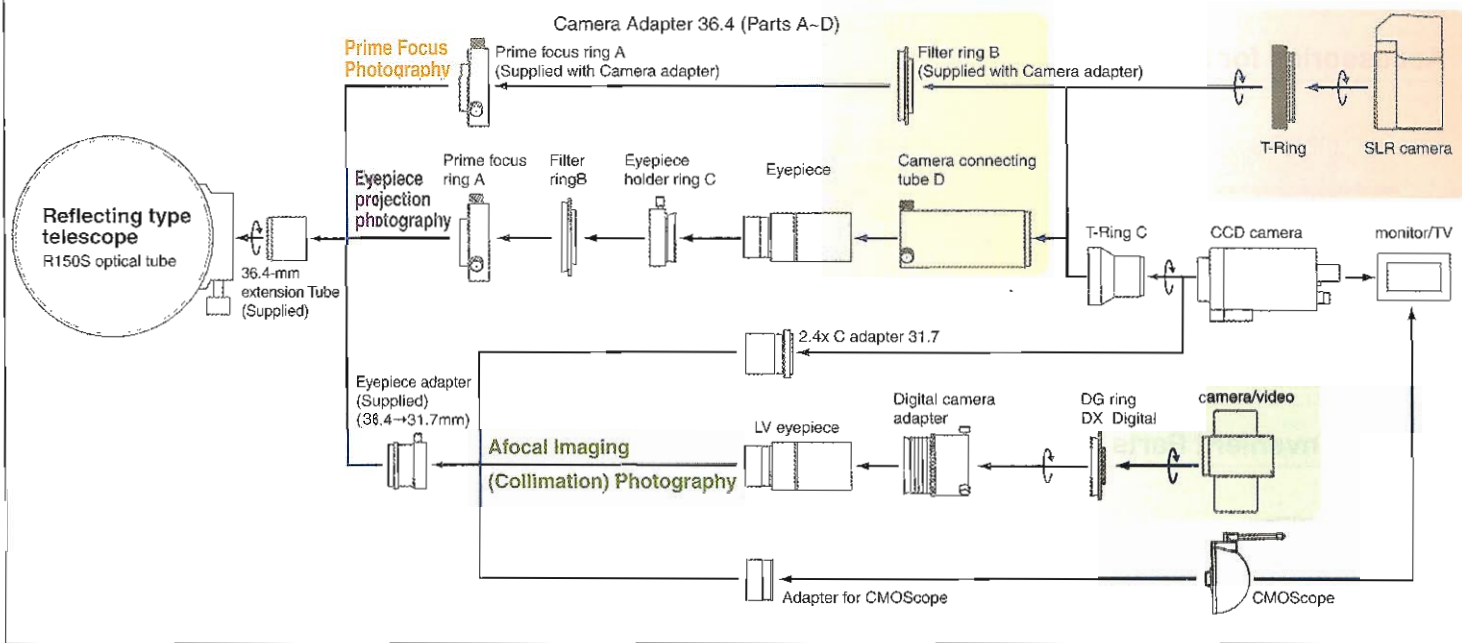
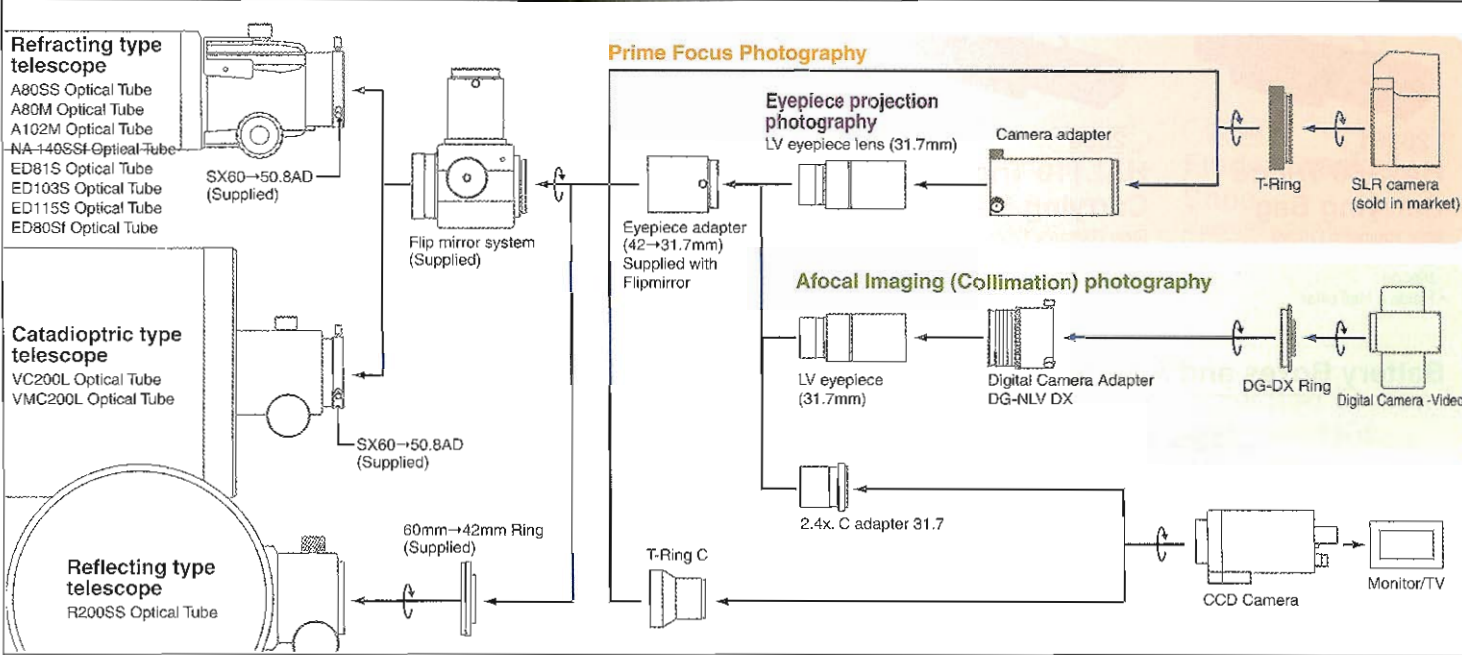
• The following table indicates guiding tolerances by focal length of the photographic lens when the GA-4 is used on a guide scope with a 1,000mm focal length.

GA-4 Circles	1 st	2 nd	3 rd	4 th	5 th	6 th
Focal length of your Photographic lens	464mm	232mm	116mm	58mm	29mm	14.5mm

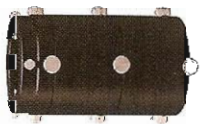
Features of GA-4

- Only the scale is illuminated in red in the dark field and you can find less bright stars.
- The cross-hairs is graduated in 5 arc sec. increments (used with f=1,000mm guide scope) for precise guiding.
- Accurate guiding is possible with the built-in 3x Barlow lens.

Photographic Accessory Chart



Camera Adapters / T-rings



39361
Eyepiece Projection Camera Adapter

Weight: 242g (8.54 oz)
 • For eyepiece projection photography
 • 105mm in length and 60mm in diameter
 • Attachable to flip mirror or R200SS focuser
 • Not usable with LVW series eyepiece and 50.8mm eyepiece.



3911
Camera Adapter 36.4

Weight: 196 g (6.91 oz)



3523
Camera Adapter 43 DX

Weight: 390 g (13.76 oz)
 • For both prime focus and eyepiece projection photography.
 • Attachable to 43mm thread
 • With 48mm thread for filter
 • 164mm in length and 63mm in diameter
 • Not usable with 50.8mm eyepiece.



Wide Photo Adapter 60mm

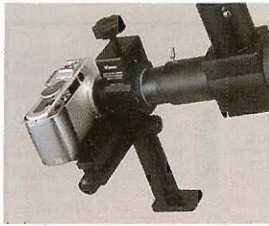
Weight: 55 g (1.94 oz)
 • For prime focus photography with R200SS or VC200L
 • Use a T-ring together.

3876
Wide Photo Adapter 60mm for Canon EOS

3877
Wide Photo Adapter 60mm for Olympus

3878
Wide Photo Adapter 60mm for General type

Photographic Accessory

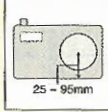


3919 Universal Digital Camera Adapter

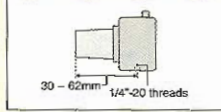
- Weight: 370 g (13.05 oz)
- Attachable to the barrel of an eyepiece with 28mm to 45mm in diameter.
 - Maximum loading weight: 800g (28.2 oz)

Size of a compact digital camera usable on the Universal digital camera adapter.

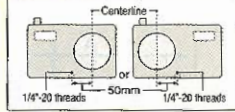
- The height from the bottom of a camera to a center of the lens: Between 25mm and 95mm.



- The length (depth) from the head of a lens to the 1/4"-20 thread hole on the bottom: Between 30mm and 62mm.



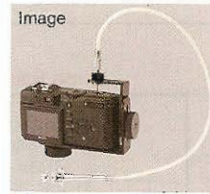
- The width between the center of a lens and the 1/4"-20 thread hole on the bottom: Within 50mm.



- It is designed to pinch the outer rim of the eyepiece of the optical device, so it can accommodate various sizes of eyepieces.

- Slow motion control is equipped on the camera mount. The camera can freely be moved in the vertical and horizontal directions, making it easy to adjust the optical axis.

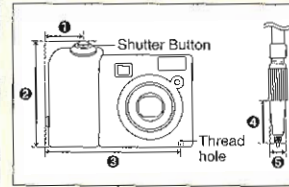
Photographic Accessory



3919 Cable Release Bracket

Weight: 70 g (2.47 oz)

Applicable Compact Digital Camera / Cable Release



Camera	
1	Shutter position: Within 22mm from the side of the bracket
2	Camera Height: Within 80mm from the bottom of the bracket
3	Thread hole position: Within 80mm from the side of the bracket
Cable Release	
4	Over 12mm in length
5	Within 7mm in diameter

Photographic Accessory



DG-DX Ring

- Available for 28mm, 37mm, 43mm and 52mm thread.

37221 Digital Camera Adapter DG-NLV DX

Weight: 153 g (5.40 oz)

No.	Description	Thread	Applicable Digital Camera Models
3932	DG-DX 28	28mm	Nikon: COOL PIX800, 900, 910, 950, 990, 995, 4500 (with Nikon AD), 700, 775, 880, 885, 4300, 5000, 8400 / Kyosera: CONTAX300RT*, CONTAX U4R
3933	DG-DX 37	37mm	Sony: DSC-P30, P50, S30, S50, MVC-FD92 / Ricoh: Caplio-400G wide (with Ricoh AD), CaplioGX, CaplioGX8, Caplio-GR / Canon (with Canon AD), PowerShot S60, S70 (Video Camcorder) Sony: DCR-PC100, 110, 120, DCR-TRV30, 50, 240K, 300K, 820K, TR-290PK, CCD-TRV96K / Sharp: VL-MR1 / Victor: GR-DVA30K, 33K
3934	DG-DX 43	43mm	Olympus: CAMEGIA2500L, C1000L, C1400L, C1400XL (with Olympus AD), 2000Z, 2020Z, 2040Z, 3030Z, 3040Z, 3100Z, 4040Z, 4100Z, 5050Z Casio: QV-2800UX, 2900UX, 8000SX (with Casio AD), 2300UX, 2400UX (Video Camcorder) Panasonic: NV-MX3000 / Canon: PV130
3935	DG-DX 52	52mm	Sony: DSC, S70, MVC-FD91, FD95, FD97, CD1000 (with Sony AD), DSC-S75, S85, V1, MVC-CD300, CD400, CD500 / Panasonic (with Panasonic AD), DMC-LC5 Canon (with Canon AD), PowerShot A10, A20, A30, A40, A80, A70, A75, A80, A85, A95 Toshiba (with Toshiba AD), Allegretto M70, M700 / Kyosera: Fine Cam M410R (Video Camcorder) Sony: DCR-TRV900

*The edge of field of view is vignitted by afocal imaging photography with a digital camera adapter.

Electronics for Imaging



3520 AGA-1 Auto-guide Adapter (Limited)

Weight: 210 g (7.41 oz)

Size: 125mm x 80mm x 32mm, Black color body

- The AGA-1 works with a CCD video camera to track a star and perform automatic telescope guiding through STAR BOOK (or SkySensor 2000-PC) hand controller.
- Usable with NTSC video system only.



3379 C004-3M Color CCD Video Camera

Weight: 315 g (11.1 oz)

- With AC adapter, cord and NBC-RCA conversion plug.
- NTSC only



3382 B2-3A Monochrome CCD Video Camera

Weight: 124 g (4.37 oz)

- NTSC only

Specifications	C004-3M	B2-3A
Image Device	Color 1/3 inch CCD	Monochrome 1/3 inch CCD
Number of pixels	811 x 508 = 411,988	512 x 492 = 251,904
Minimum sensitivity	About 0.008 lux	About 0.2 lux.
AGC	Auto and Manual Auto	
Contrast (γ)	Fixed at 0.45	Fixed at 0.45
Power source	DC 11 to 13 volts	DC 11 to 13 volts

Adapters for CCD Imaging (For CCD Video Camera)



3748 C-Mount Tele-Extender 2.4X

- Weight: 37 g (1.31 oz)
- For 31.7mm visual back
 - Extends focal length by 2.4X.



3772 C-Mount Reducer 0.6X

- Weight: 48 g (1.69 oz)
- Reduces focal length by 0.6X.
 - Use a T-C ring together.



2424 CCD Adapter F

- Weight: 252 g (8.89 oz)
- For 31.7mm visual back.
 - Relay lens for CCD video camera, not usable on reflectors.
 - Varies focal length between 0.33X and 1X.

Adaptation of Optical Accessories to Telescopes

S : Supplied ⊙ : Suitable △ : Can be outfitted with optional adapter (s).

Pages	Telescopes	Optional Accessories		Eyepiece		Visual Observation Accessories								Others				Photographic Accessories				
		Eyepiece 31.7mm	Eyepiece 50.8mm	Diagonal Mirror 50.8mm	Erect-Image Diagonal 45° 31.7mm	Erect-Image Adapter 31.7mm	Barlow lens 31.7mm	Sun projection Screen 100	Sun Projection Screen 150	Flip Mirror	SX Half Pillar 2	Tube Acc. Plate	Weight Shaft Camera Bracket	Accessory Plate DX	GA-4 Illuminated Guiding Adapter	Camera Adapter 36.4	Eyepiece Projection Camera Adapter	Digital Camera Adapter DG-NLV DX	CCD Video Camera	Autoguide Adapter AGA-1		
P8 P11	PORTA A80Mf	⊙			⊙	⊙	⊙	⊙	△⑤							⊙	△⑦	△⑧				
	PORTA A70Lf	⊙			⊙	⊙	⊙									⊙	△⑦	△⑧				
	PORTA R130Sf	⊙				⊙	⊙									⊙	△⑦	△⑧				
	PORTA ED80Sf	⊙	△⑩	⊙		⊙	⊙				S					⊙	△⑦	△⑧				
	PORTA VMC110L	⊙				⊙	⊙									⊙	△⑦	△⑧				
	PORTA A80M	⊙	△①	⊙	△③	⊙	⊙		△④	S		⊙				⊙	△⑦	△⑧				
P12 P14	SKYPOD VMC110L	⊙				⊙										⊙	△⑦	△⑧				
	SKYPOD A70Lf	⊙			⊙	⊙	⊙			S						⊙	△⑦	△⑧				
	SKYPOD A80Mf	⊙			⊙	⊙	⊙	⊙	△⑤	S						⊙	△⑦	△⑧				
	SKYPOD R130Sf	⊙				⊙	⊙			S						⊙	△⑦	△⑧				
P15	STAR PAL-50L	⊙				⊙	⊙															
	STAR PAL-60L	⊙				⊙	⊙															
P20	SXW-A80M	⊙	△①	⊙	△③	⊙	⊙		△④	S	S	⊙	⊙	⊙	⊙		⊙	△⑦	△⑧	△		
	SXW-A102M	⊙	△①	⊙	△③	⊙	⊙		△④	S	S	⊙	⊙	⊙	⊙		⊙	△⑦	△⑧	△		
	SXC-A80SS	⊙	△①	⊙	△③	⊙	⊙			S				⊙		⊙	△⑦	△⑧	△			
P21	SXW-ED81S	⊙	△①	⊙	△③	⊙	⊙		△④	S	⊙	⊙	⊙	⊙		⊙	⊙	△⑧	△			
	SXW-ED103S	⊙	△①	⊙	△③	⊙	⊙		△④	S	S	⊙	⊙	⊙		⊙	⊙	△⑧	△			
P22	SXC-VMC110L	⊙				⊙	⊙							⊙		⊙	△⑦	△⑧	△			
	SXW-VMC200L	⊙	△①	⊙	△③	⊙	⊙			S	⊙		⊙	△⑥	⊙		⊙	△⑧	△			
P23	SXW-VC200L	⊙	△①	⊙	△③	⊙	⊙			S	⊙		⊙	△⑥	⊙		⊙	△⑧	△			
P24	SXW-R150S	⊙				⊙	⊙				⊙	⊙	⊙	⊙	⊙		⊙	△⑨	△			
	SXW-R200SS	⊙	△②			⊙	⊙				⊙	⊙	⊙	⊙		⊙	⊙	△⑧	△			
P26 P27	SXD-ED81S	⊙	△①	⊙	△③	⊙	⊙		△④	S	⊙	⊙	⊙	⊙		⊙	⊙	△⑧	△			
	SXD-ED103S	⊙	△①	⊙	△③	⊙	⊙		△④	S	S	⊙	⊙	⊙		⊙	⊙	△⑧	△			
	SXD-ED115S	⊙	△①	⊙	△③	⊙	⊙		△④	S	S	⊙	⊙	⊙		⊙	⊙	△⑧	△			
	SXD-R200SS	⊙	△②			⊙	⊙				⊙	⊙	⊙	⊙		⊙	⊙	△⑧	△			
	SXD-VC200L	⊙	△①	⊙	△③	⊙	⊙			S	⊙		⊙	△⑥	⊙		⊙	△⑧	△			
P30 P32	GP2-A80M (N)	⊙	△①	⊙	△③	⊙	⊙		△④	S		⊙	⊙	⊙		⊙	△⑦	△⑧	△			
	GP2-A102M (N)	⊙	△①	⊙	△③	⊙	⊙		△④	S		⊙	⊙	⊙		⊙	△⑦	△⑧	△			
	GP2-R150S (N)	⊙				⊙	⊙					⊙	⊙	⊙	⊙		△⑦	△⑨	△			
	GP2-R200SS (N)	⊙	△②			⊙	⊙					⊙	⊙	⊙		⊙	△⑦	△⑧	△			
	GP2-VMC110L (N)	⊙				⊙	⊙					⊙	△⑥	⊙		⊙	△⑦	△⑧	△			
	GP2-VMC200L (N)	⊙	△①	⊙	△③	⊙	⊙			S			⊙	△⑥	⊙		⊙	△⑦	△⑧	△		
	GP2-A80Mf (N)	⊙			⊙	⊙	⊙	⊙	△⑤			⊙	⊙	⊙		⊙	△⑦	△⑧	△			
	GP2-R130Sf (N)	⊙				⊙	⊙					⊙	⊙			⊙	△⑦	△⑧	△			
P34 P35	GPD2-ED81S (N)	⊙	△①	⊙	△③	⊙	⊙		△④	S		⊙	⊙	⊙		⊙	⊙	△⑧	△			
	GPD2-ED103S (N)	⊙	△①	⊙	△③	⊙	⊙		△④	S		⊙	⊙	⊙		⊙	⊙	△⑧	△			
	GPD2-ED115S (N)	⊙	△①	⊙	△③	⊙	⊙		△④	S		⊙	⊙	⊙		⊙	⊙	△⑧	△			
	GPD2-R200SS (N)	⊙	△②			⊙	⊙					⊙	⊙	⊙		⊙	⊙	△⑧	△			
	GPD2-VC200L (N)	⊙	△①	⊙	△③	⊙	⊙			S			⊙	△⑥	⊙		⊙	△⑧	△			
P41	GPD2-NA140SSf (N)	⊙	△①	⊙	△③	⊙	⊙		△④	S		⊙	⊙	⊙		⊙	⊙	△⑧	△			
	NEW ATLUX NA140SSf	⊙	△①	⊙	△③	⊙	⊙		△④	S		⊙	⊙	⊙		⊙	△⑦	△⑧	△			
	NEW ATLUX NA140SSf-P	⊙	△①	⊙	△③	⊙	⊙		△④	S		⊙	⊙	⊙		⊙	△⑦	△⑧	△			
	NEW ATLUX VMC260L	⊙	△①	⊙	△③	⊙	⊙			S		⊙	⊙	⊙		⊙	△⑦	△⑧	△			
	NEW ATLUX VMC260L-P	⊙	△①	⊙	△③	⊙	⊙			S		⊙	⊙	⊙		⊙	△⑦	△⑧	△			

①Used with VC Extension Tube and/or Diagonal Mirror 50.8 ②Used with 60→50.8 AD ③Used with 64-mm DC Ring, 55-mm DC Ring, 45-mm DC Ring, 43-mm Extension Tube, 36.4→31.7AD ④Used with Screen Attachment Kit ⑤Used with 45-mm DC Ring, 36.4→31.7AD. ⑥Used with Dovetail-plate Mounting Block ⑦Used with 31.7mm LV or NLV Eyepiece ⑧Used with T-C Ring ⑨Used with Camera Adapter 36.4 and T-C Ring ⑩Used with Diagonal Mirror 50.8

Photo Guider

A compact and lightweight GP2 Photo Guider is a mighty tracking mount for guided-camera astrophotography.



3540

GP2 Photo Guider

With Aluminum piping tripod legs, drive motor and single axis controller.

Weight: 6 kg (13.2 lb)

● Auto-tracking capabilities without corrections

35mm Photographic lens	Exposure times
50mm	About 30 minutes
100mm	About 10 minutes
200mm	About 5 minutes

*Allowable exposure times shown above vary according to polar alignment accuracy and atmospheric conditions.



Comes with a Carry Bag.

Specifications	GP2 Photo Guider
R.A. slow motion axis	144-tooth wheel gears whole circle movement
R.A. graduations	10 minutes increments
R.A. slow motion	2.5 degrees per rotation
Polar axis scope	6x20mm with illuminated reticle
Altitude adjustment	0 degree to 62 degrees. (2-degree increments)
Azimuth adjustment	Double-screw fine adjustment, about 1 degree per rotation
Motor drive	Optional, with STAR BOOK-S set or D2M motor drive set
Maximum loading weight	About 2.5 kg (5.5 lb), excluding counterweight
Counterweight	1.1 kg (2.4 lb) x 1
Tripod	Legs adjustable from 42cm to 70cm in length, 1.8 kg (4 lb)
Total weight	6.0 kg (13.2 lb)

Binocular Telescope

Optional accessories for BT80-A

3798

Swing Bracket

Weight: 1000 g (35.27 oz)

3806

HF Altazimuth Fork Mount

Weight: 3.5 kg (7.71 lb)

25141

HAL130 Aluminum Tripod

Weight: 5.5 kg (12.1 lb)



Swing Bracket

HF Altazimuth Fork Mount

Shown with both Swing bracket and HF Altazimuth mount sold separately.

1431

BT80M-A Binocular Telescope

The Vixen binocular telescope provides a spectacular view of comets and star clusters.

Model	BT80M-A
Effective aperture	80mm
Focal length (Focal ratio)	900mm (F11.2)
Resolving power, limiting magnitude	1.45 arc sec., 11.3
Light gathering power	131x
Visual back	31.7mm push-fit
Eyepiece* (Magnification)	OR25 (36x)
Size	(W) 190mm x (L) 590mm
Total weight (w/o eyepiece)	5.0 kg (11.0 lb)

*Eyepieces are interchangeable, but LV Zoom eyepiece and NPL series are not usable on the BT80M-A.

Home Planetarium

A starry night sky in your room!

- Projects all 88 constellations and 805 bright stars down to magnitude 3 on the ceiling and wall of a room.
- Workable as a celestial globe by projecting constellations onto semi-transparent hemisphere screens included with the planetarium.
- Intriguing patterns of star constellations, from both northern and southern hemispheres, can be enjoyed in your room.
- Battery operation makes it easy to use everywhere. Runs for a bout 8 hours at 20 deg. C (68 deg. F) room temperature.

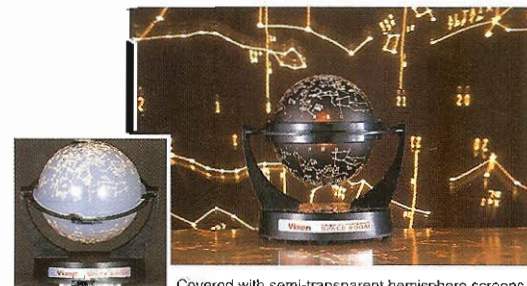


7313

Space 800M Home Planetarium

Weight: 990 g (34.92 oz)

- Rotation of the globe: 3 minutes per rotation
- Workable projection distance: 0.5m to 1.0 m
- Battery: Six (6) C-size alkaline batteries
- Size: 260mm x 290mm x (H)295mm



Covered with semi-transparent hemisphere screens.

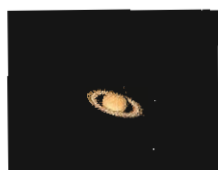
Enjoy the View of the Night Sky

Viewing Celestial Objects with an Astronomical Telescope —

When you look at the night sky through an astronomical telescope, you observe what you don't see with the naked eye such as lunar craters, phases of Venus, the surfaces of planets, faint stars and nebulae, and star clusters. The binoculars are also powerful tools that let you enjoy a night sky more casually. Looking at the moon with binoculars with 7 - 10x magnification, shows the moon as you have never seen it before. It is exciting to see the starry night's sky through an astronomical telescope or binoculars. You will be exposed to an unknown world that is totally different from what you have been used to seeing.



The lunar craters seen through an astronomical telescope



Saturn's rings



The phases of Venus

Photography with Compact Digital Camera — (Collimation Photography)

If you've been thinking that you need to have special skills to enjoy astrophotography, you may be pleasantly surprised. Astrophotography requires a certain amount of technical skill and experience if you are taking photographs of faint nebulae or star clusters, because long exposures must be used for such photographs. However, not all astronomical photographs need long time exposures. For example, you can take a picture of a full moon with your digital camera without having to expose the lens to light for a long time. As this can be done easily, it may be a good idea to start astrophotography by taking pictures of the moon with an astronomical telescope and a compact digital camera.

[What you need]

1. Astronomical Telescope

The equatorial mounts (SX, SXD, GP2, GPD2, NEW ATLUX) are recommended mounts. For bright objects like the moon and Venus, it is possible to take photographs with an altazimuth mount (PORTA, SKYPOD) as they do not require long exposures.

2. Optional parts to connect between the compact camera and the telescope plus an eyepiece.



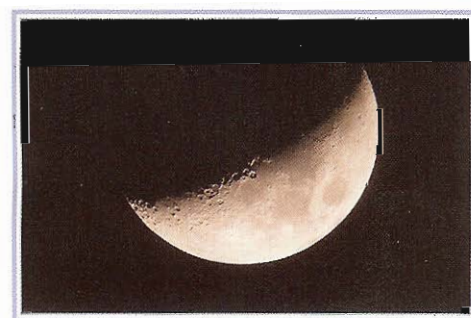
For a compact digital camera with filter thread

Usable with the Digital Camera Adapter DG-NLV DX and DG-DX Ring



For a compact digital camera without filter thread

Usable with the Universal Digital Camera Adapter



Lunar Craters
Equipment: PORTA A70Lf, Nikon COOLPIX4300, LV25mm eyepiece, Universal Digital Camera Adapter

Prime Focus Photography

Prime Focus Photography is a typical method used in photographing nebulae or star clusters. It employs an SLR (Single Lens Reflection) camera directly attached on the astronomical telescope. Specifically, it is a method of astrophotography in which the telephoto lens is replaced by the astronomical telescope. This method enables photography with a high magnification at a lower cost than when a telephoto lens for general cameras is used. When you take a photograph of objects like nebulae using the prime focus photography method, it is necessary to track the object accurately for a long time. It may sound a little difficult, but you can try this method by referring to articles on astrophotography.

[What you need]

1. Astronomical telescope

The mounts such as SX, SXD, GP2, GPD2, and New ATLUX Equatorial Mounts are required. Long exposures are required for capturing the faint objects such as nebulae and star clusters, so it is recommended that you use the products that have an auto-guiding function with motors. As for optical tubes, ED refracting type and reflecting or Catadioptric types with an aperture larger than 150mm are recommended.

2. Optional parts to connect between the SLR camera and the telescope plus an eyepiece

T-ring appropriate for the camera being used, and Wide photo adapter 60 if necessary

3. Optional instruments for accurate guiding

Guiding scope and AGA-1 AutoGuide Adapter are helpful.



Horse Head Nebula
Equipment: GPD-ED115S, Canon EOS Kiss Digital (revamping), Wide photo adapter 60

Star-Field Photography

A wide-field photograph of a starry night sky taken by a camera equipped with a wide-angle or a standard lens is called a star-field photograph since it looks like a 'field of stars.' There are two kinds of methods used in star-field photography, guided photography in which a camera is mounted on an equatorial mount to track the celestial field and fixed camera photography in which a long-exposure camera is fixed on a camera tripod. Fixed camera photography is relatively easy since only a long-exposure camera and a camera tripod are required. For guided photography, an equatorial mount is used to guide the objects in the field.

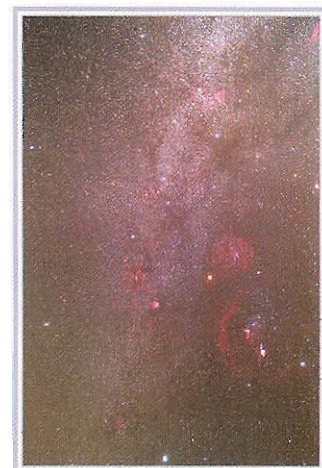
[What you need]

1. Equatorial Mount

An equatorial mounted telescope (SX, SXD, GP2, GPD2, NEW ATLUX) or a GP2 Photo Guider is required. A model with motor drive is recommended.



Fixed Camera Photography



Winter Milky Way
Equipment: GP Photo Guider, Nikon D70

Eyepiece Projection Photography

Eyepiece projection photography is employed when pictures of the surface of the moon or planets are taken. In contrast to prime focus photography in which only the telescope's optical tube (objective lens) is used, the eyepiece is essential to eyepiece projection photography.

[What you need]

1. Astronomical Telescope

An equatorial mount (SX, SXD, GP2, GPD2, or NEW ATLUX Equatorial Mount) is required. Since it is necessary for tracking objects, the motor driven mount is recommended.

2. Optional parts to mount the camera on the telescope plus an eyepiece.

Eyepiece Projection Camera Adapter and a T-ring appropriate for a camera used