iExplore™ 70AZ Telescope
Instruction Manual

For product #6003

www.iOptron.com

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WARNING!

NEVER USE A TELESCOPE TO LOOK AT THE SUN WITHOUT A PROPER FILTER!
Looking at or near the Sun will cause instant and irreversible damage to your eye. Children should always have adult supervision while observing.

1. Telescope Assembly

1.1. iExplore 70AZ Assembly Terms

Figure 1. iExplore 70AZ

(1). Optical tube assembly (OTA)
(2). Finderscope
(3). Finderscope mounting socket
(4). Eyepiece
(5). Diagonal
(6). Focusing knob
(7). Altitude adjustment rod
(8). Accessory tray
(9). Tripod support bracket
(10). Tripod legs
(11). Yoke (altazimuth) mount
(12). Altitude lockig knob
(13). Azimuth locking knob
Parts shown in Figure 2
(14). Tripod leg attachment bolts (3 sets)
(15). Tripod locking screws (3 sets)
(16). 3X Barlow lens
(17). 1.5X Erecting eyepiece

Figure 2. Parts list

1.2. Telescope Assembly

The numbers in brackets refer to the keys shown in Figure 1 & Figure 2.

1. Unpack and identify the components of your telescope using the list shown in previous pages.

2. Take the Tripod legs (#10) out of the package. Lock each one with supplied Tripod locking screws (#15).

3. Connect all three tripod legs to the yoke tripod head (AZ mount, #11) with the supplied Tripod leg attachment bolts, washers, and nuts (#14), as shown in Figure 3. Each leg has a hinged black metal flange located halfway down its length. The legs should be positioned so that these hinged flanges are facing inside. Position a washer under the wing nut.

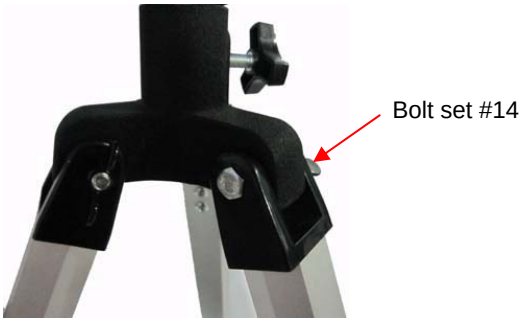

Figure 3. Attach tripod legs to york

4. Fasten the Tripod support bracket (#9) to each leg using the included bolts and nuts that come attached to the end of each arm of the Tripod support bracket. Stand the telescope's tripod mount upright by spreading the tripod's legs out uniformly. Push down slightly on the Tripod support bracket (Figure 4.) Attach the accessory tray (#8) to the Tripod support bracket via a screw on the bottom of the tray (Figure 5.) Turning the tray until hand tight – don't over tighten the tray.

Figure 4. Tripod with installed Tripod support bracket

Figure 5. Install the Accessory tray

5. Unlock the Tripod locking screws. Extend tripod legs to desired height and lock the legs afterwards.

6. Mount the eyebolt of the Altitude adjustment rod (#7) onto the telescope tube assembly (OTA, #1) using a supplied flathead screw, as shown in Figure 6.

Figure 6. Install Altitude adjustment rod

7. Retract the Altitude locking knob (#12) so the hole is clear in the eyebolt on the mount (see Figure 7). Put the OTA inside the yoke (altazimuth) mount so that the Altitude adjustment rod (#7) is on the same side as the Altitude locking knob (see Figure 1). Put the Altitude adjustment rod (#7) through the eyebolt, as shown in Figure 8.

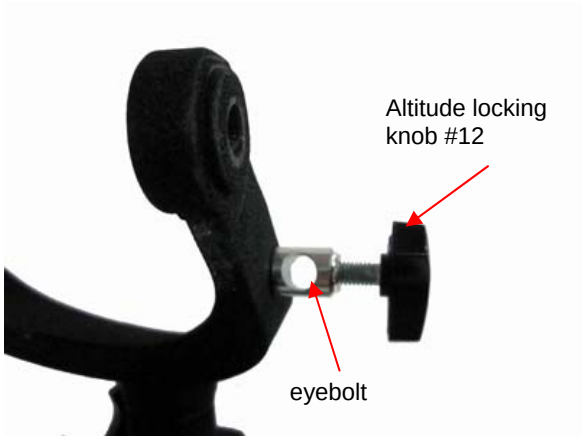

Figure 7. Retract the Altitude locking knob

Figure 8. Put the rod through the eyebolt on mount

8. Thread the two knobs (one on either side of the mount) through the top of the mount into the threaded holes on the OTA and tighten (see Figure 9).

Figure 9. Secure the OTA

9. Slide the finderscope (#2) into OTA's finderscope socket (#3) near the focuser drawtube.

Figure 10. Attach finderscope

10. The iExplore 70AZ equipped with a star diagonal (#5). This diagonal produces an image in the eyepiece that is correctly oriented vertically, but is reversed left-to-right horizontally. Insert the diagonal (#5) into the focuser drawtube and the eyepiece (#4) into the diagonal. Tighten the thumbscrews to a firm feel only.

Figure 11. Insert diagonal and eyepiece

The telescope is now fully assembled and ready to use. You can move the telescope in altitude direction (up and down) and azimuth direction (left or right) by slightly release the Altitude locking knob (#12) and Azimuth locking knob (#13).

2. Using the Telescope

Before observing a celestial object, looking at terrestrial objects during the day provides a good exercise on how to operate the mount and telescope.

2.1.1. Moving the Telescope

The iExplore Alt-Az mount is easy to move wherever you want to point it. The up and down (altitude) is controlled by the Altitude locking knob #12. The side-to-side (azimuth) is controlled by the Azimuth locking knob #13. When both knobs are loose, you can find your objects easily (through the finderscope) and then lock the controls.

For fine adjustments in altitude, you may turn the knurled ring of the Altitude adjustment rod #7 (when the Altitude locking knob is tightened) in either direction, as shown in Figure 12.

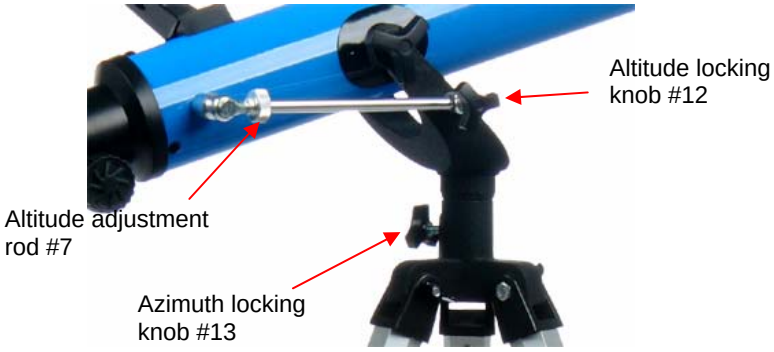

Figure 12. Altitude and azimuth moving

2.1.2. Selecting an Eyepiece

Always begin viewing with the lowest power eyepiece. (Note: a 20 mm focal length eyepiece has a lower power than a 12.5 mm one.)

The power or magnification offered by a telescope is determined by two factors: the optical or focal length of the telescope's lens and the eyepiece's focal length. This telescope's focal length is 700 mm. To calculate the magnification factor, divide the lens' focal length by that of the eyepiece. The resulting value represents the magnification factor offered by the telescope when it is used with this eyepiece. For example, using a 20 mm eyepiece provides a magnification factor of:

Magnification = 700 mm/20 mm = **35X**

Some words of caution on magnification. Although the theoretical power or magnification of a telescope is virtually limitless, there are practical limits, such as he earth's atmosphere. Every telescope has a useful magnification limit of about 2X per millimeter of aperture. This comes to 140X for a 70mm telescope. Moderate magnifications are what give the best views. It is better to view a small, but bright and detailed image than a dim, unclear, oversized image.

2.1.3. Install and Using Barlow Lens

A Barlow lens is used to increase the magnification of each eyepiece. Foe example, the total magnification will be 105X when a 20mm eyepiece (35X) and a 3X Barlow lens are used together. To use the Barlow lens, remove the diagonal and insert the Barlow directly into the focuser drawtube. You then insert an eyepiece into the Barlow lens for viewing. You can also insert the diagonal into the Barlow lens and then use an eyepiece in the diagonal but you may not be able to reach focus with all eyepieces.

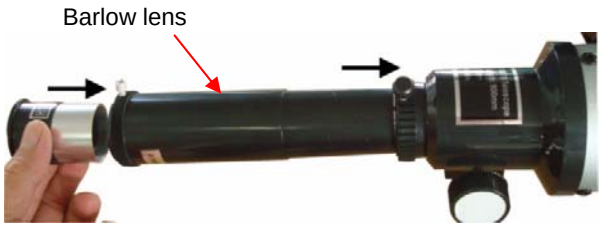

Figure 13. Using Barlow lens

2.1.4. Installing & Using the 1.5x Erecting Eyepiece

The iExplore 70AZ comes with a 1.5x erecting eyepiece, primarily for daytime terrestrial viewing. This eyepiece produces an image in the eyepiece that is correctly oriented both vertically and horizontally.

Install and use this eyepiece the same way you do with the Barlow lens. You cannot use the Barlow lens when using this eyepiece.

2.1.5. Focusing Telescope

After selecting the desired eyepiece, aim the telescope tube at a land-based target at least 200 yards away (e.g. A telephone pole or a building). Fully extend focuser drawtube by turning the focusing knob. Always start with a low power eyepiece.

While looking through selected eyepiece, slowly retract focuser drawtube by turning focusing knob until object comes into focus.

2.1.6. Aligning Finderscope:

The extended field of view (FOV) offered by the 5x24 mm finderscope (#2) makes it easier to aim at an object before viewing it through the main telescope tube with a higher magnification.

1). Remove the front lens cover from the telescope (#1). Select a low power eyepiece (20mm). Look through telescope and establish a well-defined target (see focusing telescope section). Tighten all locking knobs so that telescope's aim is not disturbed.

2). Looking through the finderscope, alternate tightening or loosing each finderscope adjustment screw (see Figure 14) until the crosshairs of the finderscope are precisely centered on the same object already centered in main telescope's field of view.

Figure 14. Finderscope

3). Now, objects centered with the finderscope first will be shown in the FOV of the main telescope. They can be focused by turning the finderscope's threaded eyepiece. The image in the finderscope will be reversed.

2.2. Star Observation

First of all you will need to choose an object that is easy to find. The Moon or a bright star is a good target to start with.

1. Slightly loose the telescope's altitude locking knob (#12) and the azimuth locking knob (#13). By applying slight pressure by hand, the telescope should now move freely along its two axes.

2. Move the telescope along altitude (vertical) and azimuth (horizontal) axes and using the aligned finderscope to find the Moon. With the object centered in the finderscope's cross hairs, retighten the altitude and azimuth knobs.

3. The Moon should be visible somewhere within the FOV of the main telescope. Focus the image by adjusting the focusing knob (#6). Center the Moon by adjusting the mount in altitude and azimuth directions.

4. You'll find that the object immediately starts to shift across the FOV. This motion is due to the earth rotation. Lower-power eyepieces will reduce this effect of movement considerably and allow you to observe an object for a longer duration before you have to readjust your telescope. To "track" the object and keep it in the FOV, adjust the altitude using the Altitude slow motion rod and the azimuth by loosing the azimuth

lock.

2.3. Observation Tips

When selecting a location for observing, get as far away as possible from direct artificial light such as street lights, porch lights, and automobile headlights. The glare from these lights will greatly impair your dark-adapted night vision. Set up on a grass or dirt surface, not asphalt, because asphalt radiates more heat, which disturbs the surrounding air and degrades the images seen through the telescope. Avoid viewing over rooftops and chimneys, as they often have warm air currents rising from them. Avoid observing from indoors through an open (or closed) window, because the temperature difference between the indoor and outdoor air will cause image blurring and distortion. Furthermore, it is preferable to let your telescope reach outside ambient (surrounding) temperature before starting an observation cycle.

Wait a few minutes to allow your eyes to become used to the darkness before attempting any serious observations. Use a flashlight with a red filter to preserve your night vision when looking at star maps or checking telescope parts.

Avoid touching the eyepiece during observation. Vibration generated by this contact may cause the view to move. Also avoid observing from locations where terrestrial vibrations are significant. Observing from the upper floors of buildings may also cause the images vibrating.

Warning! Never attempt to observe the sun through your telescope without a proper solar filter. Observing the sun, even for a fraction of a second, may cause immediate and irreversible harm to your eye as well as physical damage to the telescope.

Some atmospheres may deform the image that you are observing. Planets in particular, when observed low on the horizon, often present a fuzziness – the same object when observed at a higher altitude in the sky may benefit from far better definition and a far higher degree of contrast. Furthermore, air turbulence in the upper layers of the atmosphere may cause "trembling" to affect the view observed through the eyepiece. In this case, reduce the magnification factor until the picture stabilizes. Keep in mind that even a small sized but bright and well defined image will reveal far more interesting details than a larger, but less bright and slightly fuzzy, view.

3. Maintenance

If you give your telescope reasonable care, it will last a lifetime. Store it in a clean, dry, dust free place, safe from rapid changes in temperature and humidity. Do not store the telescope outdoors. Small components like eyepieces and other accessories should be kept in a protective box or storage case. Keep the caps on the front of the telescope and on the focuser drawtube when not in use.

Your iExplore telescope requires very little mechanical maintenance. The optical tube is aluminum and has a smooth painted finish that is fairly scratch resistant. If a scratch does appear, it will not harm the telescope.

Cleaning Lenses

Any quality optical lens cleaning tissue and optical lens cleaning fluid specifically designed for multi-coated optics can be used to clean the objective lens and the exposed lenses of your eyepieces. Never use regular glass cleaner or cleaning fluid designed for eyeglasses.

Before cleaning with fluid and tissue, blow any loose particles off the lens with a blower bulb or compressed air. Then apply some cleaning fluid to a tissue, never directly on the optics. Wipe the lens gently in a circular motion, then remove any excess fluid with a fresh lens tissue. Oily fingerprints and smudges may be removed using this method. Use caution— rubbing too hard may scratch the lens. For the larger surface of the objective lens, clean only a small area at a time, using a fresh lens tissue on each area. Never reuse tissues.

4. Technical Specifications

Mount	AltAzimuth
Optical Design	Achromatic Refractor
Objective Lens	Air-spaced, fully coated
Clear Aperture	70 mm
Focal Length	700mm
Focal Ratio	f/10
Focuser	Rack-and-pinion, accepts 1.25" eyepieces and accessories
Eyepiece	4mm, 12.5mm, 20mm
Diagonal	90º mirror, 1.25”
Magnification with supplied eyepiece	35X (w/ 20mm), 56X (w/12.5mm) 175X (w/4mm)
Barlow Lens	3X
Erecting Eyepiece	1.5X
Finding Scope	5X24
Tripod	Aluminum
Total Weight	6 lbs.
Warranty	One year limited

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IOPTRON ONE YEAR LIMITED WARRANTY

A. iOptron warrants your telescope, mount, or controller to be free from defects in materials and workmanship for one year. iOptron will repair or replace such product or part which, upon inspection by iOptron, is found to be defective in materials or workmanship. As a condition to the obligation of iOptron to repair or replace such product, the product must be returned to iOptron together with proof-of-purchase satisfactory to iOptron.

B. The Proper Return Authorization Number must be obtained from iOptron in advance of return. Contact iOptron to receive the number to be displayed on the outside of your shipping container.

All returns must be accompanied by a written statement stating the name, address, and daytime telephone number of the owner, together with a brief description of any claimed defects. Parts or product for which replacement is made shall become the property of iOptron.

The customer shall be responsible for all costs of transportation and insurance, both to and from the factory of iOptron, and shall be required to prepay such costs.

iOptron shall use reasonable efforts to repair or replace any telescope, mount, or controller covered by this warranty within thirty days of receipt. In the event repair or replacement shall require more than thirty days, iOptron shall notify the customer accordingly. iOptron reserves the right to replace any product which has been discontinued from its product line with a new product of comparable value and function.

This warranty shall be void and of no force of effect in the event a covered product has been modified in design or function, or subjected to abuse, misuse, mishandling or unauthorized repair. Further, product malfunction or deterioration due to normal wear is not covered by this warranty.

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This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

iOptron reserves the right to modify or discontinue, without prior notice to you, any model or style telescope.

If warranty problems arise, or if you need assistance in using your telescope, mount, or controller contact:

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