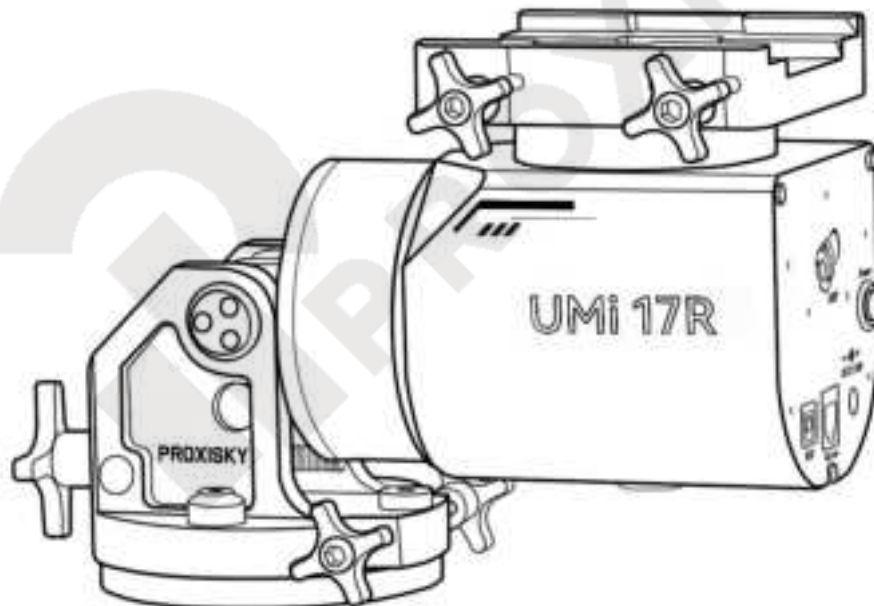




UMi 17R Servo Direct Drive Strain Wave Gear Equatorial Mount User Manual



Revision Log

Date	Version	Details
2024.06	V1.0	Initial Release
2024.07	V1.1	FRAM & E-Home Update
2024.07	V1.2	GOTO Speed Update
2024.07	V1.3	AltAz Installation Update

Preface

Thank you very much for choosing the UMi 17R Servo Direct Drive Strain Wave Gear Equatorial Mount (hereinafter referred to as the UMi 17R).

At Proxisky, we have always been dedicated to simplifying the observation of deep space celestial objects and making astrophotography accessible. The UMi 17R represents a significant advancement in our pursuit of high precision, rapid response, and portability in equatorial mounts. It features an RA axis driven by advanced servo motor and a type-17 strain wave gear reducer with a 100:1 reduction ratio. The servo motors incorporate closed-loop feedback systems, guaranteeing precise positioning and swift responsiveness. Whether initiating or halting movement, the mount achieves smooth and prompt positioning adjustments. Our design not only enhances observational accuracy but also substantially improves operational efficiency, facilitating ease and efficiency in both observation and photography of deep space objects.

The UMi 17R is crafted with an innovative integrated lightweight design, weighing only 3.4kg with dovetail saddle and wedge included, making it highly portable, and suitable for outdoor stargazing trips. Despite its compact size, the UMi 17R is equipped with exceptional payload capacity, supporting up to 13kg of equipment without the need for counterweights, making it an ideal choice for astronomy enthusiasts and professional photographers alike, ensuring stability and reliability in various outdoor settings.

Once again, we appreciate your choice of the UMi 17R and trust in Proxisky. We remain committed to our founding principles of innovation and continual improvement, striving to deliver a flawless astronomical exploration experience. Thank you for your confidence and support as we embark together on a journey across the cosmos.

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I. Safety Instructions

We highly value the safety of our users. To ensure your personal and financial safety, we strongly recommend that you carefully read and understand all the safety items in this guide before using the equatorial mount. Always follow these safety tips to avoid possible injury or property damage.

1. Safety Tips

- ▲ **Risk of Electric Shock:** Please do not touch the power cable with wet hands to avoid electric shock.
- ▲ **Risk of Electrical Fire:** Do not pull the power cord or battery. Ensure the power cord and battery are undamaged and not short-circuited before use to prevent electrical fires.
- ▲ **Risk of Battery Short Circuit:** When using the battery, ensure the DC plug is inserted correctly to prevent short circuits that could lead to fires or explosions.
- ▲ **Child Safety:** The equatorial mount and its accessories contain small parts that could be swallowed by young children. Children under the age of 12 should not use this device. Minors under the age of 18 should operate it under the supervision and guidance of a guardian.

2. Equipment Installation and Handling

- ▲ **Equipment Transportation:** Handling the equipment gently can prevent impact damage during transportation.
- ▲ **Equipment Handling:** When handling the equipment, make sure your grip is secure to increase stability and prevent accidental drops, which could cause injury or damage to the equipment.
- ▲ **Equipment Installation and Placement:** Use the equatorial mount on a flat surface. If the mount is not placed at 90 degrees on the base, it may accidentally

fall and cause damage.

3. Standard Operation

- ▲ **Operating Steps:** Refer to the product's operation manual for use and operation of the equatorial mount, strictly following the operating procedures without arbitrarily changing the equipment's position or installation method.
- ▲ **Safety Precautions:** Avoid sudden, forceful adjustments or installations that could cause your hand to hit protruding parts or edges of the equatorial mount, resulting in scratches.
- ▲ **No Disassembly:** Do not disassemble the mount without authorization. If needed, contact after-sales support for professional repair. The equatorial mount is a delicate device, and improper operation or unauthorized disassembly could damage the instrument, directly affecting warranty.

4. Troubleshooting

- ▲ **Abnormal Behavior:** If the equipment behaves abnormally, such as making strange noises or emitting smoke, immediately cut off the power and contact after-sales service.

II. Product Overview

1. Introduction

This product is an equatorial mount using strain wave gearing, featuring high precision and payload capacity, ultra-portability, and dual modes. It can be used as both a German equatorial mount and an alt-azimuth mount, suitable for astronomical observation, astrophotography, and celestial tracking.

This product adopts a lightweight design, making it easy to carry while offering precise control and smart, simple functionality to meet the needs of a wide range of astronomy enthusiasts.

Features

- ❖ **Rapid Response:** Servo motor equipped on RA connects directly to strain wave gear reducer. Compared to stepper motors on conventional strain wave gear mounts, servo motors enable faster and more accurate guiding pulses for correction.
- ❖ **Precise Tracking:** Equipped with astronomy-dedicated type-17 strain wave gear on RA, and type-14 on Dec, achieving high precision control from dual harmonic design. This allows celestial positions to be accurately determined to the arcsecond level.
- ❖ **High Payload Capacity:** Able to carry up to 13kg of payload without counterweights and 20kg with counterweights.
- ❖ **Ultra-Portability:** Weighs only 3.4kg with saddle and wedge included, and is made of aviation aluminum alloy, providing lightweight yet durable, and ultra-portable experience suitable for outdoor astro-trips.
- ❖ **Dual Mode:** Features both equatorial and alt-az modes, meeting both visual and astrophotography needs, suitable for both the exploration of the night sky and astrophotography imaging.

2. Specifications

Type	German Equatorial Mount
Weight	3.4kg
Material	6061 Aluminum Alloy, 304 Stainless Steel
Finishing	Anodized with Rust-proof Coating
Platform	OnStepX
Modes	German Equatorial/Alt-Az
Supported Software	ASIAIR, NINA, KStars and more
RA	Servo motor, type-17 SWG, 100:1 reduction ratio, Direct Drive
DEC	NEMA17 42mm stepper motor, type-14 SWG, 100:1 reduction ratio, Direct Drive
Payload Capacity	13kg without CW, 20kg with CW (20cm distance to center of mass)
Dovetail Saddle	Vixen-Losmandy
CW Shaft Thread	M12
Input	12-24V, DC 5.5-2.1
Base Type	Self-locking Design
Base Connection	3/8, 3*M6, supporting CF40 and TC40 tripods
Power Consumption	Non-GOTO 5W, GOTO 12-24W
Interface	USB 2.0, Wi-Fi, Bluetooth, ST4, UMi Mount App
GOTO Speed	3.5°/s, max 7°/s*
Braking	RA Electromagnetic Braking, Braking Power $\geq 48 \text{ N}\cdot\text{m}$
Electronic Polar Scope	Compatible with iPolar, Polemaster
Optional	FRAM with E-home

*Recommended GOTO speed is 3.5°/s. Use higher speeds at your own risk, as they may result in serious damage if collision occurs. We disclaim any responsibility for resulting damages to your mount and equipment.

3. Packaging (CW shaft optional)



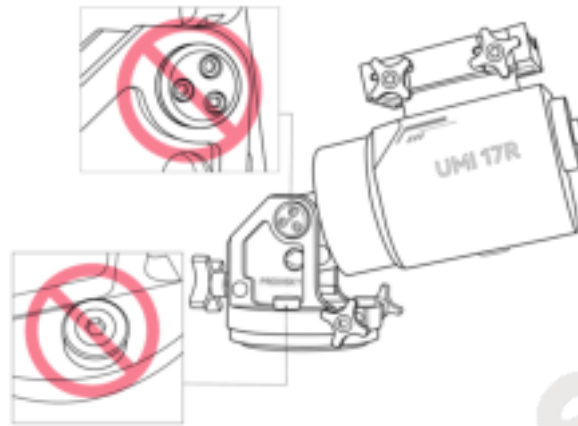
4. Item List

Note: This user manual may not be updated with changes in factory configurations. If the product you receive differs from the list below, please refer to the order configuration information at the time of purchase or contact us.

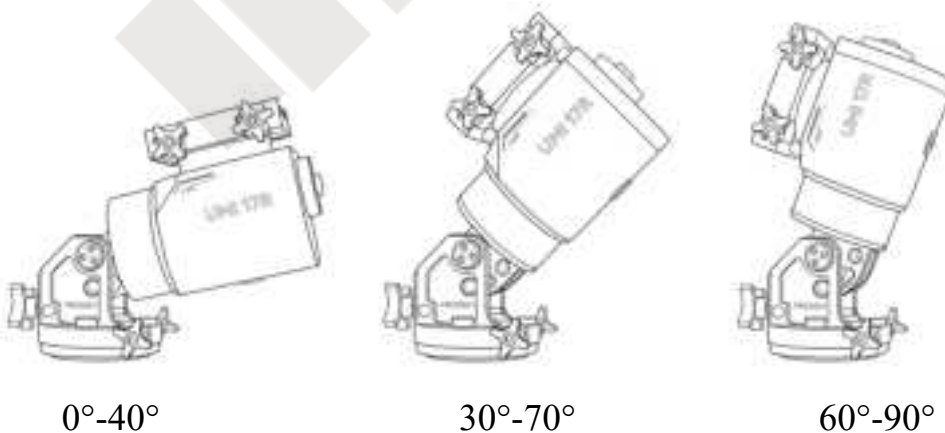
No.	Item	Quantity
1	UMi 17R Equatorial Mount	1
2	Electronic Polar Scope Base	1
3	Male-Male DC 5.5-2.1 Cable 1m	1
4	Type-B USB 2.0 Cable	1
5	Hex Screwdriver	1
6	Storage Case	1

III. Installation

Note: Please do not attempt to adjust or take out any of the 4 screws shown below and the other 4 on the opposite side, as they are assembled with specific torque. Any adjustment will render the base unusable, and will require factory reset not covered by warranty.



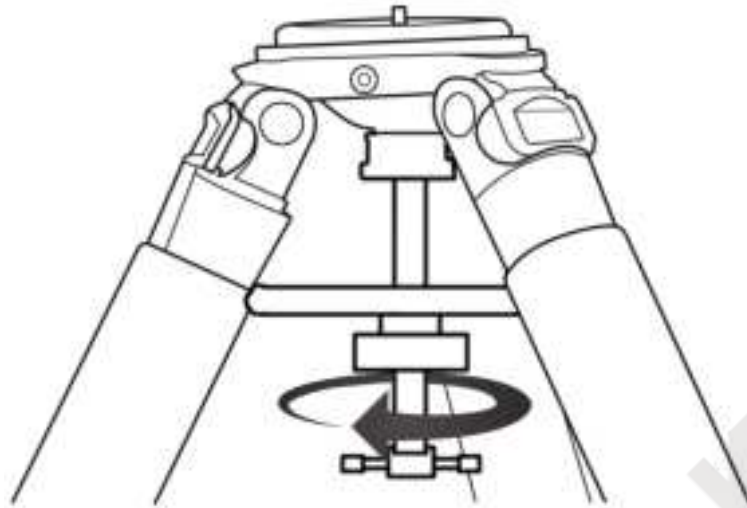
UMi 17R comes with 3 stops for initial altitude adjustment: 0-40°, 30-70°, 60-90°, please choose the appropriate stop according to your latitude. To switch between stops, loosen the altitude limit screws on both sides first for approximately 3 rotations, and ensure they are both tightened after adjustments. All 3 configs are shown below.



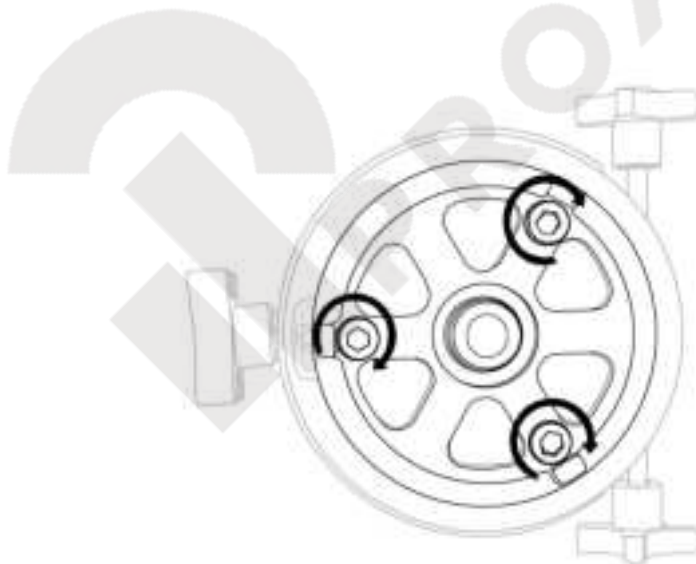
1. Body Installation (Both Configs)

a. Equatorial Config (with Proxisky CF40 carbon fiber tripod)

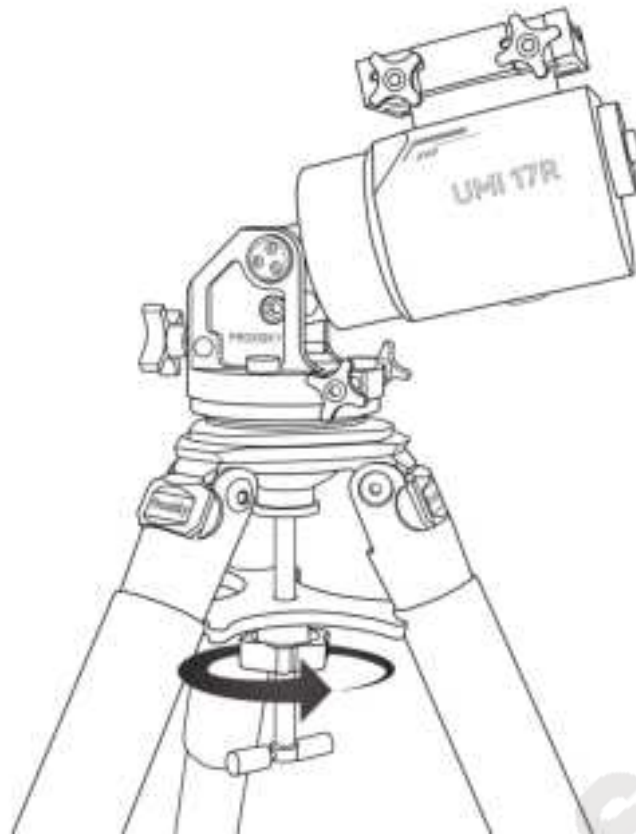
Expand the tripod, and unscrew the tripod's center plate as shown below:



Fix the silver connection plate of the tripod to the bottom of UMi 17R with three M6*10 screws as shown below:



Align the bottom silver connection plate of the to the holes on the tripod and tighten the tripod's center plate as shown below:

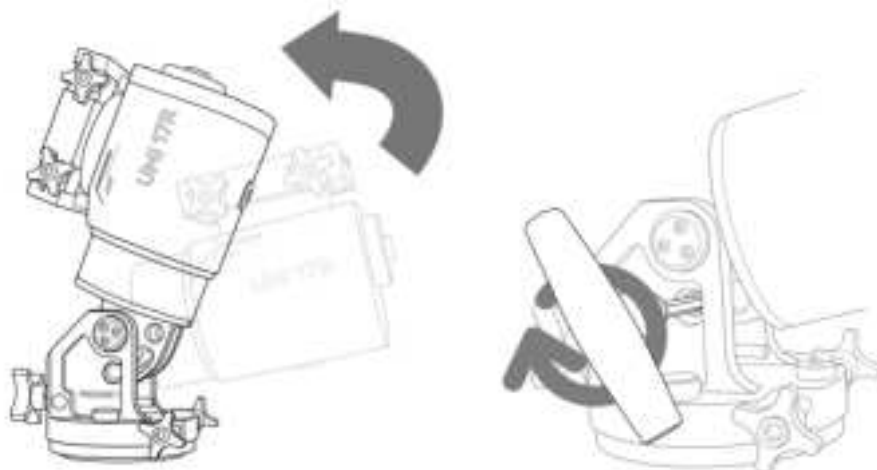


b. Alt-Az Config (with Proxisky CF40 carbon fiber tripod, PE149 pier extension, similar for PE210)

Loosen the M6*10 altitude limit screws on both sides, as shown below:



Manually adjust the UMi 17R to the highest pitch, and tighten the altitude limit screws on both sides, as shown below:



Continue to adjust the mount to 90° with the altitude adjustment screw, as shown below:

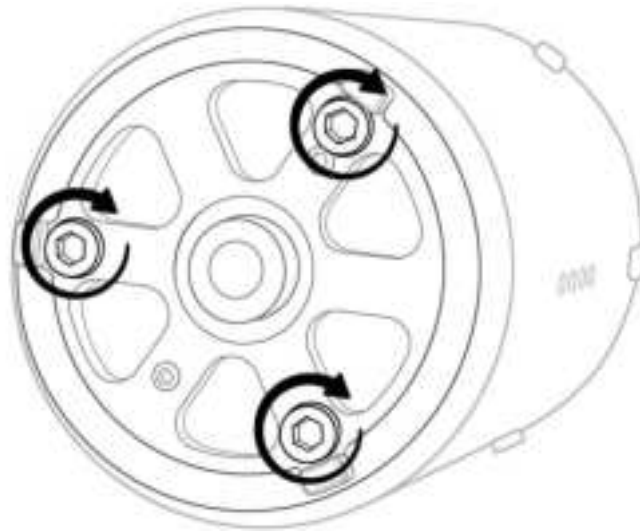


Expand the tripod, and unscrew the tripod's center plate as shown below:

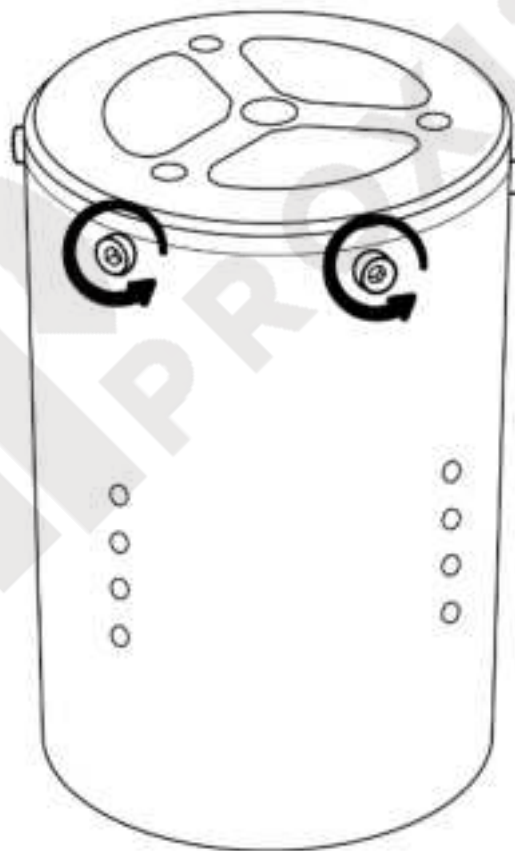


Fix the silver connection plate of the tripod to the bottom of PE149 with

three M6*10 screws, as shown below:

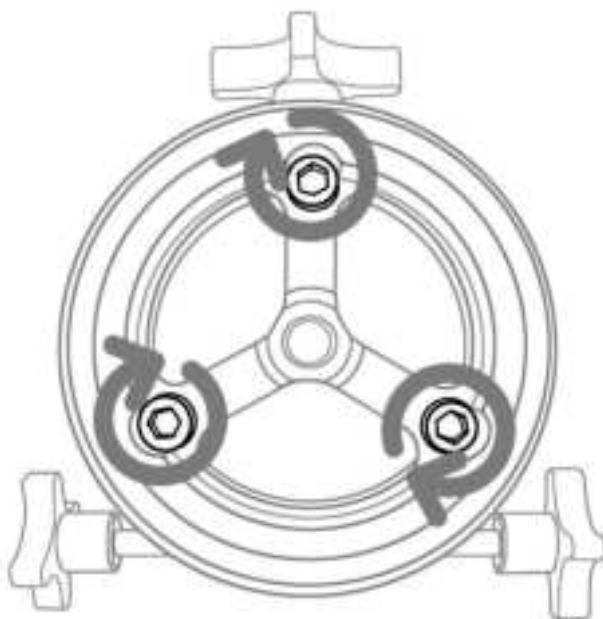


Unscrew the 6 fixing screws on the side of PE149, with three short screws being M4*8 and the other three long screws being M4*12, as shown below:

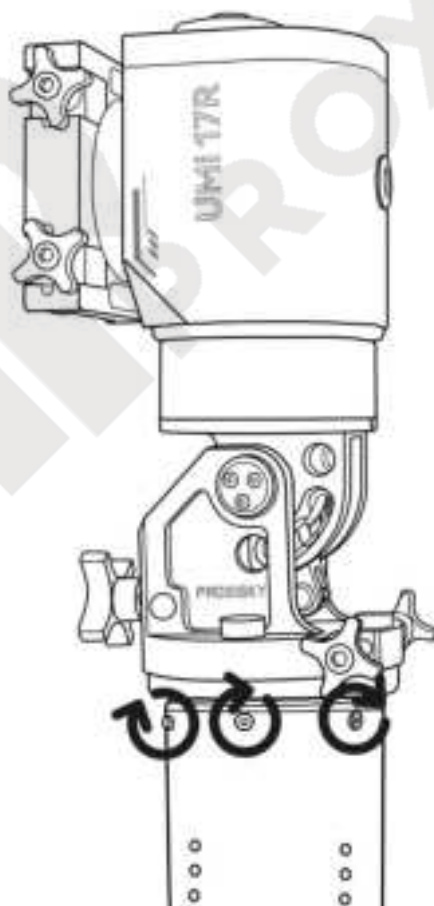


Fix the upper half of PE149 to the bottom of the UMi 17R using three

M6*10 screws, as shown below:

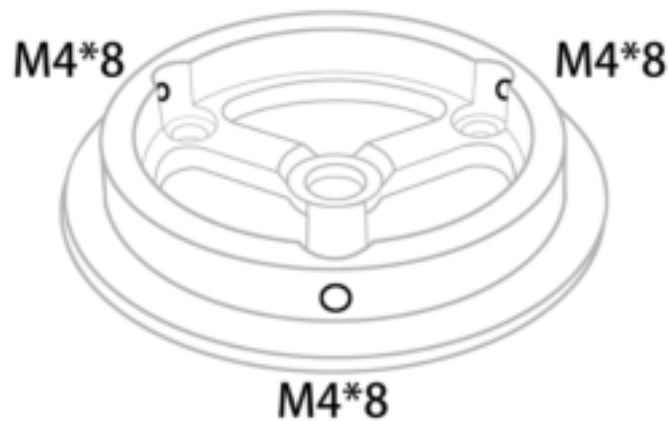


Align the lower half of PE149 with the upper half's screw holes and secure with 6 screws, as shown below:

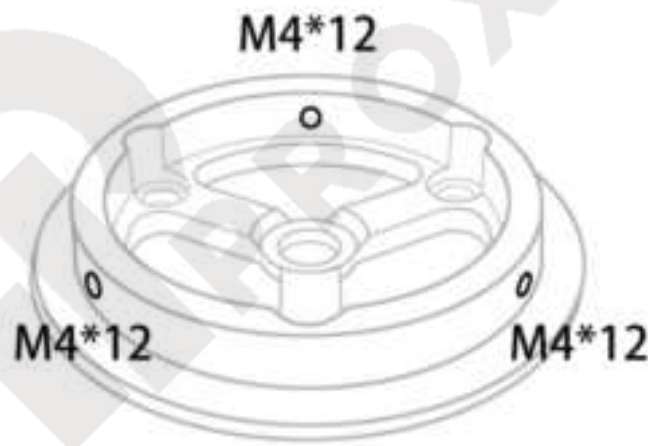


Note:

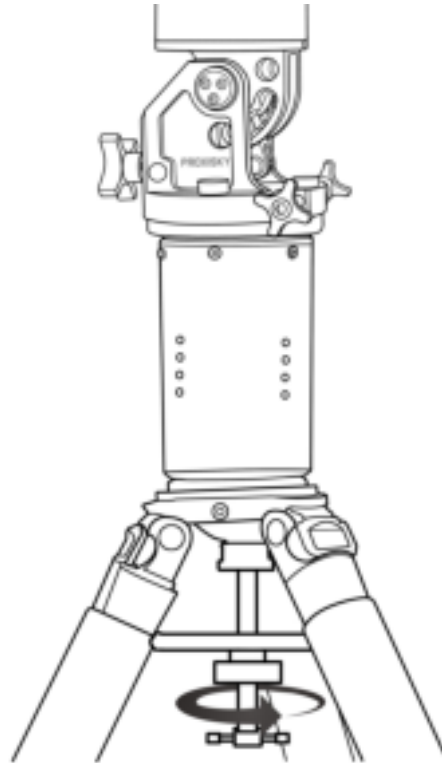
- ① The positions for the three short M4*8 screws are shown below:



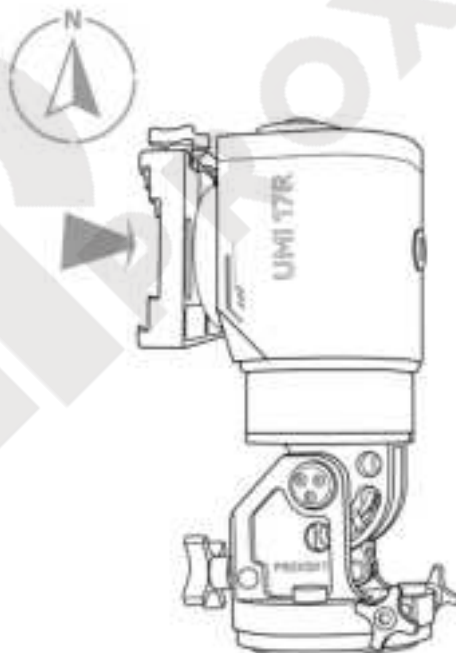
- ② The positions for the three long M4*12 screws are shown below:



Align the bottom silver connection plate with the holes on the tripod and tighten the tripod's center plate as shown below:



After powerup, point the Dec axis North via UMi Mount app, as shown below:



In the app's settings, "mount mode", switch to "AltAz", and restart.

2. Connection

a. Power

Insert one end of the 12V male-male power cable into the mount's DC connection.

Connect the other end of the 12V male-male power cable to 12V DC power output. Press the mount's power switch to turn it on. The power indicator light will flash, indicating the tracking status.

b. PC/ASI AIR and other devices

Insert one end of the USB cable (USB Type A) into the computer or ASI AIR and other astronomical equipment's USB Type A interface.

Insert the other end of the USB cable (USB Type B) into the mount's USB interface.

3. Optional FRAM and Electronic Home

FRAM, also known as Ferroelectric RAM, allows for at least 100 trillion writes. The UMi 17R equipped with optional FRAM features an electronic home function. Since the OnStep platform defaults to home position at startup, the electronic home provides a simple yet similar function to a physical home sensor. In operation, while powered, the electronic home continuously writes the current pointing coordinates to the memory. Even after power loss and restart, the mount retains the coordinates from before the power outage, facilitating easy return to home. You can enable the electronic home in the "Home Position" menu of the UMi Mount mobile

app. Once activated, to reset the home position, manually return the mount to home and click “At Home”.

Note: If E-Home (FRAM) is enabled, please click “At Home” to reset the stored home position when switching between Northern and Southern hemisphere.

UMi Mount Mobile App

<https://www.proxisky.com/downloads>

Tip: Connect to the mount’s Wi-Fi before launching the app

Wi-Fi name: OnStep Default password: password

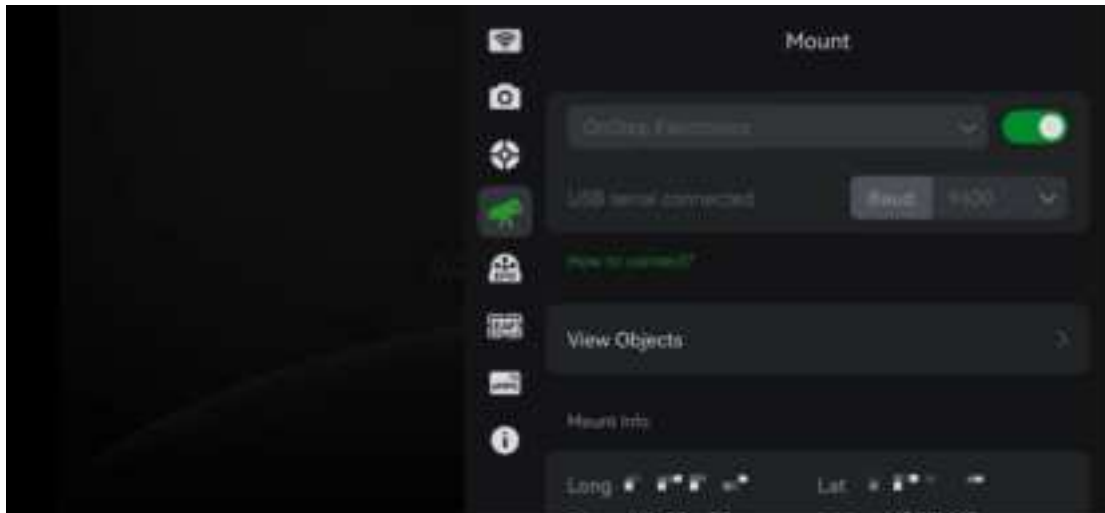
4. ASIAIR

App Download: Search for “ASIAIR” in mobile app stores, download and install.

a. Wired Connection

Connect the USB 2.0 port of ASIAIR to the USB port of the mount, with the mount powered on.

Open the ASIAIR APP, select OnStep Electronics as the mount, set serial port baud rate to 9600, then select serial port connection on the equatorial mount page, as shown below:



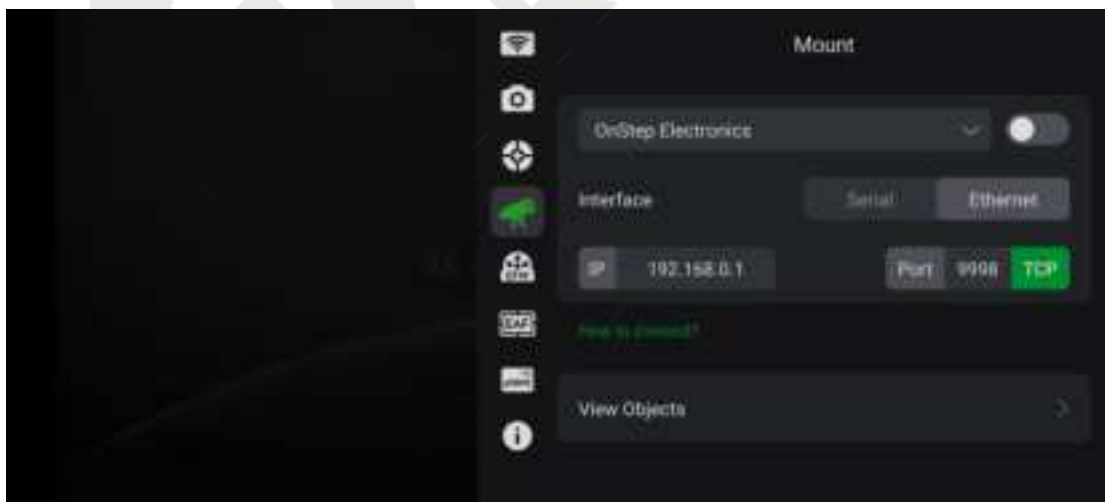
b. Wireless Connection

Reminder: Wireless connection has been tested to be potentially unstable with first and second generation ASIAIR.

Switch on ASIAIR and launch the APP, then select OnStep's Wi-Fi for Wi-Fi bridging (password: password)

Select OnStep Electronics as the mount

Change the connection mode to network, enter 192.168.0.1 in the IP column and 9998 in the port column, and click connect, as shown below:

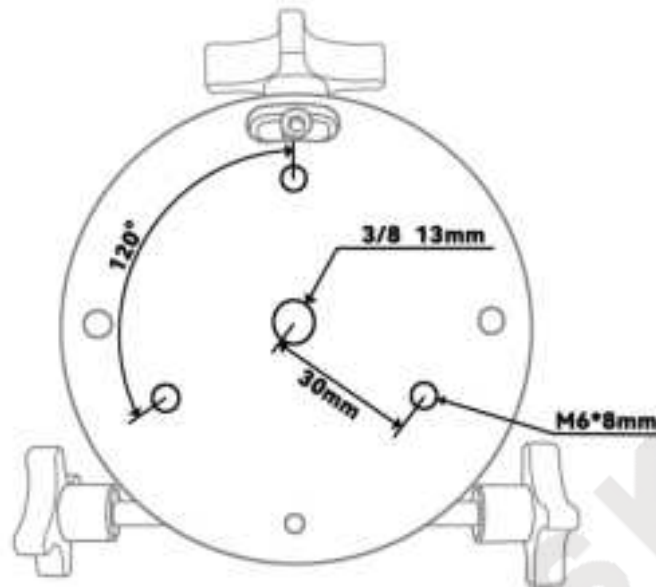


6. NINA and ASCOM Guides

<https://www.proxisky.com/downloads>

IV. Appendix

1. Related Drawings



2. FAQs

a. Why doesn't the equatorial mount rotate when polar aligning with ASIAIR?

Reason: When connecting OnStep equatorial mount to ASIAIR and controlling the mount to rotate for polar alignment, there's a small chance the mount won't rotate (due to ASIAIR's compatibility issue).

Solution 1: In the ASIAIR equatorial mount tab, switch to another OnStep named equatorial mount driver and try again.

Solution 2: Disconnect the equatorial mount in the ASIAIR equatorial mount tab before entering the polar alignment interface. When prompted to manually rotate the RA axis of the mount by 60 degrees for polar alignment, use the UMi Mount APP to control the RA rotation of the mount, then complete the polar alignment according to the prompts. After polar alignment, reconnect the equatorial mount for GOTO and subsequent operations.

b. Why is the GOTO position inaccurate? (Completely not in the target's sky

area, or even pointing the telescope to the ground)

Reason: If the coordinates are inaccurate before GOTO (no calibration or parsing error), the GOTO will be inaccurate.

Solution:

Check the following items for accuracy:

First: The target is above the horizon.

Second: Time zone, time, latitude and longitude settings are correct.

Third: Confirm that the astronomical coordinates are accurate before GOTO.

c. What do the status lights represent?

Constantly flashing: Tracking is enabled.

Steady light: Tracking is off (due to limit) / during GOTO.

Green indicator light: Equatorial mode

Blue indicator light: Alt-Az mode

d. Why is there a loud noise during GOTO?

Solution: Check if the power supply voltage is normal, please avoid using Meade batteries for power.

e. Why is tracking ineffective (only tracks for 5 seconds before stars begin trailing), or GOTO targets completely wrong?

Solution: It's likely that the alt-azimuth mode was enabled instead of the equatorial mount mode. Connect to the UMi Mount App and check if the first line displays as alt-azimuth. If so, go to settings to change the mode back to German equatorial mount and restart the device before use.

V. After-sales Services

If you have any questions or need further information, please feel free to visit our official website: <https://www.proxisky.com/>

Or call our customer service hotline: 400-7799-812

Official email: info.cn@proxisky.com



VI. Warranty

We offer a comprehensive two-year warranty service to ensure you enjoy worry-free protection during use. The warranty period begins on the actual date you receive the product, covering all possible quality issues to ensure your interests are fully protected.

During the warranty period, we promise to repair or replace products with quality issues for free, including but not limited to firmware upgrades, sending replacement parts, factory repairs, and exchanges, to ensure your user experience is optimal. However, our warranty service has some limitations. Specifically:

(1) Damage beyond the free warranty period is not covered by the warranty;

(2) Damage caused by external forces, such as falls or collisions during transportation, is not covered by the warranty;

(3) Damage or product quality issues resulting from not following the product usage guide are not covered by the warranty;

(4) Unauthorized disassembly, third-party repairs, modifications, firmware flashing, etc., without written approval from Proxisky's official after-sales, are not covered by the warranty;

(5) Damage caused by using the product in unsuitable environments, such as water immersion or rain exposure, is not covered by the warranty;

(6) Product damage caused by irresistible external forces is not

covered by the warranty;

(7) Products without purchase records are not covered by the warranty.

For products beyond the free warranty scope, we can offer paid repair services.

For product quality issues, we provide warranty service for products within the warranty period. If you encounter problems during use and need warranty service, please contact us. We will provide the appropriate solution based on the nature of the problem, such as firmware upgrades, sending replacement parts, factory repairs, and exchanges.

For product transportation issues, if you discover obvious deformation or damage to the product's shipping packaging upon receipt, you should immediately contact the official mall or authorized dealer from which you ordered. After confirmation, you can refuse to accept the product and have the carrier return it, and we or the authorized dealer will provide return or exchange services. If you discover damage to the product after signing for it, you also need to provide proof of the product's external packaging or a third-party certificate from the carrier. After verification and confirmation that the damage was caused during transportation, we or the authorized dealer will provide the corresponding return or exchange service.

We always strive to provide high-quality products and excellent service to our customers. Our warranty policy is our commitment to our

customers, ensuring you receive the highest level of protection while using our products.



VII. Works Collection

We sincerely invite you to share your outstanding images using UMi 17R or to showcase your setup with it. You can submit your portfolio or take high-resolution photos of UMi 17R, and let us witness the exceptional imaging experience it brings. We look forward to your photographs becoming part of showcasing UMi 17R's charm!

Submission email: info.cn@proxisky.com

Submission format (example):

Telescope: SharpStar Z4

Camera: Touptek 571 mono

Equatorial Mount: UMi 17R

Filters: Astrodon 50mm square LRGB, Ha 3n

Guide Camera: ZWO ASI120mm mini

Exposure:

L 600s x 103 (bin 1), RGB each 600s x 42 (bin 2), Ha 1200s x 6 (bin 1)

total 40h 10m

Location: Los Angeles, California, USA