



# AstroLite 70AZ

## Refractor Telescope



## INSTRUCTION MANUAL

For ST-AZ30-70400

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**NEVER LOOK AT THE SUN  
WITHOUT PROPER GEARS!**

**FIG.1 Solar Warning**

Please be advised that solar observations require special precautions to ensure the safety of both your eyes and your equipment. The Sun emits intense and potentially harmful radiation, including ultraviolet and infrared light. Observing the Sun without proper solar rated gear can lead to irreversible damage to your eyes and equipment.

Introducing the compact and portable AstroLite™ 70AZ Refractor and travel bag bundle. This telescope is perfect for travelers and outdoor enthusiasts who want to explore the cosmos on the go. Its compact size and lightweight design make it easy to pack and carry, while its fully coated optics and powerful magnification allow for stunning views of the night sky. The bundled travel bag provides added protection and convenience, allowing you to take your telescope with you on your next adventure. Whether you're camping in the wilderness or exploring a new city, this telescope is perfect companion for any stargazing adventure.

This telescope carries a **three year limited warranty**. For details see our website at [www.spectrumoi.com](http://www.spectrumoi.com)

Some of the outstanding features of the AstroLite 70AZ telescope includes:

- Fully coated glass optical elements for crisp clear images,
- Aluminum optical tube assemble for best quality,
- Erect image diagonal for correctly orientation while viewing,
- Lightweight three-section tripod with mount,
- Travel bag for easy transportation,
- Smartphone adapter and remote shutter,
- Quick and easy no-tool set up.

Please take time to read through this manual before exploring the night sky. This manual helps you get familiar with your telescope, so we recommend to keep this manual around until you have fully mastered the telescope's operation. This manual gives detailed information regarding each step as well as needed reference material and helpful hints to make your observing experience simple and pleasurable.

Your telescope is designed to give you years of fun and rewarding observations. However, there are a few things to consider before using your telescope that will ensure your safety and protect your equipment.

## Parts List

This section covers the parts included for your AstroLite Telescope.

Each AstroLite 70AZ Refractor telescope comes in one box. The pieces in the box including the following:



**FIG.2 Included Items**

1. Travel Bag
2. Optical Tube Assembly (OTA)
3. Tripod with Mount
4. Accessory Tray
5. Accessory Bag
6. 5X24 Viewfinder
7. 1.25" Diagonal
8. 1.25" 20mm Eyepiece
9. 2.25" 10mm Eyepiece
10. 1.25" 3X Barlow Lens
11. Smartphone adapter
12. Bluetooth remote shutter

# Parts' Name

## Major Parts List

This section covers the name of the major parts of your Astrolite 70AZ Refractor Telescopes.



FIG.3 Major Parts

## Tripod



FIG.4

1. The tripod and mount come preassembled so setting up is easy and you would not need any tools for setting up the telescope. It's recommended to set up the telescope indoor first to get familiar with the set up process.
2. Spread the tripod out fully (see Fig.4) and place the tripod on a relatively flat ground or table.
3. Attach the accessory tray onto the center spreader bar. Lock the accessory tray down by tightening the screw. (See Fig.4)
4. Release the tripod leg lock (see Fig.5) and fully extend the legs. You can adjust the tripod height by raising the tripod legs. At the lowest level the height of the dovetail receiver is about 22" (56cm) and about 60" (152cm) at its highest level. When fully extended, the tripod looks similar to the image in Fig.6.



FIG.6



FIG.5

## Optical Tube Assembly

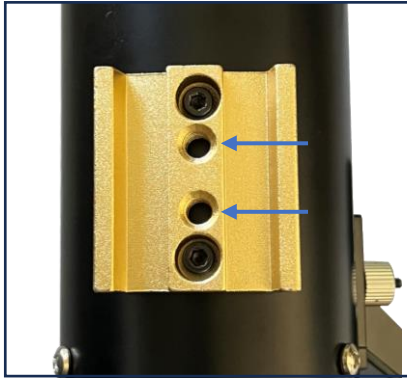


FIG.7

1. Remove the protective paper covering the optical tube assembly before moving on.
2. Please note that there are two threaded holes on the bottom of the Vixen dovetail. (see Fig.7)



FIG.8

3. Locate the Vixen Dovetail on the OTA, usually in our signature gold color and locate the OTA lock knob on the mount (see Fig.8).

4. Slide the OTA onto the dovetail receiver and tighten the OTA lock knob to a firm feel to secure the OTA onto the saddle plate.

5. Please make sure the tighten the OTA lock knob to a firm feel to prevent the OTA falling off. (See Fig. 9)



FIG.9



## Installing Accessories

1. For the 70AZ Refractor, remove the two viewfinder locking nuts and install the viewfinder onto the OTA. Tighten the lock nuts back to secure the viewfinder. (See Fig.10)
2. Remove the plastic plug at the back of the OTA and make sure the two thumbscrews do not protrude into the opening of the back of the OTA before installing the accessories. Install the diagonal into the back of the OTA and retighten the two thumbscrews to secure it. (See Fig.11)
3. Loosen the thumbscrew on the opening end of the diagonal until it is not protruding into the opening. Insert one of the three included eyepieces into the diagonal and secure it by retightening the thumbscrew to a firm feel. (See Fig.11)
4. Use different eyepieces for different magnifications. It's recommended to start off with the eyepiece with the least power (i.e. the largest focal length eyepiece). (See Fig.11)
5. In case of requiring even higher magnifications, install the included 3X Barlow Lens between the eyepiece and diagonal to double the magnification. (See Fig.12)



FIG.10

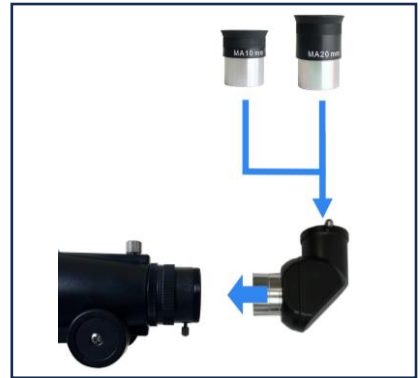
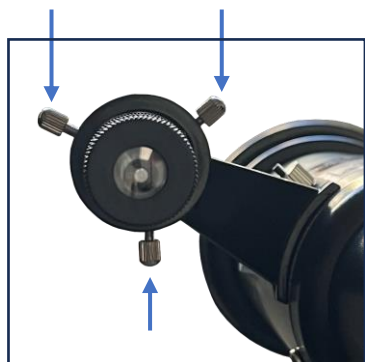


FIG.11



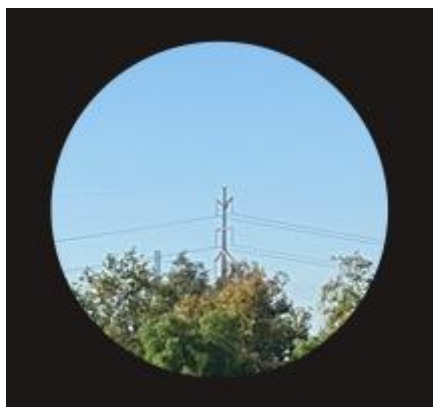
FIG.12

## Aligning Viewfinder



**FIG.13**

1. After installing the viewfinder onto the OTA, the viewfinder and OTA are not yet aligned. You may not see the same object through the eyepiece and the viewfinder. Aligning the OTA with the viewfinder is a necessary step before using the telescope.
2. Point your telescope at a stationary object at distance. A STOP sign, a light pole are some objects that often used for alignment purposes. Use the eyepiece with the lowest power and look through the eyepiece. Center the object in the eyepiece and focus image.
3. The viewfinder can be moved around by adjusting the three adjustment screws. (See Fig.13)
4. To move the viewfinder up and down, loosen the two upper screws slightly to allow up-movement. Then tighten/loosen the lower screw slightly to move the viewfinder down/up. Retighten the upper screws to a firm feel.
5. To move the viewfinder left and right, loosen one of the two upper screws and tighten the other one. Loosen the upper right/upper left screw and tighten the upper left/ upper right to move the viewfinder left/right.
6. The same object should be centered in the viewfinder and eyepiece when alignment done correctly. (See Fig. 14 & Fig.15)



**FIG.14 view through eyepiece**



**FIG.15 View Through Viewfinder**

## Visual Viewing

1. Now the telescope is eye-viewing ready. This telescope is exceptional for viewing celestial object or terrestrial object.
2. To locate an object, first loosen the two axis lock knobs shown in Fig.16. rotate the handle bar CCW to unlock the Altitude axis. Rotate the Azimuth lock knob CW to unlock the axis.



**FIG.16**

3. Move the telescope until the OTA is roughly pointing at the object you wish to observe.
4. Use the handle control bar to move the telescope around as you look through the viewfinder until the crosshair overlaps the object you wish the observe. Look through the eyepiece and the object should be within the view of field. Then lock down the two axes. (See Fig.17)
5. Focus the telescope and enjoy the magnificent world around you!



**FIG.17**

# Using with a Smartphone



FIG.18

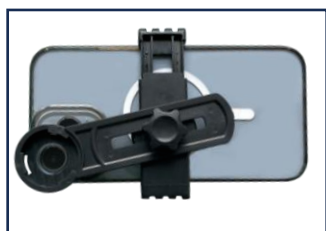


FIG.19



FIG.20



FIG.21

1. Please note that the Smartphone adapter included only works with the 10mm and 20mm eyepiece that come with the telescope.
2. Open the phone clamp and clamp the phone securely. (See Fig. 18)
3. Loosen the big knob and rotate the phone clamp around until the camera is aligned with the hole on the phone clamp. (See Fig. 19)
4. Remove the eye relief from the eyepiece to reveal the teeth. (See Fig. 20)
5. Align the adapter and the eyepiece, then rotate the eyepiece to lock the two together. (See Fig. 21)
6. Insert the eyepiece and adapter back into the diagonal. Loosen the knob on the back of the phone adapter to move the phone around.
7. Turn on the camera APP and rotate the phone until a perfect circular view appears on the screen. Then re-tighten the knob to lock the phone's position.
8. Focus the telescope and take a picture through the telescope.

## Using with the remote shutter

1. Install the included battery into the remote shutter.
2. Open the Bluetooth setting APP on your phone and connect to the device named "GB Shutter." (See Fig. 22)
3. If the device name did not appear on your phone, long press the button on the remote shutter until the device name appears.
4. Now, the remote shutter is connected with the phone, press the button on the remote to take a picture.

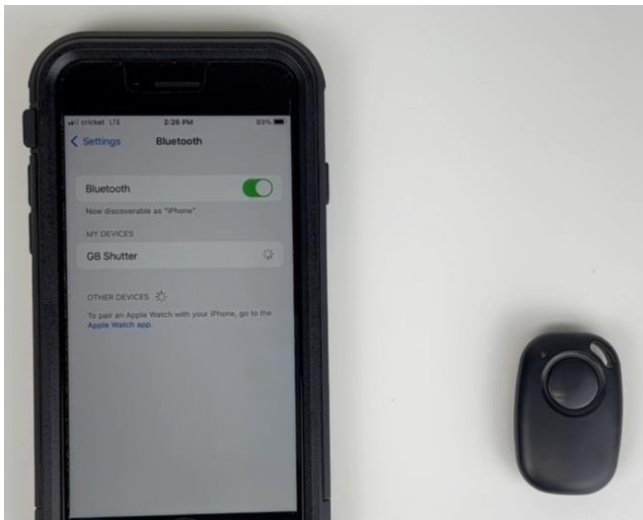


FIG.22

# How to calculate Magnification

Calculating the magnification of a telescope is a very straightforward and easy process that involves dividing the telescope's focal length by the eyepieces' focal length.

The Focal length is the distance from the primary lens or the mirror to the point where the incoming light converges. To determine magnification, simply divide the telescope's focal length by the eyepieces' focal length. Here is the equation for the calculation.

$$\textit{Magnification} = \frac{\textit{Telescope Focal Length}}{\textit{Eyepiece Focal Length}}$$

For instance, if your telescope has a focal length of 400mm and you're using an eyepiece with a focal length of 10mm, the magnification of this set up can be calculated as shown:

$$\textit{Magnification} = \frac{400\textit{mm}}{10\textit{mm}} = 40\textit{X}$$

Please keep in mind that while magnification influences the apparent size of observed objects, it is also important to consider factors like atmospheric conditions and telescope's optics for a comprehensive view.

# Celestial Observing

Once your telescope is set up completely, you are ready to observe any terrestrial and celestial objects. This section covers a few observing tips to help improve the viewing experience.

**PLEASE DO NOT LOOK AT THE SUN WITHOUT PROPER SOLAR FILTER.**

## Moon Observing

The Moon is one of the most famous celestial object in our solar system and it is the easiest to observe with a telescope.

When looking through the telescope at the Moon, you may find that the Moon is exceptionally bright when it is at full moon. This is because the Moon is reflecting the light from the Sun. Even though the Moon can be very bright, the light it reflects is not harmful to your eyes. It may take away your night version for a while, but it will not pose any damage to your eyes.

When observing the Moon's surface details, it is better to install the optional Moon filter. The Moon filter is a yellow-ish green filter to help bring the contrast of the craters. If you are viewing through your phone with the phone adapter, we recommend lowering the exposure which will bring you a similar effect of having a moon filter.

## Planets Observing

Planets observing is also fascinating. However, please note that Planets observing is limited by the seeing condition of your observation site including light pollution and atmospheric condition. So observing planets in the city and/or while the planets are low in the horizon may not be the best options.

You may see the ring of Saturn; the lunar phase of Venus; the Great Red spot of Jupiter; surface detail of Mars, etc.

# Telescope Maintenance

The main lens of the telescope is the most important part of the telescope, and all Spectrum Optical Instruments telescopes have high transmission glass optics for best performance. Each glass optic is fully coated, It is very important to protect the coating and prevent any potential damages which can cause significant decrease of performance. Here are a few maintenance tips you can perform to ensure your telescope perform at its best for a long time.

- When the telescope is not in use, we recommend putting the dust cover back onto the OTA to prevent any dust and/or moisture build-up on the main optics.
- It is also recommended to cover the back of the OTA with the included plastic plug to prevent foreign objects entering the OTA body and potentially causing any damage to the inner coated surface of the OTA and more importantly, the main optics.
- In case of dust/moisture build-up on the outside of the main optics, you can remove it with a camel hair brush or pressurized air.
  - When using a camel hair brush, make sure there is no foreign object on the brush before using. Lightly move brush across the optic to remove the dust/moisture;
  - When using a can a pressurized air, spray the air onto the optics at an angle so that the dust can be blown away from the optic.
- In case of moisture build-up occur on the inside of the OTA, remove the plastic cover of the back of the OTA, and point the telescope downward to allow to moisture to evaporate.
- In case of finger print/grease on the optics, it is necessary to remove it with the correct cloth motion.
  - Use any commercial optic cleaning solution with a optics cleaning cloth/or white tissue with the least amount of debris;
  - Apply the cleaning solution onto the cloth/tissue. **DO NOT** apply the cleaning solution directly onto the optics;
  - Apply the cloth/tissue to the optics with low pressure;
  - Move the cloth/tissue from the center of the optics to the outer portion. **DO NOT RUB the optics!**
  - Repeat until optics is fully cleaned.



# SPECIFICATIONS

<b>Model</b>	<b>ST-AZ30-70400</b>
<b>Optical Design</b>	Refractor Telescope
<b>Optical Element</b>	Fully Coated
<b>Mount type</b>	Alt-Az mount
<b>Tripod</b>	Full size Aluminum adjustable tripod
<b>Aperture</b>	70 mm (2.8")
<b>Focal Length</b>	400 mm
<b>Focal Ratio</b>	f/5.71
<b>Eyepiece 1</b>	10mm – 1.25"
<b>Eyepiece 2</b>	20mm – 1.25"
<b>Barlow Lens</b>	3X Barlow
<b>Diagonal</b>	Erect Image - 90° 1.25"
<b>Magnification</b>	20X – 120X
<b>View Finder</b>	5X24 Optical Viewfinder
<b>Other accessories</b>	Smartphone Adapter Remote Shutter
<b>Telescope size (When assembled)</b>	30" x 30" x 45"
<b>Telescope weight (When assembled)</b>	5.1 lbs
<b>Package weight</b>	7.2 lbs

**Note:** Specifications are subject to change without notice or obligation

# Three Year Limited Warranty

Thank you for choosing Spectrum Optical Instruments as your trusted source for telescopes, microscopes and other optical products. We stand behind the quality of our products and offer a **THREE-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 three years from the date of original retail purchase.

Spectrum Optical Instruments 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 Optical Instruments 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 Optical Instruments 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.

If you have any question regarding this warranty, please contact our friendly customer service team at [customer@spectrumoi.com](mailto: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](mailto: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 Optical Instruments reserves the rights 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 Optical Instruments. Spectrum Optical Instruments does not issue refunds but only repair or replacement.

## Customer Service

### Our Focus: Customer Satisfaction

Our dedication to your satisfaction is at the core of everything we do. We understand the importance of having the optical instrument to enhance your pursuits, whether you're exploring the cosmos or diving into the microscopic world.

### US-based team, Lightning-fast Response

When you reach out to us, you're not just getting assistance; you're connecting with a team of professional experts right here in California. We're proud to be based in the USA, and we stand by our commitment to provide you with an answer and support within 24 hours. Your questions and concerns are our top priority.

### Contact us Today!

Have a question or need assistance? Reach out to Spectrum Optical Instruments. We're here to help you achieve optical excellence. Feel free to contact us via email and we will be ready to assist you promptly.

Thank you for choosing Spectrum Optical Instruments. Your optical journey begins here, and we're excited to be a part of it.

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