Explore Scientific ED102

Explore Scientific ED102 Essential Series 102mm Triplet Refractor Telescope User Manual

Model: ED102 | Brand: Explore Scientific

1. Introduction

This manual provides essential information for the proper setup, operation, and maintenance of your Explore Scientific ED102 Essential Series 102mm Triplet Refractor Telescope. Please read this manual thoroughly before using your telescope to ensure optimal performance and longevity.
The Explore Scientific ED102 is an air-spaced apochromatic triplet refractor telescope designed for both visual observation and astrophotography. It features a 102mm aperture and a versatile f/7 focal ratio, providing brilliant, high-contrast views with minimal chromatic aberration.

2. Safety Information

- **Never look directly at the Sun through your telescope or its finder scope without a professionally made solar filter.** Permanent and irreversible eye damage, including blindness, can result.
- Always supervise children when they are using the telescope.
- Handle optical components with care to avoid scratches or damage.
- Ensure the telescope is securely mounted on a stable tripod or mount to prevent accidental falls.

3. Package Contents

Your Explore Scientific ED102 telescope package should include the following components:

- Explore Scientific ED102 Optical Tube Assembly (OTA)
- Retractable Dew Shield
- Cradle Ring with Built-in Handle
- 2-inch Dual-Speed Focuser
- 2-inch Diagonal (typically 99% reflectivity)

- 2-inch to 1.25-inch Eyepiece Adapter
- Dust Caps for Objective and Focuser

Note: Additional accessories such as eyepieces, finder scopes, and mounts are sold separately unless specified in your purchase.

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4. Setup

4.1. Mounting the Telescope

The ED102 optical tube is designed to be mounted on a compatible equatorial or alt-azimuth mount (not included). The cradle ring provides a secure attachment point.

1. Ensure your chosen mount is stable and properly set up according to its own instructions.
2. Loosen the clamps on the cradle ring to allow the telescope tube to rotate.
3. Carefully place the telescope tube into the cradle ring, ensuring it is balanced.
4. Tighten the cradle ring clamps to secure the telescope.

Figure 4.1: Explore Scientific ED102 optical tube assembly with cradle ring.

This image shows the main telescope tube, which is white with black accents, securely held by two black cradle rings. The focuser end is visible on the right, and the dew shield is on the left. The cradle rings are attached to a dovetail plate (not fully visible) for mounting onto a telescope mount.

4.2. Attaching the Diagonal and Eyepiece

The diagonal redirects the light path, allowing for a more comfortable viewing position. The 2-inch diagonal is typically used with 2-inch eyepieces, but the included adapter allows for 1.25-inch eyepieces.

1. Remove the dust cap from the focuser.
2. Insert the 2-inch diagonal into the focuser drawtube. Secure it by tightening the thumbscrews on the focuser.
3. If using a 1.25-inch eyepiece, insert the 2-inch to 1.25-inch adapter into the diagonal, then insert your 1.25-inch eyepiece into the adapter. Secure with thumbscrews.
4. If using a 2-inch eyepiece, insert it directly into the diagonal. Secure with thumbscrews.

Figure 4.2: A 2-inch diagonal and extension tubes.

This image displays a black 2-inch diagonal, which is an angled accessory used to hold eyepieces, and two black extension tubes. These components are crucial for achieving proper focus and comfortable viewing with various eyepieces.

4.3. Attaching a Finder Scope (Optional)

A finder scope (not included) helps locate objects in the night sky. It typically mounts onto a shoe on the focuser assembly.

1. Slide the finder scope base into the dovetail shoe on the focuser.
2. Tighten the thumbscrew on the shoe to secure the finder scope.
3. Align the finder scope with the main telescope during daylight hours by pointing the main telescope at a distant, stationary object and then adjusting the finder scope's alignment screws until the object is centered in both the finder and the main eyepiece.

4.4. Connecting to a Mount and Accessories

The following video demonstrates the assembly of a telescope onto a tripod and the installation of various accessories, including a diagonal and a zoom eyepiece. While the specific telescope model in the video may vary, the general principles of attachment and setup are applicable.

Video 4.1: Assembly of a telescope with SVBONY SV225 theodolite and SV245 zoom eyepiece. This video illustrates the process of mounting a telescope tube onto a tripod, attaching a diagonal, and installing a zoom eyepiece. It provides a visual guide for

connecting various components for observation.

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5. Operating the Telescope

5.1. Focusing

Your ED102 telescope is equipped with a dual-speed focuser for precise adjustments.

1. Use the larger knob for coarse focusing to quickly bring objects into approximate focus.
2. Use the smaller knob for fine focusing to achieve a sharp, clear image. This is especially important for high-magnification viewing and astrophotography.

5.2. Observing Celestial Objects

To begin observing, point your telescope towards a celestial object. Use the finder scope (if installed and aligned) to center the object, then look through the main eyepiece. Adjust the focuser until the image is sharp.
The ED102's apochromatic design provides excellent color correction, making it suitable for viewing planets, the Moon, and bright deep-sky objects like nebulae and star clusters.

Video 5.1: Real imaging of the Moon through a 102mm telescope. This video demonstrates the visual clarity and detail achievable when observing the Moon through a 102mm telescope, showcasing craters and lunar features.

5.3. Astrophotography with the ED102

The ED102 is well-suited for astrophotography due to its 102mm aperture, f/7 focal ratio, and air-spaced triplet optical design that minimizes chromatic aberration. You will need additional equipment such as a camera, camera adapter, and a sturdy equatorial mount with tracking capabilities.
The following video provides an overview of a similar astrophotography telescope, highlighting features like large aperture, FMC coating, double-speed focuser, and integrated structure. These features are also present in the ED102, contributing to its astrophotography capabilities.

Video 5.2: Overview of a 102mm telescope's features. This video showcases the key characteristics of a 102mm telescope, including its large aperture, fully multi-coated optics, dual-speed focuser for precise adjustments, and robust integrated tube rings, all contributing to high-quality astronomical observations and imaging.

Another video demonstrates the use of a WiFi camera with a telescope for real-time observation, which can be a valuable tool for astrophotography and sharing views.

Video 5.3: Using a WiFi camera with a telescope for real-time observation. This video illustrates how to connect and use a WiFi camera with a telescope to view celestial objects in real-time on a connected device, enhancing the observing experience.

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6. Maintenance

6.1. Cleaning the Optics

Dust and debris on the objective lens can degrade image quality. Clean only when necessary and with extreme care.

- Use a soft camel hair brush or a can of compressed air (held upright) to gently remove loose dust.
- For stubborn smudges or fingerprints, use a specialized optical cleaning solution and lens tissue. Apply a small amount of solution to the tissue, not directly to the lens, and wipe gently from the center outwards in a circular motion.

- Avoid touching the optical surfaces with your fingers.

6.2. General Care and Storage

- Always replace dust caps when the telescope is not in use.
- Store the telescope in a cool, dry place, away from direct sunlight and extreme temperature fluctuations.
- The retractable dew shield helps prevent dew formation on the objective lens during observing sessions. Extend it fully during use.

7. Troubleshooting

Problem	Possible Cause	Solution
Blurred images	Out of focus, atmospheric turbulence, dirty optics	Adjust focuser, observe on a night with stable air, clean optics carefully
No image visible	Dust caps on, wrong eyepiece, object not in field of view	Remove dust caps, use low power eyepiece, use finder scope to locate object
Stars appear elongated	Poor polar alignment (for equatorial mounts), mount tracking issues	Improve polar alignment, check mount balance and tracking settings
Chromatic aberration (color fringing)	Normal for some refractors, but minimal for apochromats	The ED102 is designed to minimize this; if significant, contact support.

8. Specifications

Feature	Specification
Optical Design	Air-Spaced Apochromatic Triplet Refractor
Aperture	102 mm
Focal Length	714 mm
Focal Ratio	f/7
Optical Glass	Genuine FCD1 HOYA Extra-Low Dispersion (ED)
Coatings	Proprietary Enhanced Multi-Layer Coatings
Focuser	2-inch Dual-Speed Rack-and-Pinion
Optical Tube Length	23.75 Inches
Product Dimensions	30.4 x 10.7 x 7.9 inches
Item Weight	12 pounds
Model Number	ES-ED10207-02

9. Warranty Information

Explore Scientific products are backed by a limited warranty. For specific details regarding your product's warranty period and coverage, please refer to the warranty card included with your purchase or visit the official Explore Scientific website.
Typically, the warranty covers defects in materials and workmanship under normal use. Damage resulting from misuse, abuse, or unauthorized repairs is generally not covered.

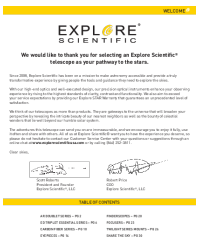
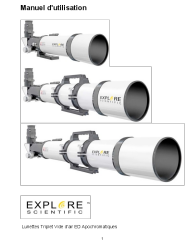
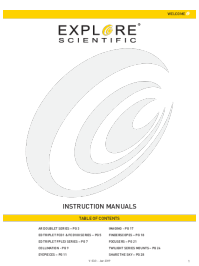
10. Customer Support

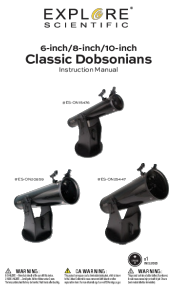
For technical assistance, service, or warranty claims, please contact Explore Scientific customer support:

- **Website:** Visit the official Explore Scientific website for FAQs, support resources, and contact forms.
- **Phone:** Refer to your product documentation for the most current customer service phone number.
- **Address:** Explore Scientific is based in Springdale, Arkansas, USA.

When contacting support, please have your telescope's model number (ES-ED10207-02) and proof of purchase readily available.

Related Documents - ED102

	Explore Scientific Telescopes and Accessories User Manual Comprehensive guide to Explore Scientific telescopes, including AR Doublet, ED Triplet Essential, and Carbon Fiber Series. Learn about eyepieces, finderscopes, focusers, and Twilight Series mounts, with setup, care, and usage instructions.
	Manuel d'utilisation : Lunettes Triplet Vide d'air ED Apochromatiques EXPLORE SCIENTIFIC Ce manuel d'utilisation fournit des informations complètes sur les lunettes astronomiques EXPLORE SCIENTIFIC Triplet Vide d'air ED Apochromatiques (modèles ED80, ED102, ED127). Il couvre les consignes de sécurité importantes, les procédures de manipulation et de transport, la description de l'équipement standard et des accessoires optionnels, le montage et le réglage du chercheur, l'utilisation et le réglage de la mise au point, l'emploi du pare-buée, le nettoyage et l'entretien, ainsi que les spécifications techniques détaillées et les informations de garantie.
	Explore Scientific Telescope and Accessory Instruction Manuals Comprehensive guide to Explore Scientific telescopes including AR Doublet, ED Triplet FCD1/FCD100, ED Triplet FPL53 series, along with finderscopes, eyepieces, focusers, and Twilight Series mounts. Covers setup, care, and usage.

	Explore Scientific 6, 8, 10-inch Classic Dobsonian Telescopes: Instruction Manual & Assembly Guide Detailed instruction manual for Explore Scientific's 6-inch, 8-inch, and 10-inch Classic Dobsonian reflector telescopes. Learn about unpacking, assembly, setup, operation, collimation, maintenance, and specifications.
	Explore Scientific 134mm Equatorial Newtonian Telescope Instruction Manual Comprehensive instruction manual for the Explore Scientific 134mm Equatorial Newtonian Reflector Telescope (Model ES-ON13449EQ3). Covers assembly, alignment, focusing, collimation, care, maintenance, and basic telescope principles for amateur astronomers.
	Explore Scientific 6-inch Table Top Newtonian Telescope Instruction Manual Comprehensive instruction manual for the Explore Scientific 6-inch Table Top Newtonian Telescope (Model ES-ON15205TT), covering assembly, operation, alignment, collimation, and basic telescope principles.