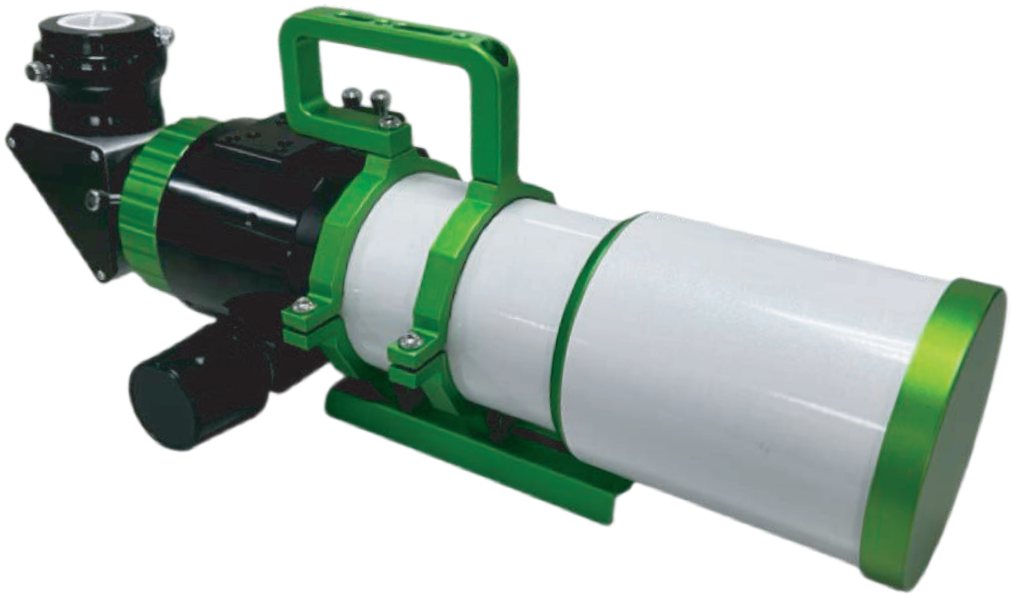
INSTRUCTION MANUAL

ESPRIT 70EDX



Sky-Watcher®
Be amazed.

202604V2.0

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Introduction

The spirit of perfection, by Sky-Watcher

Designed with the discerning astronomer in mind, Sky-Watcher top-of-the-line Esprit refractors deliver the kind of imaging performance one would expect from telescopes costing much more. With their three-element air spaced objective lens design, false color is completely eliminated, yielding exceptional contrast and sharpness.

The 2.7" CNC machined 1:11 rotatable dual speed linear power focuser provides a smooth, rock-solid focusing with zero image shifts. The Esprit ED 70mm refractor comes with a 2-inch Star diagonal, dovetail, and padded case.

The 2-element thread-on 48mm field flattener guarantees excellent field flatness across the entire 30 mm imaging plane. Its oversized lenses ensure a larger and clearer aperture and also extremely minimized halation.

Quick overview:



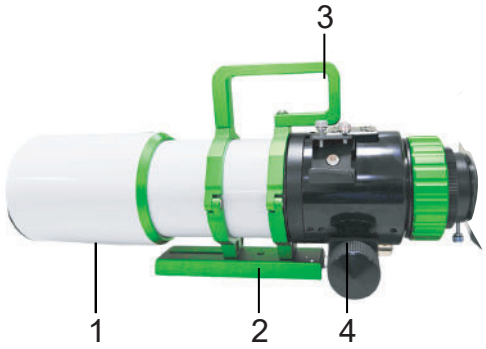
- 70 mm apochromatic, 3-element refractor
- 455 mm (f/6.5)
- Metallic high-transmission lens coatings
- 2.7" CNC machined 1:11 dual-speed focuser
- Zero color fringing even on bright objects
- 30 mm image circle
- Knife-edge Baffled Optical System
- dovetail (Vixen style) bar
- Aluminum foam lined case
- Thread-on field flattener
- APS-C corrected focal plane



- NEVER USE YOUR TELESCOPE TO LOOK DIRECTLY AT THE SUN. PERMANENT EYE DAMAGE WILL RESULT.
- NEVER USE AN EYEPIECE-TYPE SOLAR FILTER.
- NEVER USE YOUR TELESCOPE TO PROJECT SUNLIGHT ONTO ANOTHER SURFACE; THE INTERNAL HEAT BUILD-UP WILL DAMAGE THE TELESCOPE OPTICAL ELEMENTS.
- USE A PROPER SOLAR FILTER FIRMLY MOUNTED ON THE FRONT OF THE TELESCOPE FOR VIEWING THE SUN.
- WHEN OBSERVING THE SUN, PLACE A DUST CAP OVER YOUR FINDERSCOPE OR REMOVE IT TO PROTECT YOU FROM ACCIDENTAL EXPOSURE.
- NEVER LET A TELESCOPE POINTING THE SUN UNATTENDED.

Getting started

Parts description



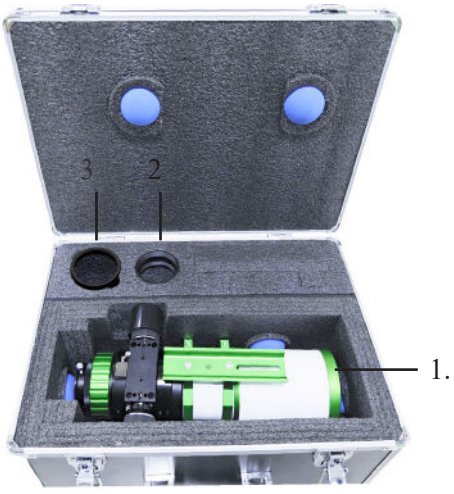
1. Dew cap
2. dovetail bar
3. Handle
4. 2.7"1:11 dual-speed focuser



Unpacking the telescope

Your telescope is inside the sturdy aluminum padded case, designed to securely carry the telescope and the tube rings.

The case contains and protects the telescope and its accessories. Once open you will find:



1. The telescope with dew cap and EQ5 (Vixen style) dovetail bar.
2. The extension adaptor is used to connect the camera for photography when there is no focus reducer.
3. Thread-on field flattener adaptor, used to install the field flattener on the focuser's drawtube.

Note: Remove the EPE, and you can place the focussing mirror, corner mirror and other accessories below. The accessories need to be purchased separately.



Some parts may be optional, depending on the dealer's country.

Please check with him if any doubt.

Using the telescope for prime focus imaging



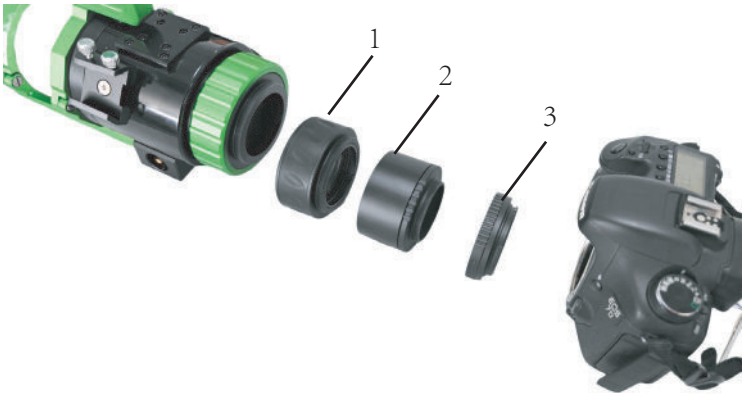
Before installing the field flattener onto the drawtube of the focuser, the 2" ring adaptor **(2)** needs to be unscrewed and removed.

In order to easily unscrew the ring, hold with one hand the ring **(1)** at the end of the drawtube and then unscrew the 2" ring adaptor **(2)** with the other hand.

The Sky-Watcher ESPRIT 70 Field flattener has been specifically designed for your telescope. It guarantees excellent field flatness across the entire 30 mm imaging plane and ensures full illumination with extremely minimized halation and zero color fringing even on bright objects.

No "universal" field flattener available on the market will deliver the premium results achieved with the Sky-Watcher ESPRIT 70 Field flattener which is designed exclusively for this telescope.

Installing the field flattener and a DSLR (Digital Single-Lens Reflex) camera





1. Screw the field flattener **(1)** at the end of the focus tube.
2. Screw the extender tube **(2)** onto the field flattener **(1)**.
3. Screw the enlarged 48mm T-Ring **(3)** onto the extender tube **(2)** .

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The enlarged 48mm T-Ring **may not be included with your telescope** and should match your DSLR camera's manufacturer and model. Please check with your reseller to get the correct 48mm Enlarged T-Ring for your DSLR camera.

5. Install your DSLR camera on the 48mm enlarged T-Ring **(3)**.

NOTE: The accessories need to be purchased separately.



In order to get the premium results the field flattener for ESPRIT 70 can deliver the distance between the last lenses to the sensor should be exactly 100.06mm. This distance is called the field flattener "back focus".

The rings are designed to provide 91.2mm of back focus with any DSLR camera. Modifications to this layout, i.e. by adding a radial guider, will lead to blurry stars images in the field edges.

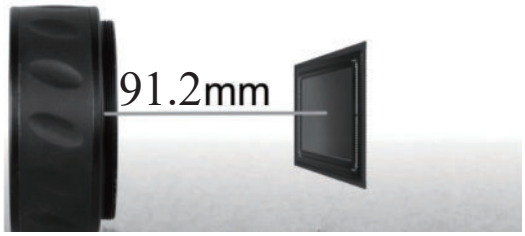
Installing the field flattener and a CCD (Charge-Coupled Device) camera

Installing an astronomical CCD camera and its accessories (filter wheel, radial guider…) behind the field flattener is not as straightforward as installing a DSLR camera. All DSLR cameras have the exact same distance from the front side of the T-Ring adapter to the sensor, thus share the same extension rings to ensure the 91.2mm back focus distance.

CCD cameras differ from one model to another, even in the same brand name, by the threads used and the body-to-sensor distance. Accessories also have different possible threads and depths, thus the combination of a CCD camera and its accessories can have any total length and any coupling thread.

A custom coupling ring is needed in order to assemble the CCD camera and its accessories (called the "optical train") to the telescope's field flattener. The custom ring should be machined* to have:

1) A female M62x1 thread, to screw and secure the ring to the field flattener exit.
2) A thread compatible with the first component of the optical train.
3) A length to ensure that the distance from the last lenses of the field flattener to the CCD sensor is exactly 100.06mm.



The 91.2mm distance is measured from the edge marking the start of the male thread on the field flattener, to the CCD sensor (See picture on the left).

Most CCD cameras have also the distance from their body thread to CCD sensor noted in the manual, thus evaluating the length of the custom ring you need can be precisely evaluated.

* Refer to your local dealer about custom ring supply.

Installing the field flattener and a CCD camera - continued



1. Screw the drawtube adaptor **(1)** at the end of the focus tube.
2. Screw the field flattener **(2)** onto the drawtube adaptor **(1)**.
3. Screw the custom ring **(3)** onto the field flattener (**2**).

> The custom ring needs to be sturdy enough to secure the optical train to the field flattener.

4. Screw your optical train to the custom ring **(3)**.

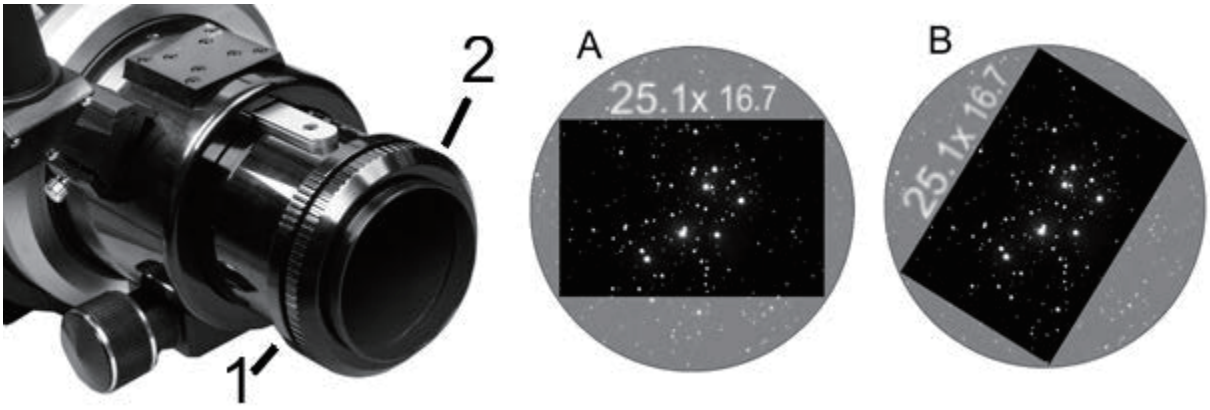
Focusing



- Make sure the locking lever below the focuser **(1)** is unlocked (position as shown in picture).
- Slowly turn the focus knobs **(2)** one way or the other, until the image in the eyepiece is nearly sharp.
- To finely focus the image turn the 1:11 knob one way or the other until the image is perfectly sharp **(3)**.
- Lock the screw below the focuser **(1)** if a heavy load is attached (pull the lever at 90°).

The image usually has to be finely refocused over time, due to small variations caused by temperature changes. This often happens when the telescope has not yet reached outside temperature.

Framing the picture



When the object you want to picture is in the middle of the circular 33mm field, most often its orientation on the rectangular camera APS-C sensor is not what you expected (figure A). You can easily reframe the picture on the camera sensor by unscrewing the blocking ring **(1)** at the end of the focuser drawtube, then turning the adapter ring **(2)** with all the optical train until the framing suits your needs (figure B). When done screw the ring **(1)** to lock position, and you are ready to picture the sky.

Useful tips for all observations



Removing the finder scope

During an observation, when the desired target is acquired, it is possible to remove the finder scope from its support. When needed the finder scope can be inserted again.

This can be useful when the observer's head is in a position where the finder scope becomes an obstacle to observation.

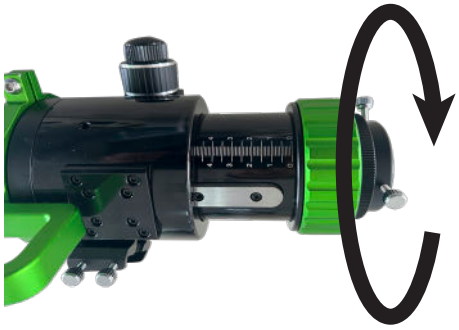


Using the indexed scale

The indexed scale on the focuser drawtube gives an accurate indication on the focus position for various accessories.

Once the position for one accessory is known it is very easy to approximate the focus position.

Due to the precision needed to reach perfect focus a fine tuning is advised.



Rotating the focuser

The whole focuser body can be rotated. It is useful when the focuser knobs aren't in a convenient position.

1. Loosen the green ring
2. Rotate the focuser body.
3. Tighten tjhe green ting

Specifications

Telescope specifications

Optical Design	Refractor (air-spaced triplet APO)
Field Flattener	Thread-on (2 lenses)
Aperture (mm)	70mm (2.75 in)
Focal Length	455 mm (17.9 in)
Focal Ratio	f6.5
Diagonal	2" dielectric coatings
Dovetail	(Vixen style) dovetail plate
Optical Coatings	Fully multi-coated
Fully Illuminated Field With Field Flattener	30 mm (1.18 in)
Optical Tube Length	35 cm (13.8 in)
Optical Tube Weight	3.3 kg (7.3lbs)
*Telescope Visual Backfocus**	> 160mm (6.3 in)
*Field Flattener Backfocus***	100.06mm (2.6 in)

Threads specifications

