Description & recommended accessories

of the

HYPERION® 8-24mm Universal-Zoom MARK IV

– with ClickStop Action –
#2454826

Every Mark IV Hyperion Universal Zoom-Eyepiece is shipped with complete accessories shown above.

BAADER PLANETARIUM GMBH
Zur Sternwarte • D-82291 Mammendorf • Tel. +49 (0) 8145 / 8089-0 • Fax +49 (0) 8145 / 8089-105
Baader-Planetarium.de • kontakt@baader-planetarium.de • Celestron-Deutschland.de

Contents

Instruction manual version 01/2017

The Hyperion Universal Zoom Mark IV with 1¼" and 2" nosepiece

Hyperion Universal Zoom Mark IV eyepiece with 2"-nosepiece

Hyperion Universal Zoom Mark IV eyepiece with 1¼" nosepiece

Zoom-lenses in general are not really famous for high quality optics. Also many zoom-eyepieces do not deliver the best possible image quality at high magnification because they were designed with focus on the price-tag so that image sharpness and field size is getting worse with increased magnification.

The recognition that the Hyperion Zoom Eyepiece enjoys is based on the fact that it was designed the other way around: the glass selection and most of all the principal optical design and consequently the lens polish quality – all were optimized for the highest magnification. And obviously, when closing in on an object you will want the field of view to increase and not to have it become seemingly smaller. Hence the Hyperion-Zoom shows the largest apparent field of view at highest magnification.

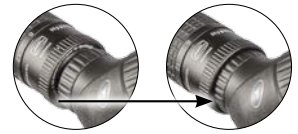
For many birders, observers of nature and astronomers alike, the Hyperion Zoom Eyepiece is their favorite eyepiece, it is also the only zoom-eyepiece that was designed from ground up to be used with bino-viewers.

What's new on the Universal Zoom Mark IV?

The fourth generation of this eyepiece weighs 290 gram and is lighter by 80 grams than its predecessor – it now has 55 mm diameter to become useful in dual mode from 55 mm interpupillary distance, both features make it especially desirable for use with bino-viewers. The adjustable eyecup can be removed to expose the M43 video/photo thread and create the maximum "nose space" for using it on binocular viewers with the supplied winged rubber eyecups - for maximum concentration on the target. The click-stop action has been smoothed out to more easily access the magnification stops at 8/12/16/20 and 24mm. The zooming-mechanism as well as the inner zooming rails for all lens groups have been modified to improve cold temperature operation and the parfocalty for each focal length has been finetuned.

Most important however – the Mark IV offers almost 4 mm more backfocus. This is most beneficial for application with a multitude of spotting scopes. Many spotting scopes nowadays do allow the mechanical insertion of astronomical 1¼" eyepieces – but in many cases this combo cannot focus to infinity. By utilizing the supplied spotting-scope adapter ring "A", the Hyperion Universal Zoom almost reaches four mm deeper into the eyepiece clamp of all those spotters, to safely reach infinity focus.

When using the Mark IV on a telescope though, the "B"-ring (supplied) should be chosen instead, to keep the bottom of the eyepiece flush with the upper end of most star diagonals. Otherwise the bottom 2" SC-threaded holding ring that holds the "A" or "B" ring in place may directly rest on the clamping screws of the star diagonal.



The Mark IV comes with both the 2" and 1¼" nosepieces mounted, both are free of the hated undercuts. Instead our proprietary Zero-Tilt Safety-Kerfs provide an added measure of security by reducing the tendency of an eyepiece to slip from an unlocked eyepiece clamp. An additional little feature is the Baader-yellow soft pouch with integrated belt strap – which fastens onto many tripod legs just as well, to serve as a bin for all dustcaps that may go astray otherwise.

Unchanged is the optical quality, 68° field of view at highest magnification, Phantom Group multicoatings, a large adjustable eyecup or alternatively two M43 rubber eyecups for bino viewing. An optional spacer ring M43/M43 (#2954250) with 7,5 mm extension enables the user to increase the height of these eyecups in case of need.

The Mark IV likewise accepts adaptation of the 2.25x Hyperion-Barlow onto the 1¼" nosepiece, to transform into a high power zoom, featuring the magnification range of 3.6 to 10.7 mm. The Hyperion Universal Zoom Mark IV is available individually (#2454826) or as set together with the 2.25x Hyperion Barlow (#2454827)

Continously adjustable Magnifications with ClickStops at 8/12/16/20/24mm

The Hyperion Universal Zoom Eyepiece can be adjusted steplessly from 8 to 24 mm of focal length. In addition the focal lengths 8 / 12 / 16 / 20 / 24 mm are marked with „ClickStops“, so that any of these five magnifications can be set intuitively. This is especially of importance for use with binoviewers, to easily and precisely set two Mark IV eyepieces to the same focal length for effortless binocular observation without eye-strain – even in the dark. The click-sound has been smoothened, so that hunters or birders will not disturb their targets when zooming in on them.

Included Eyecups

Three eyecups are shipped together with the eyepiece. The M43-adapterthread is located on the top of the eyepiece.

Three different eyecups are included with the Mark IV Zoom. Choose the eyecup according to your preferences or desired eye relief (with or without glasses):

1. Initially mounted is the large height-adjustable eyecup that also fastens onto the M43 photo-thread of the eyepiece. By rotating it counterclockwise the height will increase. This eyecup easily unthreads by simply rotating it upwards further than the uppermost stop - this reveals the M43-thread connection.

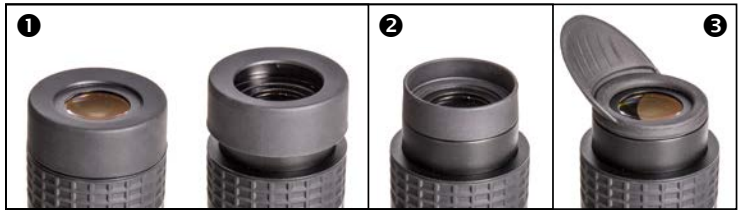
The height of the large eyecup can be adjusted.

2. A none-folding rubber eyecup alternatively fits straight onto the M43-thread. This is the preferred solution for observers without glasses at a binoviewer. It gives you enough room for your nose and good support to keep the perfect eye distance.

The Universal-Zoom-Okular with the round, foldable eyecup.

3. An even lower eyecup with foldable winged eye shield especially serves for wearers of eye glasses, the flappable side shields block stray light and side image information not part of the eyepiece field of view. This helps to concentrate on the target when using a binoviewer.

In case of need an optional, 7.5mm height extension tube with M43-threads (#2954250) is available for further finetuning the position of the eyecups. This extension tube has one male and one female M43-thread.



The Zoom-eyepiece with the winged eyecup.

Changing the mounting adapters A and B

In the standard configuration, both 1¼" and 2" nosepieces are mounted at the eyepiece main body, including dustcaps. Remove both dust caps before using the eyepiece for the first time. This way you can use it at telescopes with 2" eyepiece clamp.

For telescopes or spotters with 1¼" clamp, it is necessary to reconfigure the eyepiece as shown below. Reconfiguring the eyepiece is always done according to the following scheme:

1. **Removing the 2" nosepiece ❶**:
   Hold the eyepiece at the locking ring ❸, which also has a 2" female thread inside, and unthread the nosepiece counterclockwise. Now you can access the 1¼" nosepiece, the female 2" SC-thread and the adapterring B (for telescopes). This way, you can use the eyepiece e.g. at telescopes with 1¼" eyepiece holder or at telescopes, prisms and mirrors with male 2"-SC-thread.

2. **Removing the 1¼" nosepiece ❷:**
   Remove the nosepiece by rotating it counterclockwise. Now you can see the 1⅜" thread of the telescope-adapter B ❹ (or of the spotting-scope-adapter A), and you can screw the eyepiece directly onto many smaller spotting scopes (e.g. Celestron Ultima, Skywatcher).

3. **Replacing the adapterring for telescopes (B) ❹ or spotting scopes (A) ❺:**
   Completely unscrew the knurled 2" locking ring ❸ from the bottom end of the eyepiece and replace the pre-mounted ring "B" (for instance) against the other supplied ring "A" or vice versa. Always orient the rings in a way that you can see the engravement. Now thread the knurled locking ring back onto the eyepiece to fix the adapterring in its place. Do not use force.

The 1¼" nosepiece fits onto both of the adapter-rings („A“ and „B“).

Locking Ring

Telescope-Adapter B

Spotting Scope Adapter A

Connection options at the telescope-side

There are three principle ways to adapt the Hyperion Universal Zoom Mark IV onto a telescope.

2" eyepiece barrel (intended for directly adapting onto 2" stardiagonals):

The nosepieces for 2" and 1¼" are both pre-mounted. The eyepiece fits "out-of-the-box" onto all 2" eyepiece holders.

In this configuration, even all your 1¼"-filters as well as 2"-filters can be mounted onto either supplied barrel. But you can not use 1¼"- and 2"-filters at the same time.

Mark IV without filters

Mark IV with 1¼" filter

Mark IV with 2" Filter

1¼" eyepiece clamp with adapter B (typical for most telescopes):

To use the eyepiece on a 1¼" eyepiece clamp, all you have to do is unthread the 2" nosepiece.

The telescope adapter B is pre-mounted and fastened onto the eyepiece by a knurled 2" locking ring.

The B-Adapter raises the eyepiece by almost 4mm, so that the lower rim of the 2" locking ring is almost flush with the 1 ¼" nosepiece. This configuration helps to use the Mark IV with most 1¼" star diagonals, without having the knurled ring touch the star diagonals eyepiece locking screws (assuming the locking screws do not stick out above the upper end of their star diagonal (see image on the left).

Also all 1¼" filters will work in this configuration if threaded onto the 1 ¼" nosepiece

2"-SC-thread

The Mark IV Zoom eyepiece also features a female 2" (SC) thread cut into the knurled 2" locking-ring. This universal standard thread can be utilized as soon as the 2" nosepiece is being removed. In case the optical distance is critical or in case a theft proof adaptation is preferred, this 2" thread fastens the Mark IV straight onto the backend thread of SC-telescopes and their derivatives . Alter-natively the Mark IV directly adapts onto the body of any Baader 2" star diagonal, with the help of an optional 2"/2" inverter-ring (#1508020). This ensures a permanent and very sturdy eyepiece ad-aptation and saves about 45mm of optical length (the closer distance even results in a slightly larger field of view, in case you are using a Schmidt-Cassegrain optics).

Connection options for spotting scopes

Spotting scopes with integrated 1¼" eyepiece in most cases do not offer a lot of backfocus. Accordingly it is necessary to insert any eyepiece as deeply as possible into the 1¼" clamp of the spotting scope to reach infinity focus. Many eyepieces will fail at this operation since their field stop position is not optimized for use at spotting scopes. On the Mark IV simply replace the telescope adapter „B“ against the spotting scope adapter „A“, as described on page 5, to gain almost 4 mm in backfocus compared to most other eyepieces. Then re-attach the 1¼" nosepiece onto the adapterring „A“, to use the Mark IV with spotting scopes like the Zeiss Conquest Gavia or the Celestron Regal M2, the Hummingbird- or TrailSeeker-spotters (image).

Zeiss Diascope Adapter
2454500

For Zeiss-Diascope Spotting Scopes use the optional Zeiss-Diascope Bayonet Adapter 1¼" (#2454500). Configure the eyepiece as described above with the Spotting Scope Adapter A and the 1¼" nosepiece, then fasten the Bayonet Adapter the Zeiss-Diascope at the 1¼" nosepiece.

Spotting Scopes with 1⅜" male thread (e.g. many Skywatcher, Orion, Acuter, Synta and Celestron spotting scopes) can be used directly with the Hyperion Zoom Mark IV. Just unthread the 1¼" nosepiece to expose the 1⅜" female thread inside the adapterring „A“ and thread the eyepiece onto the spotting scope.

This way a very short adaptation onto the spotting scope is achieved – ensuring to reach infinity focus. Adapters to spotting scopes of other manufacturers are under preparation.

Connection options for cameras and video photography

Attaching a camery body (DSLR and System-Cameras)

After removing the height-adjustable eyecup, the universal M43-thread is exposed. This type of thread is used by most video-cameras. Baader Planetarium offers many step-up- or step-down-rings for most common threads of camera lenses, as well as the adapter #2958080 to convert from M43 to the universal photographic T-2-thread (M42x0,75).

All standard-T-rings for DSLR-cameras do attach onto this (#2958080) T-2 thread. In this way, a camera body attaches onto the Mark IV (without camera-lens). Now the Mark IV Zoom becomes a digiscoping projection optics, also featuring variable magnification.

A full-frame-DSLR will require an added ~40 mm of distance between the camera T-2-ring and the Mark IV *T-2 ringed* eyepiece. This is advisable to retain the flat field of the Mark IV. For smaller APS-C-cameras, only ~30 mm of distance are recommended. We propose the use of an optional quick-changer, for instance the TQC/TCR Heavy Duty T-2 Quick Changing System (#2456322). In this way the camera orientation can be adjusted easily, to align the camera with the optical axis or to remove the camera body for a quick look into the eyepiece. We recommend the following combinations:

For Full Frame Cameras:

- M43/T-2 Adapter (#2958080), TQC/TCR Quick Changing System (#2456322), T-2 extension tube 15mm (#1508154), T-2 extension tube 7,5mm (#1508155) ~ **40mm optical length**
- *Alternatively:* M43/T-2 Adapter (#2958080), extension tube 40mm (#1508153) ~ **41,5mm optical length**

For APS-C:

- M43/T-2 Adapter (#2958080), TQC/TCR Quick Changing System (#2456322), T-2 extension tube 15mm (#1508154) ~ **32,5mm optical length**
- *Alternatively:* M43/T-2 Adapter (#2958080), 2xT-2 extension tube 15mm (#1508154) ~ **31,5mm optical length**

The magnification will increase when inserting additional T-2 extension tubes, but this will also greatly increase the exposure time.

The setups above enable the Mark IV to work very similar to a dedicated photo-adapter as offered by many manufacturers of spotting scopes (e.g. the Zeiss-Photoadapter (#528030, offering but one fixed magnification). However - the Mark IV will provide a wide range of magnification.

Example: The Zeiss Diascope 85 T/FL with Zeiss Photoadapter (left) does provide one magnification (right).

The Zeiss Diascope 85 T/FL in combination with the Hyperion Universal Zoom Mark IV (right) offers five different steadily increasing magnifications instead of one magnification:

24mm focal length

20mm focal length

16mm focal length

12mm focal length

08mm focal length

Attaching cameras with mounted lenses by their front-lens filter threads

Most camera lenses attach onto the Mark IV (or any Hyperion or Morpheus eyepiece) by using the Baader SP54-system-thread, together with a whole family of Hyperion DT-Rings. For this system, the adapter M43/SP54 #2958086 is available, which fits directly onto the Mark IV. This SP54 adapter is the base to adapt the Mark IV onto all common camera lenses with a filter thread and allows to use any such lens and camera for afocal projection imaging.
The SP 54 step-rings for making this system most versatile are called „Hyperion DT-Rings“. Choose the appropriate adapter from SP54 onto the filter thread of your lens by reading the tread size at the engravement around the front lens of your camera-lens . Following SP54 step-rings are available:

SP54 to **M28**: #2958028
(requires also 2958090)

SP54 to **M37**: #2958037
(requires also 2958090)

SP54 to **M46**: #2958046

SP54 to **M49**: #2958049

SP54 to **M52**: #2958052

SP54 to **M55**: #2958055

SP54 to **M58**: #2958058

SP54 to **M62**: #2958062

For more information, please visit: www.baader-planetarium.com/en/eyepiece-accessories

These step-rings are designed to ensure the shortest possible distance between eyepiece and camera front lens. This is crucial to reduce or completely avoid vignetting. The M62-ring can even serve as base for further Hyperion-stepper-rings to adapt lenses with up to 82 mm front filter threads – but the spacing increases and the eyepiece – camera distance becomes less optimal.

For cameras with M43-thread, we recommend to use the M43 Extension Ring #2954250 to gain some safety distance, in case there is a risk that the lenses of the camera and eyepiece may touch (see image to the right). Check for correct spacing of the connection before threading camera lens and Mark IV completely to avoid damage to your valuable camera lenses.

Use with Binoviewers

The Hyperion Universal Zoom Mark IV has an outermost diameter of just 55 mm, which makes it a perfect choice for bino-viewers. People of all ages, even children with an interpupillary distance of just 55 mm, can use a binoviewer with two Mark IV Zoom-eyepieces – a big advantage e.g. for public observatories. The click-stops greatly eases the quick change of magnification without even having to look at the eyepiece scales.

By removing the height-adjustable eyecup, a huge gain in “nose space” is achieved. The stepped eye-piece housing offers the dearly needed space for your nose, such it becomes much easier to find the best viewing position to observe comfortably with two eyepieces side by side. By choosing the winged eyecups instead of the height-adjustable ones, even wearers of glasses can observe comfortably with both eyes.

Note: we recommend the shorter adapter ring „A“ (for spotting scopes) also for observations with bino-viewers, together with the 1¼" nosepiece. You will gain ~4 mm of optical length compared to using the adapter ring „B“ (for telescopes). Observing with any binoviewer regularly forces the user to fight for every mm of back-focus in order to achieve a focused image, just like when using a spotting scope.

Mark V Großfeld Binokular

2454610

The optional Hyperion Zoom Barlow Lens – 2,25x (#2956180)

Configuration for 1¼" eyepiece clamps

Configuration for 2" eyepiece clamps

The 2.25x Baader Hyperion Zoom Barlow lens was designed especially to complement the Hyperion Zoom eyepiece. It converts the regular focal lengths of 8 to 24 mm to a range of focal lengths between 3,6 and 10,7 mm, while retaining the outstanding image quality for observing sun, moon, planets and double stars with high resolution.

The Mark IV Zoom, in conjunction with or without the Hyperion Barlow, covers all focal lengths between 3.6 to 24 mm.

The Hyperion Barlow works with every Hyperion 8-24 mm Zoom eyepiece ever produced. The barlow is attached onto the 1¼"-nosepiece. Because of the dual nosepiece of the Mark IV, it can be used at telescopes with 1¼" or 2" eyepiece clamps.

The pictures above show the Universal Zoom Mark IV eyepiece together with the barlow, on the left for 1¼" and on the right for 2" eyepiece clamps.

Hyperion Barlow on 18mm Classic Ortho

The Hyperion Barlow comes with a T-2 thread-adapter, to mount the Barlow in front of any camera or other accessories with T-2-threads. Combine it e.g. with a DSLR-camera – in this way the camera body will be equipped with a 1 ¼" nosepiece. The camera body just needs a standard T-ring to fit it onto any 1 ¼” eyepiece holder.

www.baader-planetarium.com/en/camera-adapter

Attach the lens unit without the Barlow-adapter (A) directly onto many 1¼" eyepieces, whenever they do not already have an integrated barlow element. The result is a 2x Barlow with very good optical properties (see left image).

The Hyperion-Barlow can be attached directly at a DSLR with a T-2 adapter

Some highlights of the Hyperion Zoom Barlow Lens:

- Triplet lens for highest optical quality
- Anastigmatic Flatfield Design for high sharpness all over the field of view
- Baader Phantom Coating™ Group for highest contrast and light transmission

Mounting at the eyepiece side:

- T-2 (M42x0,75mm) thread with Barlow-Adapter (B)
- Direct connection to any Hyperion Zoom eyepiece with Barlow-Adapter (A)
- 1¼" Filter thread without additional adapter

Please note:
The Barlow element can only be used with telescopes, not with spotting scopes!

Technical Data

Focal length	8 mm	12 mm	16 mm	20 mm	24 mm
Focal length with Hyperion Barlow Lens 2,25x	3,6 mm	5,3 mm	7,1 mm	8,9 mm	10,7 mm
Lenses / Groups	7 / 4	7 / 4	7 / 4	7 / 4	7 / 4
Lenses / Groups with optional Zoom Barlow	10 / 6	10 / 6	10 / 6	10 / 6	10 / 6
Field of view	68°	63°	58°	53°	48°
Homofokal	✓	✓	✓	✓	✓
Eye relief	19 mm	18,2 mm	17,4 mm	16,7 mm	16 mm
Height of eyepiece body (mm)	81 mm (without barrels)	81 mm (without barrels)	81 mm (without barrels)	81 mm (without barrels)	81 mm (without barrels)
Outer diameter	55 mm	55 mm	55 mm	55 mm	55 mm
Weight	290g with 1¼" 309g with 2"	290g with 1¼" 309g with 2"	290g with 1¼" 309g with 2"	290g with 1¼" 309g with 2"	290g with 1¼" 309g with 2"
Coating	Phantom Coating™ Group Multicoated				

Important Mark IV Zoom Accessories

M43 / T-2 Adapter
#2958080

M43 / SP54 Adapter
#2958086

2" / 2" Changer ring
#1508020

M43 / M43 extension
#2954250

www.baader-planetarium.com

All technical specifications and instructions contained in this manual are given without warranty of any kind and are subject to technical changes.

BAADER PLANETARIUM GMBH
Zur Sternwarte • D-82291 Mammendorf • Tel. +49 (0) 8145 / 8089-0 • Fax +49 (0) 8145 / 8089-105
Baader-Planetarium.de • kontakt@baader-planetarium.de • Celestron-Deutschland.de