MINI SOLAR WEDGE 1.25”
Instruction Manual:

WARNING: NEVER POINT A TELESCOPE AT THE SUN WITHOUT THE SOLAR WEDGE IN PLACE! PERMANENT INSTANT EYE DAMAGE WILL RESULT!

READ THESE INSTRUCTIONS BEFORE USING THIS PRODUCT!

This is not a toy. NEVER allow children or inexperienced adults to observe the sun with a telescope and wedge or filter without the supervision of a knowledgeable adult. NEVER remove a solar filter or wedge without first placing the front lens cap on the telescope. ALWAYS securely fasten Solar Wedge securely to the telescope. ALWAYS remove any optical finder containing lenses from the telescope before pointing it at the sun, so nobody can look through it by mistake. Use the safe Altair Solar Finder Code: SOLARFINDER to point the telescope. DO NOT use this product with a reflecting telescope such as Schmidt Cassegrain (SCT), Newtonian, Maksutov or any other telescope containing mirrors. NEVER add any filter BEFORE the Solar Wedge. NEVER add any kind of Barlow lens BEFORE the Solar Wedge. MAKE CERTAIN there are no field flatteners or focal reducers in the space between Solar Wedge and telescope.

Introduction: The Altair Solar Wedge (Herschel Wedge) replaces the 1.25" star diagonal at the rear of your refractor telescope. The Solar Wedge transmits a greatly reduced, safe amount of light to the eyepiece or camera. This makes it safe for visual use with an eyepiece, or astrophotography with a CMOS camera like Altair GPCAM or Hypercam. Solar wedges give higher-contrast images than front-mounted metallized solar film filters. The Altair Imaging-Ready Solar Wedge directs energy into a special Polycrystalline Ceramic diffuser at the rear.

It is important to familiarise yourself with the parts of the solar wedge before use:

A) Thumbscrew to tighten eyepiece or camera in place

B) Male M42x0.75mm thread for direct camera or filter holder attachment.

C) Brightness adjustment lock. Loosen to rotate the brightness adjustment. Tighten to lock brightness at desired level.

D) Brightness adjustment collar. Rotate to increase or decrease brightness.

E) Ceramic energy diffuser. A bright spot will appear when the sun is centred perfectly in the field of view.

F) Front male 1.25” nosepiece – inserts into standard 1.25” push-fit adaptor on telescope focuser.

G) Cooling vents. Do not obstruct air flow.

(F) The top turret assembly rotates for brightness adjustment.

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How to use the product. SAFE SETUP PROCEDURE:

1. With the front objective lens caps still in place. Remove the lens-based finder scope from the refractor telescope and replace it with a safe **solar finder**, such as the Altair Solar Finder.
2. Insert the Solar Wedge push-fit barrel **(F)** in place of the diagonal mirror on your telescope and fasten it securely. **Do not put an eyepiece or camera into the Solar Wedge yet.**
3. Centre the sun in the solar finder and remove the telescope front lens cap. **Do not look through the solar finder yet and do not place an eyepiece into it.** Note: If you remove the lens cap before the wedge is in place, you could damage your eyes, equipment, or burn yourself.
4. The sun should appear as a bright spot on the rear ceramic diffuser **(E)**. Move your telescope until the bright spot is in the centre of the disc, for fine-alignment.
5. Rest a piece of white paper on the top of the Solar Wedge, and you should see a faint glowing spot through the paper. Rotate the top turret in either direction by gripping the knurled ring **(D)** until the **LOWEST brightness is achieved with the paper in place**. You are now set at lowest brightness level and you should always start observation at the lowest brightness level. For imaging, brightness level doesn't matter. Tip: If you don't have any paper, any translucent material will do. You can also use the white plastic dust plug included with the product because it's slightly translucent. A little shade may be needed to see the fainter glow.
6. Insert a low power 1.25" eyepiece or camera into the **1.25" eyepiece adapter (B)** on the back of the Solar Wedge. Tighten the little **thumbscrew (A)** to secure the eyepiece or camera.
7. Approach the telescope, and look into the eyepiece. If the image still appears a little bright, loosen the side locking thumbscrew **(C)** and rotate the **Brightness Adjustment Turret Top (D)** until it's dimmer. **Re-fasten the turret top locking screw (C)** in this position at a comfortable brightness level.
8. You can now fine-tune the brightness further by rotating the turret-top. When the correct brightness is achieved, **lock it with thumbscrew (C)** to prevent unwanted changes in brightness. You will find that high power eyepieces or Barlow lenses and filters make the image dimmer, so require a little additional brightness adjustment. **Note: Always place Barlow lenses or filters behind the Herschel Wedge, NOT in front of it because they can overheat and melt or crack.**
9. You can connect a camera to the solar filter directly by means of the M42 thread on the top.

Q: What telescopes can I use with a Solar Herschel Wedge? A: Only refracting telescopes up to 6" (152mm) aperture can be used with the Altair Herschel Solar Wedge. Refracting telescopes have a front lens, and do not have any mirrors. **It is dangerous to use ANY telescope with mirrors with a Herschel Solar Wedge.** This includes Maksutov Cassegrains, Schmidt Cassegrains, Newtonians and Ritchey Chretiens, amongst others. If in doubt, contact Altair Astro or your authorized dealer.

Q: Can I use coloured filters with the Altair Solar Wedge? A: Yes but **only if positioned AFTER the wedge. NEVER add ANY filter in front of a Solar Wedge**, because it will crack or melt due to the concentrated heat from the sun, and it can deposit metal vapour on the rear of the objective lens. Never position a filter, Barlow lens, or flattener/reducer in front of the wedge.

Q: How do I "tune" the image brightness for "lucky" imaging? A: Being designed for visual or imaging use, the internal polariser module (controlled by rotating the turret top) has a wider brightness range than normal Hershel wedges, allowing for fast frame rates and short exposure durations suitable for "lucky imaging". When imaging the sun using "lucky" imaging techniques with a high frame rate camera like the Altair Hypercam, it's best to keep the exposure duration of the camera as short as possible - ideally under 15 milliseconds is ideal for apertures up to 100mm and faster for for large apertures. This "freezes" air motion to show granulation and other small details. When set for fast frame rates, the image can appear very bright visually through an eyepiece, like looking at a light bulb. This is uncomfortable, but not dangerous due to the protective ND filter inside the unit. CMOS cameras can be used at full brightness. If using the wedge for imaging only, you can just insert the camera and turn the turret-top until you are satisfied with the exposure duration and gain settings. If you are using the Altair G-Band, NUV or CaK filters it's recommended to image at maximum brightness.

Q: For how long can you keep the 1.25" Mini Solar wedge aimed at the sun? The Altair 1.25" Mini Solar Wedge has been fully tested with the sun remaining in the centre of the field of view for 4 hours of continual use centred on the sun with a 152mm aperture refractor telescope in mid-summer from 11:00 – 14:00, and a cloudless sky. At no point did the outer prism housing become too hot to touch, a common problem with cheaper solar wedges. Whilst we cannot recommend use with telescopes of larger than 152mm aperture for longer or shorter durations, if your telescope is larger than 6", then we suggest trying the wedge for a shorter time, to assess the heat build-up, and then make your own informed decision.

Q: What if I drop or disassemble the product? Do not use the product unless it's in perfect condition. Always first contact Altair technical support.

Q: What filters can be used behind the Solar Wedge? Altair G-Band, Altair 540nm, Altair CaK and Altair NUV filters can all be used behind the wedge to increase contrast and highlight various solar features.

Q: Can I use a Barlow Lens, reducer or flattener with the Solar Wedge? You cannot use a reducer, flattener or Barlow Lens with the solar wedge because they will melt or crack if placed in front of the solar wedge on the telescope side, however they can be used BEHIND the solar wedge at the eyepiece or camera side.

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