Astro 53 Pro
Smart Telescope



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INTRODUCTION

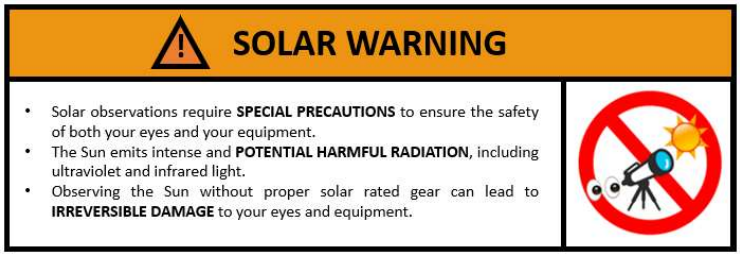
The Astro 53 Pro combines visual astronomy and imaging technology to provide you with an out of this world experience !

Its very easy to use. The Astro 53 Pro, using its Sony IMX662 camera sensor, has built in plate solving technology that recognizes star patterns and automatically guides you to the celestial object of your choosing using your iOS or Android device. Once the telescope has located the object that you chose, whether it's a planet, deep sky object or known star, you can switch (literally!) to visual mode and SEE the celestial object. You want to take an astro image? No problem! The easy to follow menu can instruct you to take a deep sky astro image your first time out. Its an ALL IN ONE astronomy device!

The Astro 53 Pro comes complete with everything you need for visual observing or imaging.

PARTS LIST

- 53mm F/5 ED Refractor with camera x1
- Alt/Az Mount x1
- Full-height Tripod x1
- 25mm Plössl Eyepiece, 1.25" x1
- Carry Case x1
- External Power Bank x1
- Bahtinov Focusing Mask x1
- USB-C Cables x2



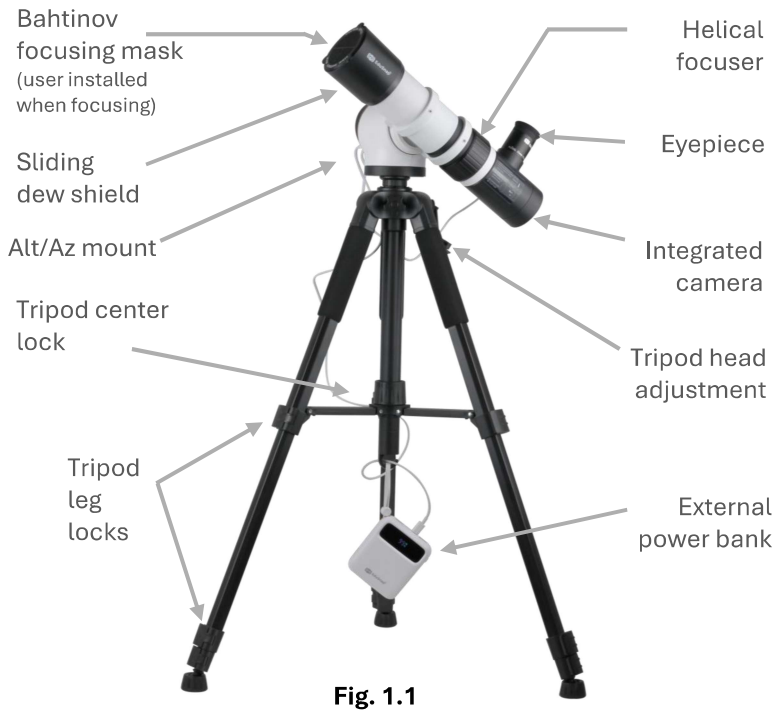

Bahtinov focusing mask (user installed when focusing)
Sliding dew shield
Alt/Az mount
Tripod center lock
Tripod leg locks
Helical focuser
Eyepiece
Integrated camera
Tripod head adjustment
External power bank

Fig. 1.1

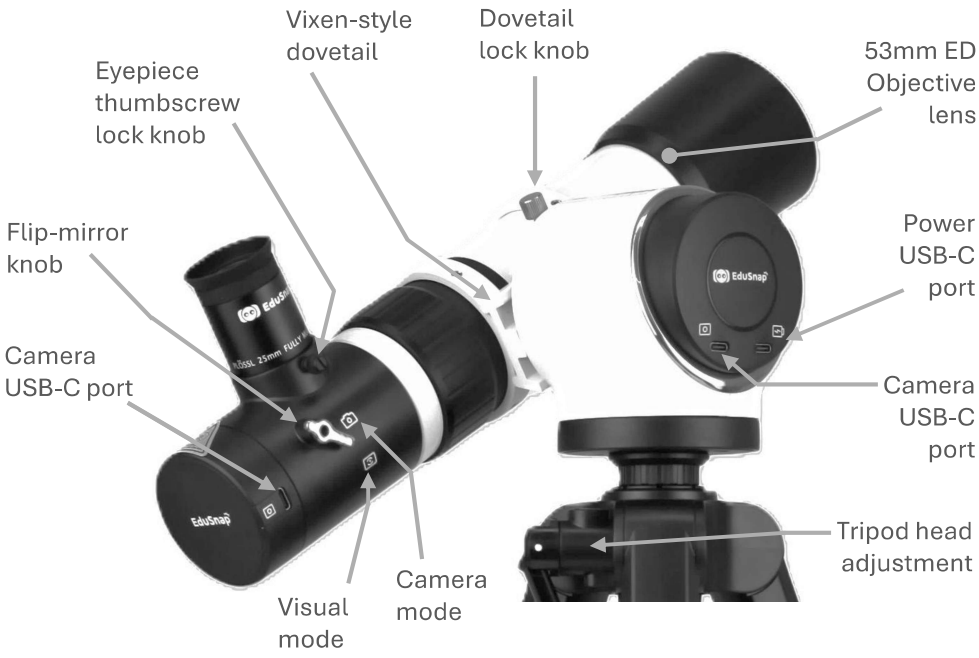

Vixen-style dovetail
Dovetail lock knob
Eyepiece thumbscrew lock knob
53mm ED Objective lens
Flip-mirror knob
Power USB-C port
Camera USB-C port
Camera USB-C port
Tripod head adjustment
Visual mode
Camera mode

Fig. 1.2

Fig. 2.1

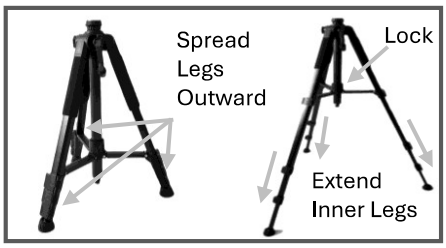


Fig. 2.2

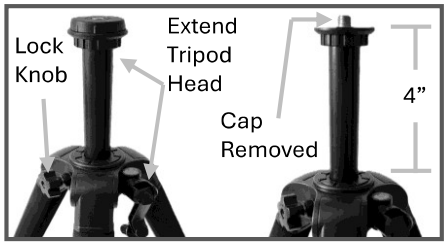


Fig. 2.3

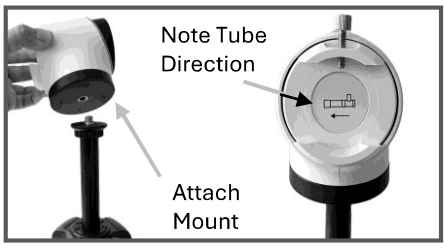


Fig. 2.4

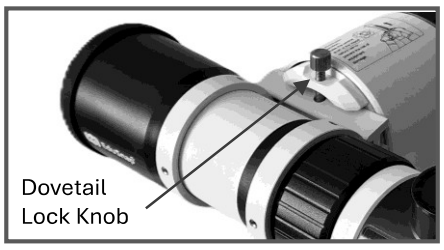


Fig. 2.5

Before you begin, please check out our YouTube page for the latest product videos. Click here or scan the QR code (see Fig 2.1.)

Setup the Tripod

- Unpack the tripod and place it in a flat, open area with a clear view of the night sky, ideally away from streetlights.
- Spread the tripod legs and tighten the center column lock. See Fig. 2.2.
- Extend each tripod leg section, leaving a few inches unextended for final adjustments. Adjust the leg lengths until the bubble level near the top of the tripod is centered, then securely lock all leg knobs. See Fig. 2.2.
- Loosen the lock knob at the top of the tripod and raise the head using the crank until it's at least 4 inches above the tripod legs. This ensures the telescope can point directly overhead. Re-tighten the knob firmly. See Fig. 2.3.
- Remove the plastic cap from the 3/8" mounting thread, then attach the Alt/Az mount by threading it on securely. See Fig. 2.3 and Fig. 2.4.

Attach the Optical Tube

- Slide the optical tube's dovetail rail into the mount's receiver as indicated, then tighten the dovetail lock knob. See Fig. 2.5.
- Connect the short USB-C cable from the camera port on the optical tube to the corresponding camera port on the mount as shown in Fig. 2.6.
- Connect the long USB-C cable from the mount's power port to the included 12V external power bank. Use the USB-C port labeled "Type-C/In" on the top of the power bank. See Fig. 2.7.

  Note: The power bank (or any replacement) must support fast charging (12V output).

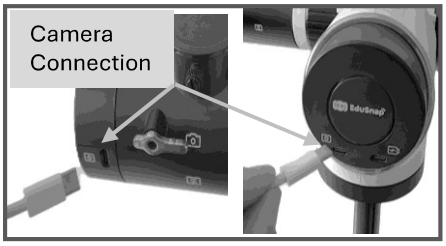


Fig. 2.6

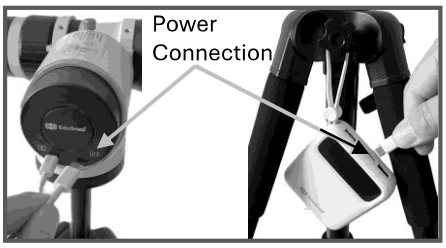


Fig. 2.7



Fig. 2.8

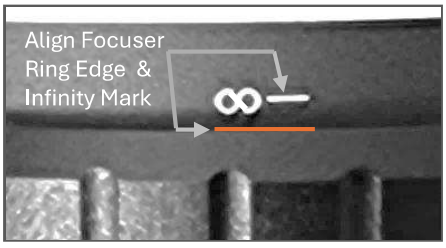


Fig. 2.9

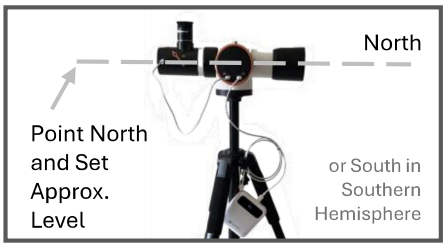


Fig. 2.10

- When powered on, the telescope will automatically home the altitude axis to find approximate level position.

- Rotate the telescope so it faces roughly north. Verify the tripod is level using the physical bubble level on the tripod. The SkyPilot app also has a precise tripod level.

- Remove the front lens cover and rear eyepiece cap; keep them for later use.

- Insert the included eyepiece and tighten the thumbscrew as shown in Fig. 2.8.

- Rotate the helical focuser until the front ring aligns with the ∞ (infinity) mark. This is the rough focus position for night time use—fine-tune later for sharp stars. See Fig. 2.9.

- Once it's dark, flip the mirror to camera mode and use the SkyPilot App to slew to a bright star to fine-tune focus. (See Fig. 2.8.). Reference the section titled "Getting Ready" for app setup.

Note: The SkyPilot Astro 53 Pro uses plate solving technology to locate celestial objects. Accurate focus is required for this feature to work. If alignment appears off, ensure the telescope is in camera mode and the camera is properly focused. See Focusing on page 5 & 6.

Home Position

The telescope starting configuration is with the tube roughly facing north (or south in the southern hemisphere) and with optical tube approximately level.

The Astro 53 Pro's altitude axis includes a home sensor that will move the telescope at power up to approximately the level position.

Note: The Home Position algorithm assumes the OTA faces North when starting. If its not, it will still locate objects correctly but may initially slew the opposite direction to the target.

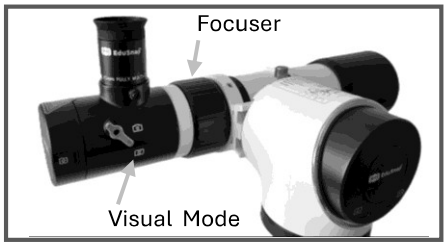


Fig. 3.1

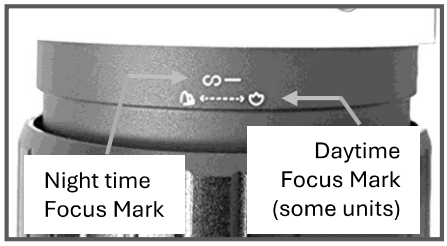


Fig. 3.2

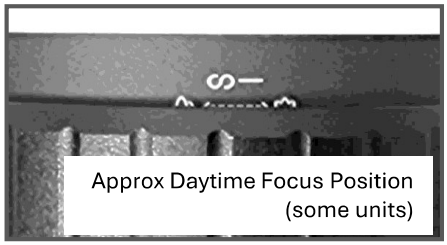


Fig. 3.3

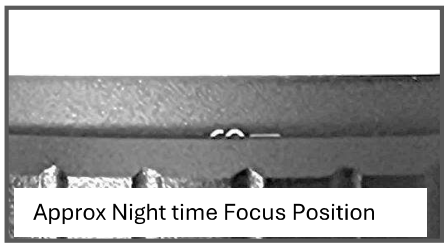


Fig. 3.4

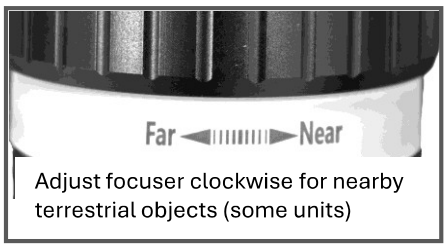


Fig. 3.5

Focusing the Optics

The included 53mm ED OTA features a helical focuser with approximately 12mm of travel. Use the flip mirror to switch between imaging and visual modes. Rotate the black focuser ring until the image is sharp. See Fig. 3.1.

The telescope comes with a 25mm Plössl eyepiece that is parfocal with the camera sensor. This means focusing with the eyepiece first will get the camera nearly in focus, making fine adjustments easier.

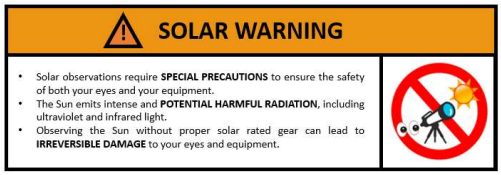
Daytime Focusing

- Rotate the focuser clockwise (when viewed from the back) to focus on nearby objects; rotate counterclockwise for distant objects. See Fig. 3.2 & Fig 3.5.

- A good starting point is to align the front of the focuser ring with the tree–flower graphic on the focuser tube. See Fig. 3.3. This will get you close to focus during daytime use, but note the final position depends on the eyepiece used and distance to the object.

  Please note some units don't have the daytime focuser marks as shown in Fig. 3.3 but instead will have the "Far <--> Near" marks shown in Figure 3.5.

- **Note:** Heat waves from warm ground or atmospheric turbulence can blur images. For best results, observe in the early morning before the environment heats up.



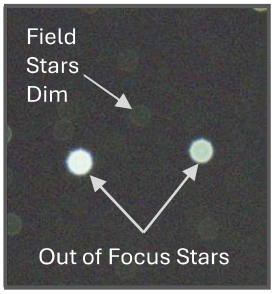


Fig. 3.6

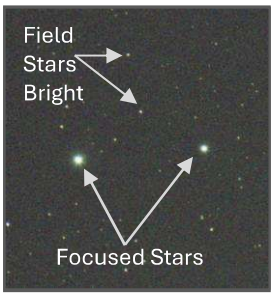


Fig. 3.7



Fig. 3.8

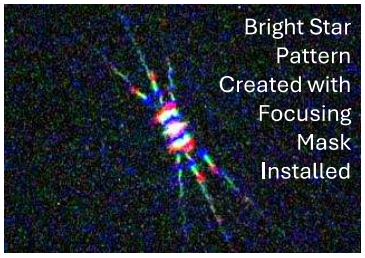


Fig. 3.9

Night Sky Focusing

- The telescope may not initially be at infinity focus. Use the etched infinity reference mark on the focuser to approximate focus. Align the edge of the focuser ring with the infinity mark for a starting point suitable for camera plate solving. See Fig. 3.4.

- Switch the flip mirror to camera mode and use the SkyPilot app to slew to a target. Then switch back to visual mode with the 25mm Plössl eyepiece to fine-tune focus. See Fig. 3.6 & 3.7.

Note: Changing eyepieces often requires refocusing.

Using the Bahtinov Focusing Mask

The included Bahtinov mask fits inside the sliding front dew shield when extended and is used only when focusing the camera. See Fig. 3.8.

- Point the telescope at a bright star high in the sky to see the "X" pattern with a central line. The brighter the star, the better. Adjust the focuser until the central line bisects the "X" evenly. Zoom in using the app for precise alignment. See Fig. 3.9.

Bahtinov Mask Instructions

General Tips

- Out-of-focus stars appear large, blurry, and dim. Adjust the focuser until stars are small, sharp, and bright. See Fig 3.6 & 3.7.

- As focus improves, fainter stars become visible. Focus may shift during the night due to temperature changes or when switching eyepieces. Refocus the telescope as needed.



Fig. 4.1

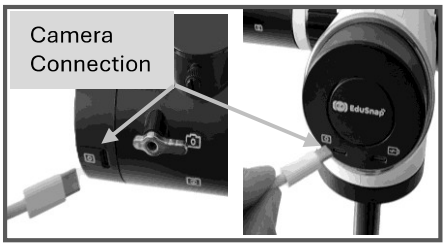


Fig. 4.2

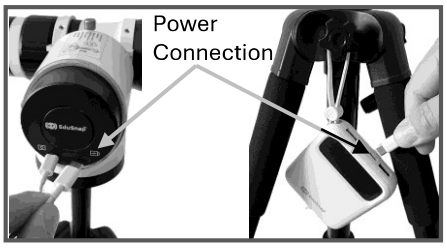


Fig. 4.3

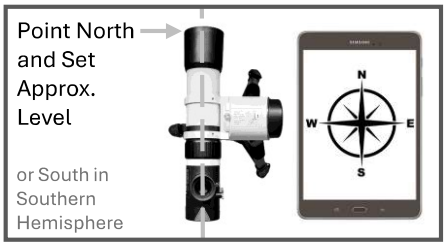


Fig. 4.4

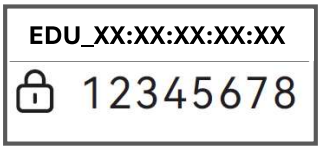


Fig. 4.5

Download the SkyPilot App:

- Scan the QR code (Fig. 4.1) or search "SkyPilot Astro" in your device's app store.

Launch the App:

- When prompted, allow access to your photo album (for saving images) and location (for telescope alignment).

- If prompted, select always connect without internet.

Connect the Camera:

- Connect the short USB-C cable from the camera port on the optical tube to the corresponding camera port on the mount as shown in Fig. 4.2.

Power the Telescope:

- Connect the included long USB-C cable from the external power bank to the telescope's mount power port. See Fig. 4.3.

- Use the USB-C port labeled "Type-C/In" located on top of the power bank. It outputs 12V to the telescope. See Fig. 4.3.

Set Home Position:

- Once powered, the telescope automatically performs an auto-home in the vertical axis. The optical tube should end up approximately level.

- Move the tripod so the optical tube points roughly north (or south in the southern hemisphere). See Home Position for details.

- **Note:** The Home Position algorithm assumes the OTA faces North when starting. If its not, it will still locate objects correctly but may initially slew the opposite direction to the target.

Connect to Telescope Wi-Fi:

- Open your device's Wi-Fi settings and connect to **EDU_XX:XX:XX:XX:XX:XX** using the password **12345678.** See Fig. 4.5.



Fig. 4.6

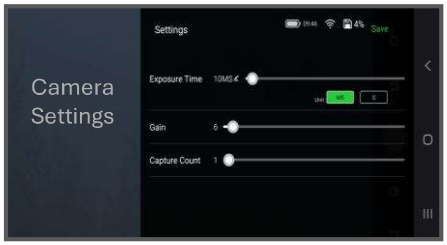


Fig. 4.7

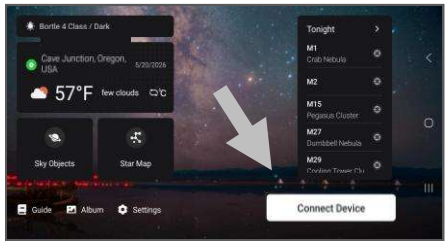


Fig. 4.8

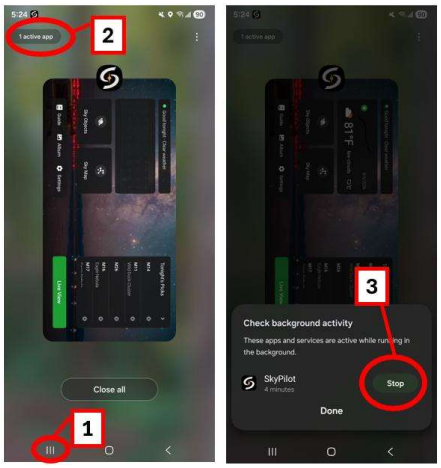


Fig. 4.9

Connect to the telescope inside the app:

- The telescope will initialize. In the app, tap the green "Live View" button in the lower right corner to see the live camera view. See Fig. 4.6.

Tip:

- Ensure the flip mirror is in camera mode.
- For daytime targets, adjust the exposure in ms and gain: default is 2 ms exposure, gain 4. See camera settings window in Fig. 4.7.
- For night sky targets, switch the exposure to seconds and increase gain to 34 or higher.
- Note: The gain of 34 is the default value when imaging deep sky objects and the SkyPilot app will revert back to this value every time you slew to a new object.

Troubleshooting Connection:

- If the app shows "Connect Device" or disconnects, ensure your device is:
  - Still connected to the telescope Wi-Fi
  - Within ~30 ft of the telescope with no obstructions. See Fig. 4.8.
- App disconnects can also occur if the device locks. Increase lock-screen timeout if needed.
- On Android, if the telescopes Wi-Fi is still connected to your device but won't connect in the app, close the SkyPilot background service and connect again.
  Go to your smart device recent apps button(1), then "active apps"(2), and stop the SkyPilot app(3). Try connecting to the telescope again. See Fig. 4.9.
- If the telescope loses connection while imaging, it will continue to capture images. When connection is reestablished, the app will display the most recent stacked image. Be patient as it may take several new images to download before the updated stacked image is shown.

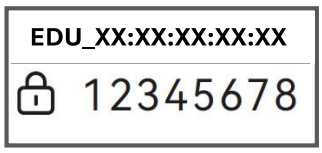


Fig. 5.1

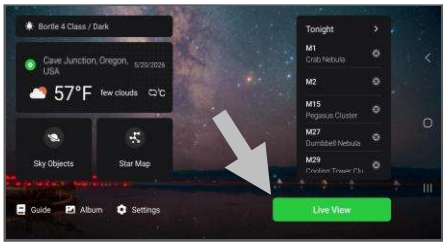


Fig. 5.2



Fig. 5.3

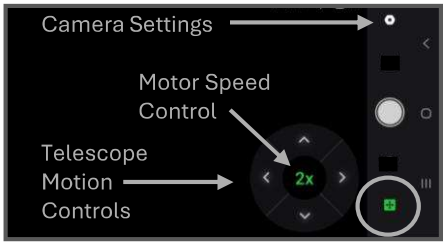


Fig. 5.4

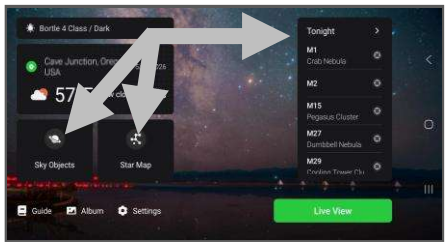


Fig. 5.5

App Version Note: The SkyPilot App is frequently updated, so instructions may vary slightly depending on the version.

1. Connect and Live View

a) Connect your device to the telescope Wi-Fi: **EDU_XX:XX:XX:XX:XX:XX**, password **12345678**.

b) Open the SkyPilot App and tap "Live View" in the lower right corner. See Fig. 5.2.

c) Ensure the flip mirror is in camera mode.

d) Adjust camera exposure and gain until an image appears:

Daytime: Use milliseconds exposure, low gain (10–30).

Nighttime:

- **Moon:** 1–2 ms exposure, gain 30–50
- **Stars & Deep-sky objects:** 10–15 second exposure, gain ~34

2. Moving the Telescope

a) Tap the directional icon See Fig. 5.4.

b) Use the center button to select slew speed (1x, 2x, 3x). Press and hold an arrow to move the telescope.

c) Speeds 1x–2x are slow; movement may be subtle

3. Slewing to Targets with Plate Solving

a) Ensure flip mirror is in camera mode.

b) From the main menu, select "Star Map", "Sky Objects", or "Tonight". See Fig. 5.5.



Fig. 5.6



Fig. 5.7

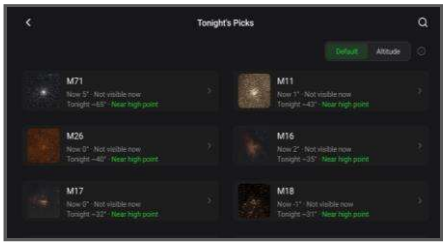


Fig. 5.8



Fig. 5.9



Fig. 5.10

c) Menu Overview:

- **Star Map:** Planetarium-style view. Pan, zoom, and select objects. See Fig. 5.6. Additional settings:
  - **View Settings:** Toggle celestial overlays (Milky Way, DSS) and reference lines (Meridian, Ecliptic).
  - **Sky Map Settings:** Customize the display with night mode, toolbar labels, and Alt/Az & EQ map grids.
  - **Planets Tonight:** View nightly rise and set times for planets.

- **Sky Objects:** List of objects by category. See Fig. 5.7.

- **Tonight:** Highlights the night's best viewing targets. See Fig. 5.8.

d) Select a target and tap "Goto". The telescope will plate solve and center the object (up to 2 minutes). Fine-tune focus using the focuser ring. See Focusing the Optics on page 5 for more information.

- Note: Telescope may move to another part of the sky to plate solve first.

After plate solve, tap "Next" to proceed.

4. Camera Settings and Imaging

a) Tap the camera settings icon to adjust exposure, gain, and number of images. See Fig. 5.9.

b) Tips:

- Use the longest exposure and most images possible while keeping gain low.

- Gain amplifies both signal and noise, so increasing gain will make the images brighter but with increased noise.

- Avoid overly long exposures to prevent saturation, star trailing, or field rotation.

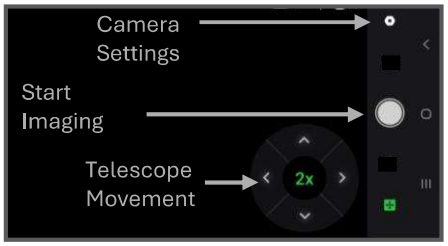


Fig. 5.11



Fig. 5.12

- Example starting settings: 15 second exposures (15,000 ms), gain 34.

c) Use the directional arrow icons to manually center the target as shown in Fig. 5.11. The telescope will continue tracking automatically after you're done centering the target.

d) Start imaging by pressing the circular camera icon. See Fig. 5.11. The App performs live stacking:

- After ~4 images, object details start to appear. Let the telescope stack more images to show more detail!
- Stop anytime with the Cancel button.

- After image stacking is complete or image sequence is cancelled, the final stacked image is saved to your device using the down arrow icon shown in Fig. 5.12. Select this to save the final stacked image to your devices Gallery.
- The individual image files in jpeg format are available to download or delete from within the SkyPilot app. Navigate to the ALBUM located on the app home screen and the jpeg files are sorted by date.
- The individual raw images in tiff format are available for download using the SkyPilot Desktop Client program. See page 13 for more information.

EXTERNAL POWER BANK

The included External Power Bank is a compact, high-capacity portable power source designed to provide reliable, extended power for your devices, including specialized equipment like the Astro 53 Pro.

Key Features

- **High-Capacity Li-Po Battery:** Equipped with a 10,000 mAh (37 Wh) Lithium Polymer battery cell.
- **Dedicated 12V Output:** Provides a stable USB-C 12V/1.5A output, capable of powering 12V devices such as the Astro 53 Pro for extended periods (typically about 4 hours of continuous use).
- **Fast Charging Support:** Features an advanced Power Delivery (PD) system to rapidly charge compatible smartphones, tablets, and other devices.
- **Versatile Charging Ports:** Includes multiple integrated connections (USB Micro, USB-C, USB-A, Lightning) to support a wide range of devices.
- **Digital Power Display:** An integrated LED digital screen provides a precise percentage readout of the remaining battery capacity.
- **Advanced Safety System:** Built-in safeguards protect against over-charging, over-heating (thermal protection), and short-circuiting.



Fig. 6.1

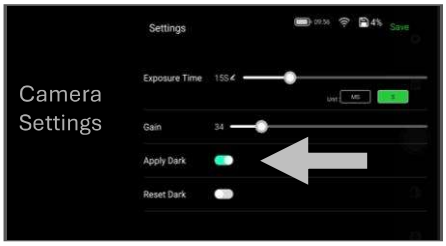


Fig. 6.2

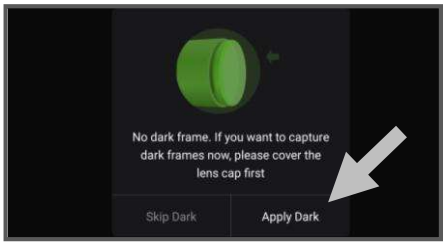


Fig. 6.3

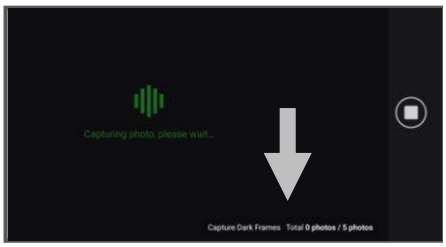


Fig. 6.4

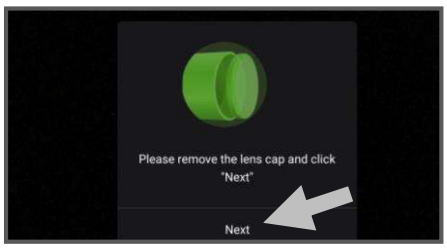


Fig. 6.5

How Dark Frames Improve Image Quality

The SkyPilot App can improve image quality by using dark frames, which records the camera's electronic noise (dark current) when no visible light illuminates the camera sensor. This can be done by placing the lens cap over the front lens or, if the ota is equipped, by using the internal camera shutter.

Note: Some early models of Astro 53 Pro are not equipped with an internal camera shutter (dark filter) and must have the front lens cap securely installed when taking dark frames. Newer Astro 53 Pro units are equipped with an internal shutter and you will hear a click sound from the camera before and after taking dark frames. If your OTA includes an internal camera shutter, you do not need to cover the front lens when taking dark frames.

Dark current noise changes with exposure time, gain, and temperature. If applying dark frames to your images (highly recommended), you will need to take new dark frames if you change the exposure time or gain settings.

Dark frames are also only retained for the current session. If the telescope loses power, dark frames must be retaken in the next session.

Benefits of Dark Frames:

- Reduces electronic noise in your images.
- Removes artifacts from hot pixels, which can appear as colored streaks when stacking multiple images.

Using Dark Frames:

1. Power on the telescope and connect to the SkyPilot App.
2. Select your target object and press **Goto**.
3. Open camera settings and tap "Apply Dark". See Fig. 6.2.
    a) To delete existing dark frames, select "Reset Dark".
    b) If no dark frames exist, the App will provide instructions before you begin imaging. See Fig. 6.3.

4. Cover the 53mm OTA front lens with the dust cap, ensuring no light leaks.
   Note: *If your ota has an internal camera shutter you can skip steps #4 & #6.*
5. Confirm by selecting "Apply Dark" to start. The App will capture 5 dark frames using the same exposure and gain as your target object.
6. Once complete, remove the dust cap. See Fig. 6.5.

Note: When "Apply Dark" is selected, the App automatically subtracts dark frames from object images.

THE DESKTOP CLIENT

The SkyPilot Desktop Client is available to download from the Spectrum Optics® website and allows for direct access to the Astro 53 Pro Camera System. Currently it is compatible with Windows 10 or later. As the Desktop Client is in development, features will be added when ready. Some features of the Desktop Client include:

- Exporting and deleting raw image files
- Viewing image information
- Updating the camera and mount firmware
  (Also available in the SkyPilot app by navigating to Settings/About/Device Management)

SkyPilot Software

To download the SkyPilot Desktop Client, scan the QR code or click the link to the right.

MAINTENANCE

Your Astro 53 Pro telescope is a precision instrument built for years of use. With proper care, it will rarely need service and general maintenance can keep the telescope quality in its peak performance. Follow these guidelines to maintain the telescope quality:

- **Avoid Cleaning Optics:** A light layer of dust on the front lens does not significantly affect image quality and usually doesn't require cleaning. If cleaning is required, take note of the recommendations described below.
- **Dust Removal:** When necessary, gently brush or blow off dust with a camel-hair brush, ear syringe, or optical dust blower. Avoid commercial lens cleaners and canned compressed air as they often contain propellants that can spray onto the glass and can be difficult to remove.
- **Removing Smudges:** For fingerprints or organic marks, use a mix of 3 parts distilled water to 1 part isopropyl alcohol, plus one drop of biodegradable dish soap per pint. Use soft, white, unscented facial tissues and light, short strokes. Change tissues frequently. Avoid colored, scented, or lotioned tissues to prevent optical damage. When cleaning any optical surface always use light strokes to avoid scratching the optical coatings.
- **After Damp Use:** If used in humidity, wipe external surfaces dry before storage, but do not wipe optical surfaces. Let optics air-dry indoors and keep the dust cap off until fully dry. Otherwise, mold can develop on optical surfaces which can eat away at the optical coatings.
- **Heat Exposure:** Don't leave the telescope in a hot car or direct sunlight for long periods—excessive heat may damage electronics and lubrication. Never point the telescope at or near the sun without certified safe solar filters installed on all open optical tubes or permanent damage will occur to the optics. See the Solar Warning on page 5.

Setup & Calibration

- **Digital Tripod Leveler**: For the best image stacking performance, level your tripod after setting up in your observing spot. Open Settings > Tripod Leveling in the SkyPilot app and adjust the tripod legs until your angle is 0.4° or less.

- **Sliding Dew Shield**: Always extend the integrated dew shield before starting. It keeps stray ambient light pollution out of your optical path and prevents dew from forming on the front objective lens during humid nights.

- **North Home Position**: Align the optical tube toward True North before starting. While the system auto-corrects regardless, starting near True North speeds up your very first target acquisition by skipping an extra telescope aligning routine.

- **Focusing Made Easy**: Align the front edge of the helical focuser with the focusers infinity mark for a reliable starting point. Slew to a bright star high in the sky (above 45°), set a 2–3 second exposure at Gain 100 for fast, bright visual feedback in Live View mode. Next, attach the included focusing cover and adjust the focuser until the center diffraction spike sits perfectly centered in the "X" pattern (see image example). Zoom in on the Live View for a more precise focus.

Observing & Imaging Tips

- **Default Exposure & Gain Settings**: Start with 15-second exposures at Gain 34 for optimal performance. Lower the exposure time if stars appear trailed or elongated; lower the gain if you want to reduce background noise; or raise the gain to reveal faint details faster.

- **Always Take Dark Frames**: Run a dark frame calibration routine before your session. This only takes a few minutes and will automatically remove digital camera noise and hot pixels, giving your final stacked images a cleaner, more professional look.

- **Pause Before Imaging**: After slewing and centering a new target, wait about 30 seconds before starting your image. This allows the drive motor to settle, take up gear backlash, and track smoothly.

- **Field Rotation Awareness**: Because the mount uses an alt/azimuth drive, target areas in the East or West which yield the longest exposure times before field rotation occurs. Expect field rotation effects to appear sooner when imaging targets directly overhead (Zenith) or pointing toward the North or South.

- **Give Deep-Sky Targets Time**: To bring out intricate details in nebulae and galaxies while minimizing background noise, aim to collect live-stacked data for at least 45 to 60 minutes per target. The longer you photograph the target, the better the image will appear.

- **Refocusing Temperature Drops**: As ambient temperatures cool down throughout the night, metal components contract slightly and alter focus. Check and tweak your focus with the Bahtinov mask every couple of hours for crisp, sharp stars.

Target Selection & Navigation

- **Planet & Moon Pointing**: Pointing the telescope directly on bright planetary disks can be tricky. When targeting the Moon or planets higher than 35° altitude, the specialized planetary pointing algorithm engages automatically. If it struggles, simply slew to a nearby bright star first to calibrate, then do a final slew to the target.

- **Using an Eyepiece - Ideal Targets for the 53mm ED Lens**: The high-contrast 53mm Extra-low Dispersion optics excel on bright, expansive targets. Great targets when using an eyepiece include:

    - **Lunar & Solar**: The Moon and the Sun *(always use a certified solar filter installed over the objective lens!)*

    - **Solar System**: Saturn's rings and Jupiter's four Galilean moons

    - **Deep Sky**: The Andromeda Galaxy (M31), Orion Nebula (M42), Open Clusters (M45, NGC869 & NGC884, The Hyades) and Bright Globular Clusters (M3, M5, M13, M15, M22, M92) and many more!

    - **Terrestrial**: Birdwatching, wildlife observation, landscapes, target shooting and archery, etc.

        Note since this is an astronomical telescope, the image orientation when using the flip-mirror & eyepiece will result in a mirror-reversed image. This is common with refracting telescopes and is normal.

    - *Remember that different times of years will show different objects or points of interest. Consult the Sky Pilot Star Map first and make sure that it is set to your location and time.*

- **Video Mode for Planetary Details**: When capturing the Moon or planets, try switching to Video Mode (AVI format) to record high-frame-rate uncompressed video clips, which preserve fine surface details better than single exposures. Using advanced techniques known as lucky imaging stacking, we can produce better images that what you would get with a single frame.

Power, Comfort & Post-Processing

- **Powering Your Telescope**: Connect a USB-C battery bank that supports Power Delivery (PD) Fast Charging. The included 10,000mAh battery delivers approximately 4 hours of run time; use a higher-capacity PD power bank for all-night imaging.

- **Protect Your Dark Adaptation**: Switch on Night Vision Mode in the SkyPilot app at least 15 minutes before visual observing. This creates a red overlay across the entire SkyPilot interface to keep your eyes adapted to the dark.

Power, Comfort & Post-Processing continued

- **Escape Light Pollution**: While smart digital stacking works well in suburban backyards, taking your telescope to a dark-sky location drastically improves contrast, color depth, and exposure efficiency. For best results go to a dark sky location and improve the performance of your Astro 53 Pro telescope.

- **Advanced Post-Processing (TIFF Files)**: While the SkyPilot app lets you view and download JPEGs directly from the Album, the telescope simultaneously saves raw TIFF files. Export these high-bit-depth files via the SkyPilot Windows Desktop Client to process them in your favorite astro-imaging software.

Product Number	1203101
Classification	Smart Telescope
What's in the box	53mm ED refractor with camera, motorized GoTo mount, full-size photo tripod, carry case, external power bank, Bahtinov focusing mask, 25mm Plössl eyepiece, Two(2) USB-C cables, New SkyPilot APP download
Optical Design	ED Refractor with integrated camera system
Aperture	53mm ED Refractor
Focal Length	265mm
F Ratio	F5
Flip-Mirror	Integrated flip mirror to quickly change from photographic to visual mode
Eyepiece	25mm Plössl Eyepiece, 1.25"
Focuser	Helical focuser with reference marks for infinity focus
Dovetail	Vixen-style
Dew Shield	Integrated Sliding Dew Shield
Camera Image Sensor	Sony IMX662 1/2.8
Dark-Frame Imaging Filter	Internal auto dark-frame imaging filter* for removing electronic noise from your astrophotos
Storage Capacity	32GB
Image Stacking	Live real-time stacking with auto image rejection
Wi-Fi	Dual Band 2.4GHz & 5GHz
GPS	Location data acquired from smart device
Processor	Quad-core processor + 2T NPU
Input Power	USB-C, 12V PD
Mount	Simple altazimuth mount with GoTo Plate Solving automatically locates night sky targets for you.
Max Slew Speed	6 degrees/second*
App Compatibility	SkyPilot APP (iOS and Android)
Alignment System	Plate Solving technology for automatic night sky pointing
Tripod	Aluminum Tripod with extendable head
Carry Case	Deluxe fitted carry case with straps
Assembled Dimensions	With min tripod height: 11.5" (L) x 13.25" (W) x 22" (H) With max tripod height: 30.5" (L) x 34.5" (W) x 52.5" (H)
Assembled Weight	5.27 lbs (2.39 kg)

* Product #1203101 only

WARRANTY

Thank you for choosing Spectrum Optics® as your trusted source for telescopes, microscopes and other optical products. We stand behind the quality of our products and offer a TWO-YEAR limited warranty from the date of purchase within the US. If a defect is identified on a new product, Spectrum Optical Instruments will repair or replace a product with proof of original purchase. Please note that this warranty only applies to the original purchaser and it is not transferable. Any product that is purchased from anyone or organization other than Spectrum Optical Instruments or authorized dealer is not covered in this warranty.

Additionally, this warranty does NOT cover damage caused by misuse, mishandling, unauthorized repairs, or normal wear and tear. Spectrum Optical Instruments specifically disclaims special, indirect, or consequential damages or lost profit which may result from a breach of this warranty. Any implied warranties which cannot be disclaimed are hereby limited to a term of two years from the date of original retail purchase.

Spectrum Optics® shall use reasonable efforts to repair or replace any product covered by this warranty within thirty days of receipt. In an event where repairing or replacement would require more than thirty days, Spectrum Optics® shall notify the customer in advanced. Spectrum Optical Instruments reserves the right to replace any obsolete product with a new product of comparable price and performance.

Spectrum Optics® reserves the right to change product specifications or to discontinue products without notice. This warranty gives specific rights. You may have other rights which vary from state to state. For warranty inquires, please contact: customer@spectrumoi.com

RETURN POLICY

As a condition to the obligation to repair or replace your product, the product needs to be returned to Spectrum Optical Instruments with proof of original purchase from Spectrum Optical Instruments or an authorized dealer.

A claim is required to be filed before return of a product. A claim template can be obtained from Spectrum Optical Instruments by email. Please contact customer service at customer@spectrumoi.com in such an event. Each return product must include a written statement detailing the nature of the claimed defect. As well as the original purchaser's name, address, and contact information.

Buyers are responsible for return shipping and handling cost for warranty services after 30 days of original purchase. Our warranty covers parts and labor only.

Spectrum Optics® reserves the right to replace an obsolete product with a new product of comparable price and performance. In event of a defected product shall be replaced by a new product, the defected product become the property of Spectrum Optics®. Spectrum Optics® does not issue refunds but only repair or replacement.

CUSTOMER SERVICE

US-based team, Lightning-fast Response

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