CELESTRON®

POWERSEEKER® 60AZ

INSTRUCTION MANUAL

#21057-DS

INTRODUCTION

Congratulations on your purchase of a PowerSeeker 60AZ Telescope with Smartphone Adapter. The PowerSeeker Series is made of the highest quality materials to ensure stability and durability. All this adds up to a telescope that gives you a lifetime of pleasure with a minimal amount of maintenance.

The PowerSeeker line of telescopes was designed for the first time buyer offering exceptional value. The PowerSeeker series features a compact and portable design with ample optical performance to excite any newcomer to the world of amateur astronomy. In addition, your PowerSeeker telescope is ideal for terrestrial observations which will open your eyes with its superb high power viewing. PowerSeeker telescopes carry a two year limited warranty. For details see our website at www.celestron.com.

Take time to read through this manual before embarking on your journey through the Universe. It may take a few observing sessions to become familiar with your telescope, so you should keep this manual handy until you have fully mastered your telescope's operation. The manual gives detailed information regarding each step as well as needed reference material and helpful hints to make your observing experience simple and pleasurable as possible.

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.

SOME OF THE MANY STANDARD FEATURES OF THE POWERSEEKER INCLUDE:

- All coated glass optical elements for clear, crisp images.
- Smooth functioning, rigid altazimuth mount with easy pointing to located objects.
- Preassembled aluminum tripod ensures a stable platform.
- Quick and easy no-tool set up.
- BONUS universal smartphone adapter (part #81060) for taking images of what you see!
- FREE Starry Night Software download with included code.
- FREE Sky Portal APP for your smartphone gives you an interactive map of the night sky.
- All models can be used terrestrially as well as astronomically with the standard accessories included.

WARNING

- Never look directly at the Sun with the naked eye or with a telescope (unless you have the proper solar filter). Permanent and irreversible eye damage may result.
- Never use your telescope to project an image of the sun onto any surface. Internal heat build-up can damage the telescope and any accessories attached to it.
- Never use an eyepiece solar filter or a Herschel wedge. Internal heat build-up inside the telescope can cause these devices to crack or break, allowing unfiltered sunlight to pass through to the eye.
- Do not leave the telescope unsupervised, either when children are present or with adults who may not be familiar with the correct operating procedures of your telescope.

ATTACHING THE TELESCOPE TUBE TO THE MOUNT

Figure 1-1 PowerSeeker 60AZ Refractor

1 Objective Lens
2 Telescope Optical Tube
3 Finderscope
4 Eyepiece
5 Diagonal
6 Focus Knob
7 Altitude Slow Motion Rod Assembly
8 Accessory Tray
9 Tripod
10 Alt-Az Mount
11 Altitude Locking Knob
12 Azimuth Lock
13 Smartphone Adapter

ASSEMBLY

This section covers the assembly instructions for your PowerSeeker telescope. Your telescope should be set up indoors the first time so that it is easy to identify the various parts and familiarize yourself with the correct assembly procedure before attempting it outdoor.

Your PowerSeeker 60AZ telescope comes in one box. The pieces in the box are the optical tube, altazimuth mount, 20mm eyepiece, 4mm eyepiece, 3x Barlow lens, erect image diagonal, and a universal smartphone adapter.

SETTING UP THE TRIPOD

1. Remove the tripod from the box (Figure 2-1). The tripod comes preassembled so that the set up is very easy.

2. Stand the tripod upright and pull the tripod legs apart until each leg is fully extended and then push down slightly on the tripod leg brace (Figure 2-2). The very top of the tripod is called the tripod head.

3. Next, we will install the tripod accessory tray (Figure 2-3) onto the tripod leg brace (center of Figure 2-2).

4. On the bottom of the tripod tray is a screw attached to the center. The screw attaches into a threaded hole in the center of the tripod leg brace by turning it clockwise.
   NOTE: Pull up slightly on the tripod leg brace to make it easy to attach.
   Continue turning the tray until hand tight – don't over tighten the tray.

5. The tripod is now completely assembled (Figure 2-4).

6. You can extend the tripod legs to the height you desire. At the lowest level, the height is about 27" (69 cm) and extends to about 47" (119 cm). You unlock the tripod leg lock knobs at the bottom of each leg (Figure 2-5) by turning them counterclockwise and pull the legs out to the height you want and then lock the knobs securely. A fully extended tripod looks similar to the image in Figure 2-6.

7. The tripod will be the most rigid and stable at the lower heights.

Figure 2-1

Figure 2-2

Figure 2-3

Figure 2-3a

Figure 2-4

Figure 2-5

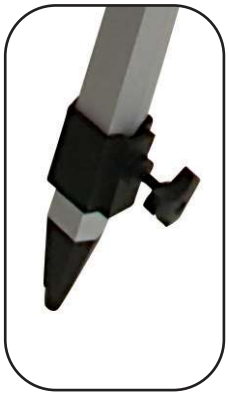


Figure 2-6

ATTACHING THE TELESCOPE TUBE TO THE MOUNT

The telescope optical tube attaches to the altazimuth mount with the altitude slow motion rod assembly and the respective knobs. Before starting, remove the objective lens cap. To mount the telescope tube to the mount:

1. Remove the protective paper covering the optical tube.

2. Put the telescope optical tube inside the yoke (altazimuth) mount so that the altitude slow motion rod assembly is on the same side as the altitude locking screw (see Figure 1-1).

3. Thread the altitude locking knob out so the hole is clear in the eyebolt (see Figure 2-8).

4. Put the rod of the assembly through the eyebolt and then tighten the altitude locking knob – Figure 2-9.

5. Thread the two knobs (one on either side of the mount) through the top of the mount into the threaded holes in the optical tube and tighten – Figure 2-7.

Figure 2-7

Figure 2-8

Figure 2-9

MOVING THE TELESCOPE MANUALLY

The PowerSeeker 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 (Figure 2-12). The side-to-side (azimuth) is controlled by the azimuth lock knob (Figure 2-12). 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 turn the knurled ring of the altitude slow motion rod (when the altitude lock is tight) in either direction – see Figure 2-9.

NOTE: Before tightening the altitude locking knob, the location you are seeking should be located in the finderscope.

Figure 2-12

INSTALLING THE DIAGONAL AND EYEPIECE (REFRACTOR)

The diagonal is a prism that diverts light at a right angle to the light path of the refractor. This allows you to observe in a position that is more comfortable than if you had to look straight through. This diagonal is an erect image model that corrects the image to be right side up and oriented correctly left-to-right which is much easier to use for terrestrial observing. Also, the diagonal can be rotated to any position which is most favorable for you. To install the diagonal and eyepiece:

1. Insert the small barrel of the diagonal into the 1.25" eyepiece adapter of the focus tube on the refractor – Figure 2-13. Make sure the two thumbscrews on the eyepiece adapter do not protrude into the focuser tube before installation and the plug-up cap is removed from the eyepiece adapter. Once in place, tighten the thumbscrews to hold the diagonal in place.

2. Put the chrome barrel end of one of the eyepieces into the diagonal and tighten the thumb screw. Again, when doing this make sure the thumbscrew is not protruding into the diagonal before inserting the eyepiece.

3. The eyepieces can be changed to other focal lengths by reversing the procedure in step 2 above.

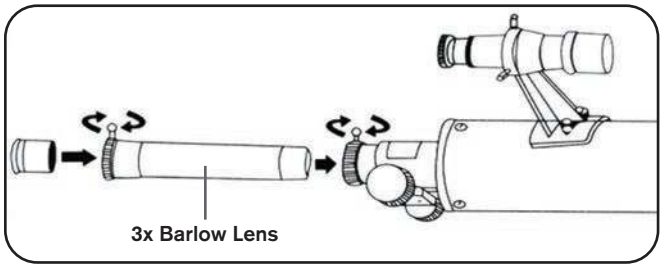
Figure 2-13

INSTALLING AND USING THE BARLOW LENS

Your telescope also comes with a 3x Barlow Lens which triples the magnifying power of each eyepiece. To use the Barlow lens, remove the diagonal and insert the Barlow directly into the focuser tube. 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.

NOTE: Start by using a low power eyepiece as it will be easier to focus.

Figure 2-16



INSTALLING THE FINDERSCOPE

To install the finderscope:

1. Locate the finderscope (it will be mounted inside the finderscope bracket) – see Figures 1-1 and 1-2.

2. Remove the knurled nuts on the threaded posts on the optical tube – see Figure 2-17.

3. Mount the finderscope bracket by placing it over the posts protruding from the optical tube and then holding it in place thread on the knurled nuts and tightening them down.

4. Note that the finderscope should be oriented so that the larger diameter lens is facing toward the front of the optical tube.

5. Remove the lens caps from both ends of the finderscope.

Figure 2-17

ALIGNING THE FINDERSCOPE

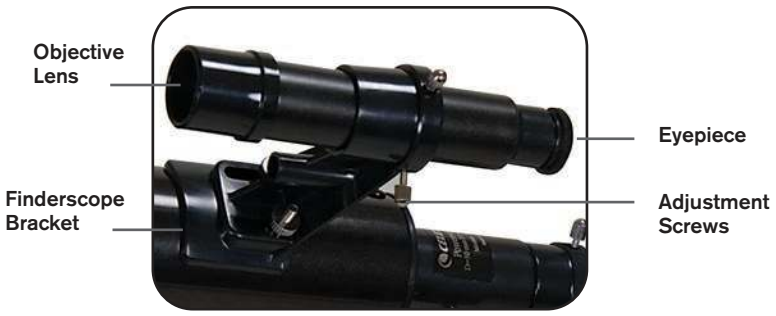
Use the following steps to align the finderscope:

1. Locate a distant daytime object and center it in a low power (20mm) eyepiece in the main telescope.

2. Look through the finderscope (the eyepiece end of the finderscope) and take notice of the position of the same object.

3. Without moving the main telescope, turn the adjustment thumb screws located around the finderscope bracket until the crosshairs of the finderscope are centered on the object chosen with the main telescope.

Figure 2-18



USING THE BASIC SMARTPHONE ADAPTER

1. Lift the bungee straps and slide your smartphone between the straps and the adapter so that the camera is looking through the camera opening. The straps should give plenty of tension to hold the device against the adapter and the black rubberized surface will give enough friction to prevent the phone from sliding around.

HINT: Depending on the design of your smartphone, the camera may be in the middle of the device or in one corner. You may want to change the angle of the bungee straps to better secure the phone. There are six different anchor points to choose from around the edge of the adapter. Simply reposition them to different anchor points to achieve the best results.

2. Turn the adapter over and make sure your camera lens is centered in the opening in the lens cap. The better you have this centered, the easier it will be to take images through the telescope.

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3. Take the 1.25” eyepiece and if necessary remove the rubber eyecup by pulling it straight off the eyepiece body.

4. Loosen the set screws located on the eyepiece holder on the inside of the adapter. Place the black portion of the eyepiece into the eyepiece holder and tighten the screws to secure the eyepiece in place.

5. Now take the adapter with the phone and eyepiece attached and insert the chrome barrel of the eyepiece into the diagonal on the back of the telescope’s focuser. Secure it in place by tightening the set screws on the diagonal.

6. Activate your camera app on your smartphone and adjust the focus, just as you would the eyepiece, this time using the image that appears on your screen.

NOTE: Make sure you turn the phone’s flash off.

7. When the image appears sharp snap your image. It is best to try this in the daytime first, then, once everything is setup correctly, take it outside and try shooting the Moon. Once you have practiced and are comfortable using the low power eyepieces, try using the camera adapter with a more powerful eyepiece for higher magnification.

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SPECIFICATIONS

Optical Design	Refractor
Aperture (mm)	60mm (2.36”)
Focal Length (mm)	700mm (28”)
Optical Coatings	Fully coated
Focal Ratio	12
Focal Length of Eyepiece 1	20mm (0.79”)
Magnification of Eyepiece 1	35x
Focal Length of Eyepiece 2	4mm (0.16”)
Magnification of Eyepiece 2	175x
Finderscope	5x24
Star Diagonal	1.25” Erect image diagonal
Highest Useful Magnification	142x
Limiting Stellar Magnitude	11.4
Resolution (Rayleigh)	2.32 Arc seconds
Resolution (Dawes)	1.93 Arc seconds
Light Gathering Power	73x
Optical Tube Length	711mm (28”)
Barlow Lens	3x
Star Diagonal	1.25” Erect image diagonal
Highest Useful Magnification	142x
Tube Color	Black
Total Telescope Kit Weight	7 lb (3.18kg)
Software	Starry Night Basic Software

For complete specifications and product information, visit: www.celestron.com

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celestron.com/pages/technical-support
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Product design and specifications are subject to change without prior notification.

Designed and intended for those 13 years of age and older.