Sky-Watcher Heliostar 76 Hα

Overview

The *Sky-Watcher* Heliostar 76 Hα is a dedicated solar telescope designed exclusively for observing the Sun in the hydrogen-alpha (Hα) band at a wavelength of 656.28 nm. Unlike white-light filters, which show only the photosphere, an Hα telescope reveals the chromosphere — the outer layer of the Sun's atmosphere. This makes visible details that remain invisible through a standard solar filter: prominences, filaments, flares, and spicules.

For this telescope we also have an additional zoom eyepiece from Lunt Solar Systems, optimised specifically for solar observation. This is the `Zoom eyepiece 7.2 mm – 21.5 mm 1.25“`, which delivers even better image quality than the eyepiece supplied by Sky-Watcher.

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Technical Data

	Heliostar 76 Hα
Aperture	76 mm
Focal length	630 mm
Focal ratio	f/8.3
Bandwidth	< 0.55 Å
Observation wavelength	656.28 nm (Hα)
Solar image size	6 mm
Tube length	600 mm
Weight	3.8 kg
Connection	1.25”

Warning: The Heliostar 76 Hα is designed primarily for solar observation. The included prism diagonal must never be removed, as it contains an 11.5 mm blocking filter that is an essential safety component. Improper observation of the Sun can result in permanent eye damage.

Special Features

Solis Etalon

At the heart of the Heliostar 76 Hα is *Sky-Watcher's* proprietary Solis Etalon Technology. Conventional Hα solar telescopes typically achieve a bandwidth of 0.7–0.8 Å; reaching below 0.5 Å — which significantly improves contrast and fine detail — normally requires a second etalon (known as “double stacking”). The Heliostar 76 Hα achieves a bandwidth of < 0.55 Å with a single etalon.

Operation

Setup and Acclimatisation

Before the first observation session, the telescope should be left outside to acclimatise for at least 30 minutes so that the etalon can stabilise thermally. Temperature gradients within the etalon significantly degrade image sharpness. If there is a large temperature difference between the storage location and the outside, a longer acclimatisation period is recommended.

Solar Finder

The integrated Heliostar solar finder projects the Sun as a bright point of light onto a target disc, allowing the Sun to be located safely. The telescope is correctly aimed when the point of light falls concentrically on the target disc.

Focusing

Focusing is done via the dual-speed Crayford focuser with 10:1 reduction. First use the coarse adjustment to find an approximate focus, then refine it with the fine adjustment knob.

Etalon Tuning (Trifid Tuner)

The Trifid Tuner adjustment bolt is located at the top of the tube. Slowly turning the bolt slightly tilts the etalon, shifting the bandpass. This enables the optimal transmission wavelength, and therefore contrast, to be found for either surface details, such as granulation and filaments, or prominences at the solar limb.

It is advisable to move the bolt in small increments, pausing briefly between adjustments until the desired structure comes out optimally. The ideal setting also depends on the ambient temperature and may shift slightly over the course of an observation session.

Camera Operation

Cameras with a 1.25“ nosepiece can be inserted directly into the diagonal. Note that the etalon has a

limited acceptance angle; with larger sensors, vignetting or softness may occur towards the edges of the frame. For full-disc imaging, the QHY 268M or the veTEC 533C are recommended.

Safety System

The Heliostar 76 Hα employs multiple combined safety mechanisms:

- An infrared reflection film at the front of the tube
- A heat-blocking filter to reduce thermal load
- A UV blocking filter
- The 11.5 mm blocking filter integrated into the supplied prism diagonal

Only the combination of all these filters makes solar observation safe.