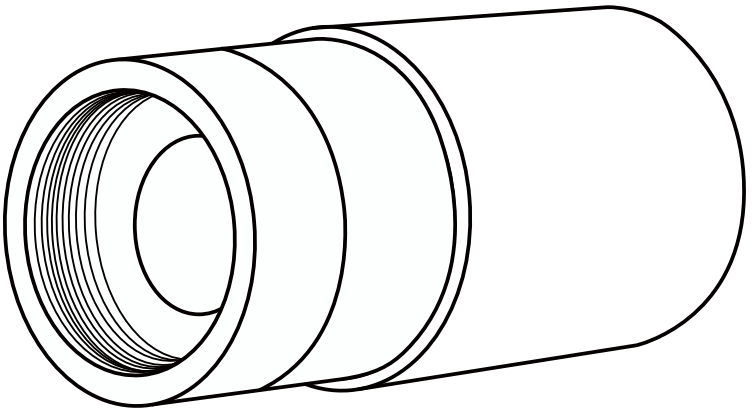
ToupTek Astro

The G3M Series
Planetary / Guide Cameras Quick Start



Thank you for purchasing the G3M series camera. This document provides an overview of its key features and usage instructions. For more details, visit our official website at ***https://www.touptek-astro.com.***

For any issues, please contact us via email or your purchase channel.

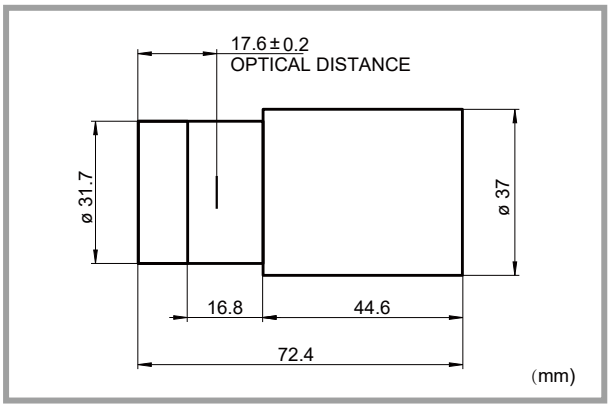
Product Introduction

Planetary cameras are typically used to observe natural and man-made objects in the solar system, such as planets, the Sun, the Moon, asteroids, space stations, satellites, etc., or to perform "lucky imaging" of deep-sky targets such as tiny planetary nebulae. The unique character of these objects is captured by shooting video and later filtering, aligning and overlaying the video frames.

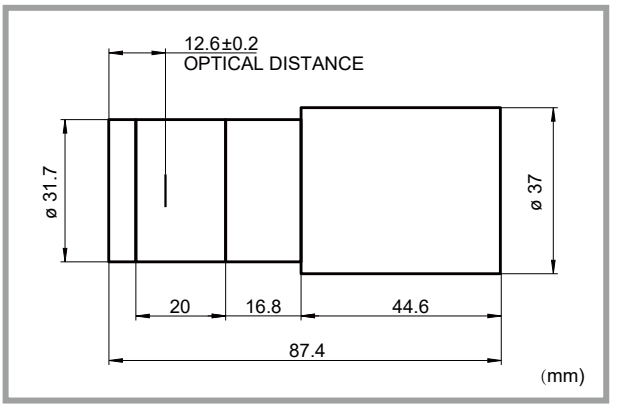
The guide camera is crucial for deep sky photography. By capturing and analyzing star points, it helps the equatorial mount correct tracking errors, making it indispensable for single-frame, long-exposure deep sky imaging.

The ToupTek Astro G3M series are dual-function cameras that combine both guiding and planetary imaging functions. They feature a USB 3.0 high-speed port, excellent image quality, and high sensitivity, making them suitable for both planetary photography and guiding, thus adapting to various needs.

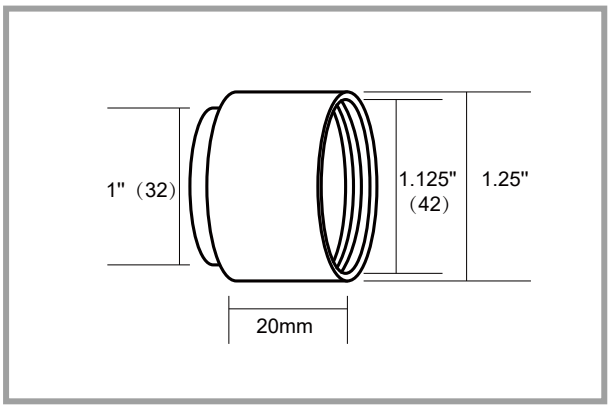
Structure and Size



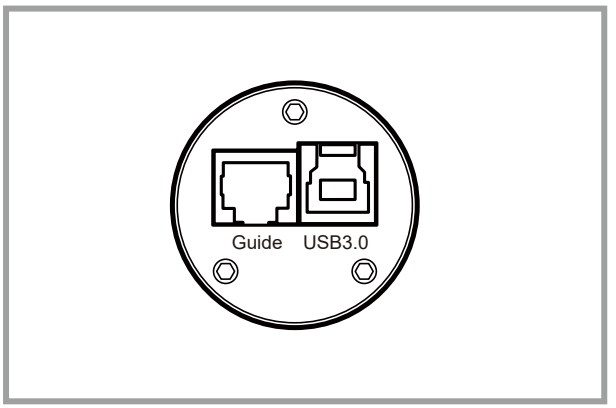
G3M Series Camera Size



The Long Type Size



Extensive Cube Size



Interface

At present, each model of the G3M series camera is available in two types: a short type and a long type.

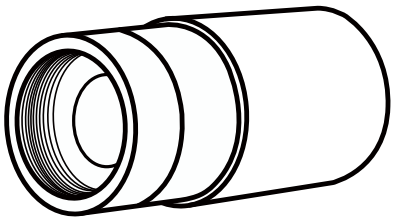
- The default back focal length of the short type camera is 17.5mm with a type C adapter.
- The default back focal length of the long type camera is 12.5mm with a CS adapter.

The front of the G3M camera is an CMOS sensor and a front protective window. The color camera is equipped with an IR cut filter (380-690 nm) by default, while the monochrome camera comes with AR anti-reflection glass (380-1100 nm). The back panel is electronic interfaces. One of these is a USB 3.0 Type-B port, used to connect to the AstroStation or computer for imaging and guiding. The other is a less used ST4 port, which connects to the equatorial mount for guiding.

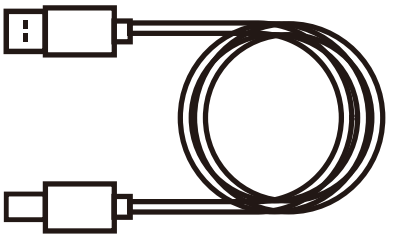
Note: The long type of the G3M camera is compatible with more OAGs (Off-Axis Guiders), providing a larger focusing range. This is especially beneficial when using OAG for guiding focus, as it offers more adjustment space and makes focusing easier. Unless there are specific requirements, the longer type is more recommended.

The standard 1.25" extension tube can extend the focus range of the G3M camera on the main telescope or guide scope when needed. The front end of the extension tube can also accommodate a 1.25-inch filter.

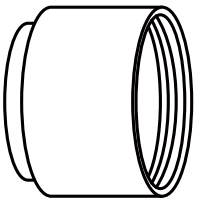
Packing list



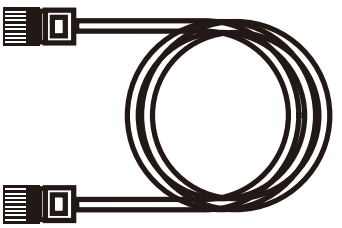
Camera Body



USB 3.0 Data Cable

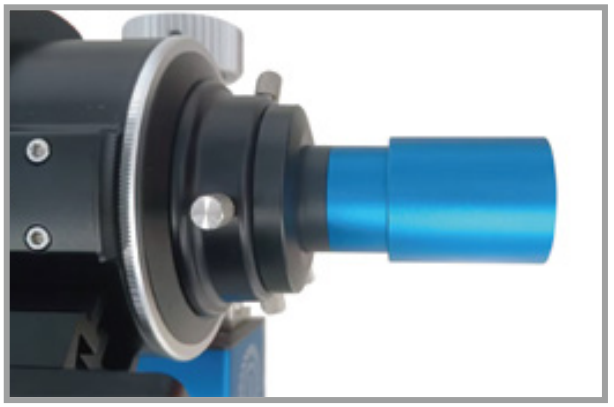


1.25" Extensive Cube



Guide Cable

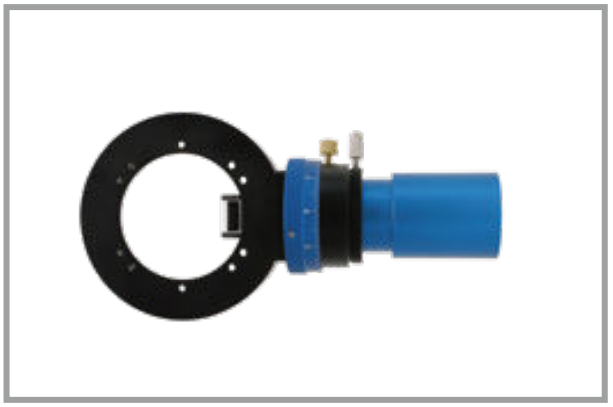
Installation



Install to the main telescope for shooting.



Install to the guidscope for guiding.

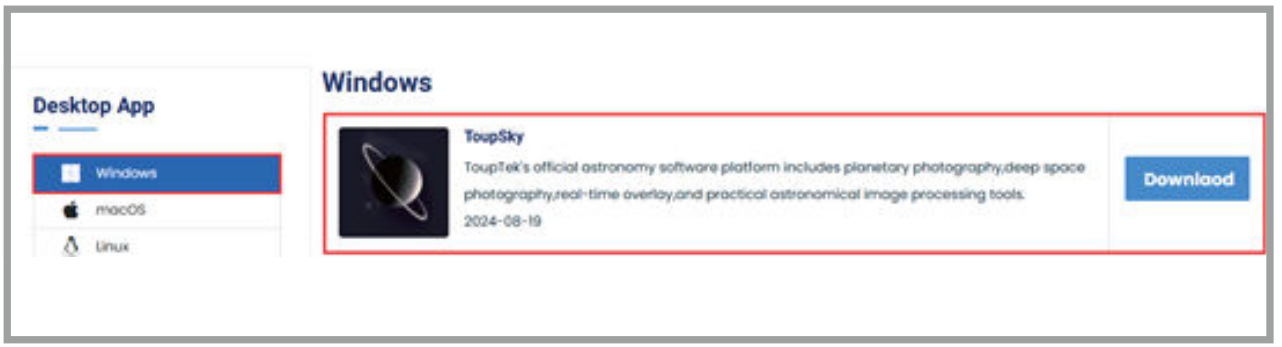


Install to the OAG for guiding.

Connect the G3M Series Cameras to ToupSky (Windows) for Planetary photography

(Take the G3M662C as an example)

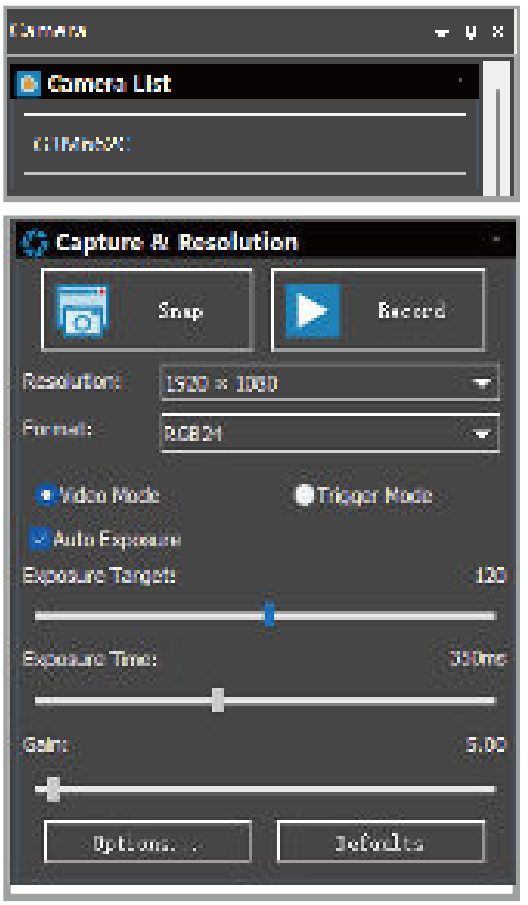
1. Software Acquisition: Please visit https://www.touptek-astro.com/downloads/ to download ToupSky. You can find ToupSky in “Desktop App - Windows” on this webpage. The software can be used without driver, so there is no need for additional downloads.



2.Hardware connection: Use the included data cable to connect to the computer.

3.Open ToupSky, the software can automatically detect the connection with the ToupTek Astro camera. Click the camera name to successfully connect.

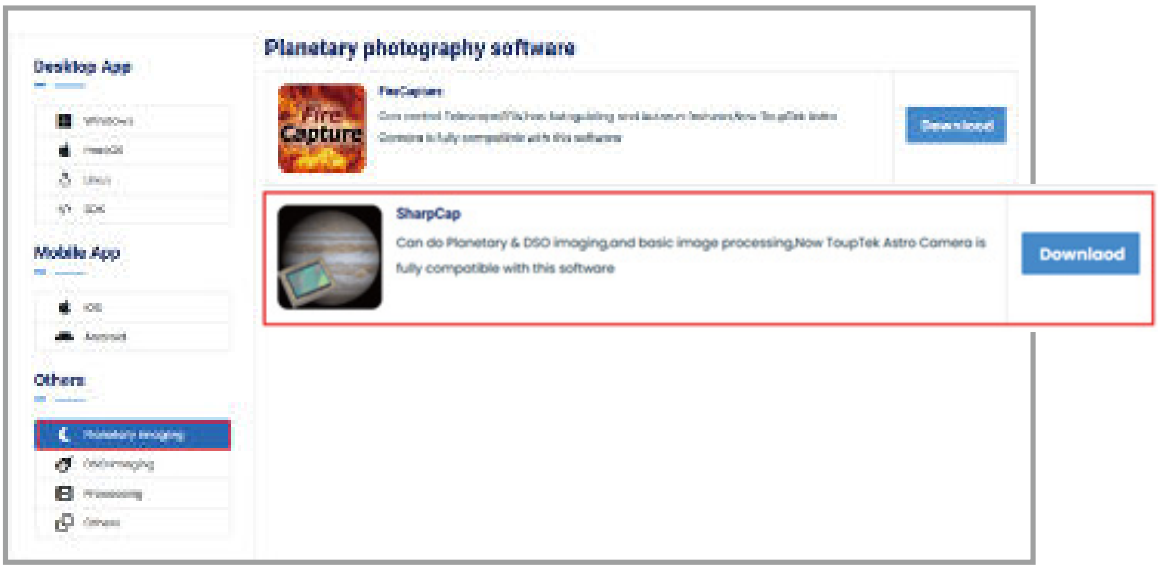
4.After connecting, the video preview window will be open automatically and show the basic shooting parameter. You can adjust the video mode or trigger (single-frame) mode according to your needs.



Connect the G3M series cameras to SharpCap (windows) for Planetary photography

(Take the G3M662C as an example)

1. Software acquisition: Please visit https://www.touptek-astro.com/downloads/ to acquire the download link for SharpCap. You can find SharpCap in "Others - Planetary Imaging" on this webpage, and this software package already includes the ToupTek Astro Camera local driver, so there is no need for additional downloads.

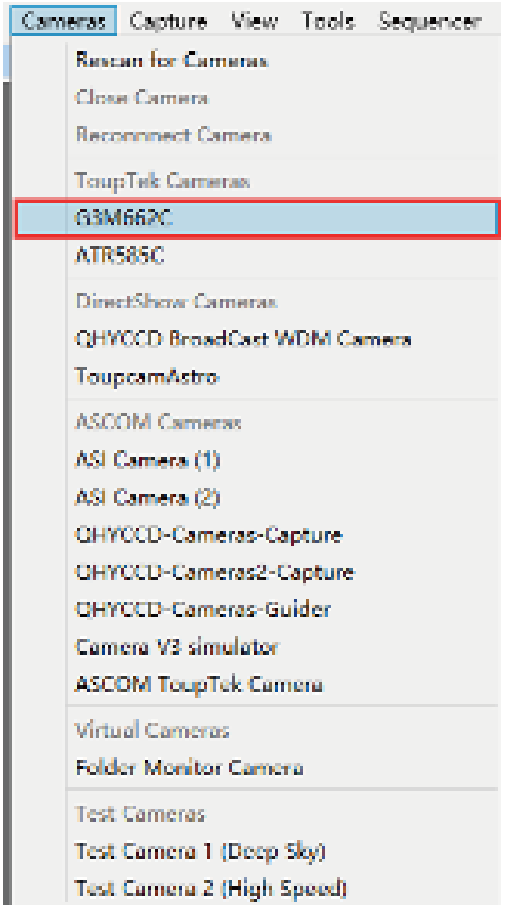


2.Driver update: Please visit https://www.touptek-astro.com/downloads/ to download ToupTek Astro Equipment Driver, and you can find it in“Desktop APP - Windows” on this webpage. The software package has already contained the ToupTek Astro and ASCOM Platform Driver, which can be installed with one-click setup without specifying the installation path. Please refer to the “Attention” again before installation.



3.Hardware connection: Use the data cable included with the camera to connect to the computer.

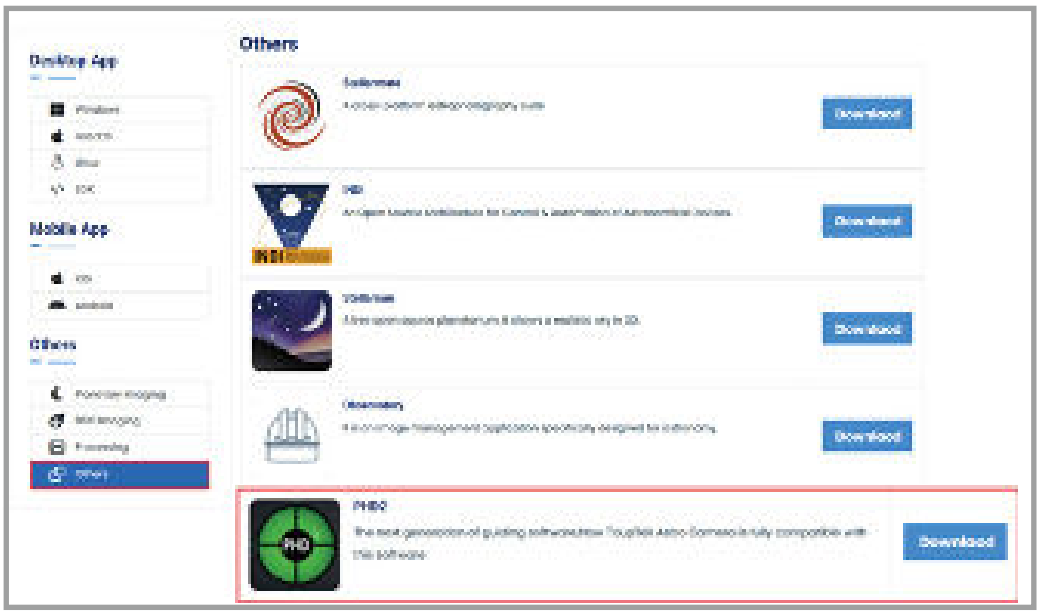
4.Open SharpCap, and the software's local driver will automatically detect the camera connected to the PC. Select the planetary camera intended to connect. Once connected, you can adjust the shooting parameters on the right control panel for planetary photography.



Connect the G3M series Cameras to PHD2 (Windows) to star guide

(Take the G3M662C as an example)

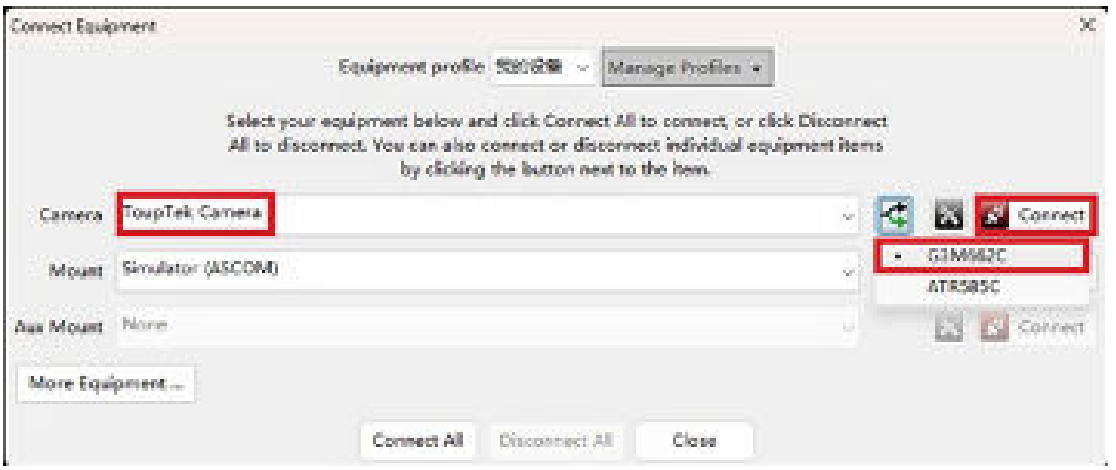
1. Software acquisition: Please visit https://www.touptek-astro.com/downloads/ to acquire the download link for PHD2. You can find PHD2 in "Others - Others" on this webpage. PHD2 already includes the ToupTek Astro Camera local driver, so there is no need for additional downloads and installations.



2.Driver update: Refer to the updating of ToupTek Astro Equipment Driver.

3.Hardware connection: Use the data cable included with the camera to connect to the computer.

4.After finishing the profile wizard, enter PHD2 and select ToupTek Camera. If you have more than one ToupTek cameras connected to your computer, please click the double-arrows icon on the right side to select the guide camera you need, and then click Connect.

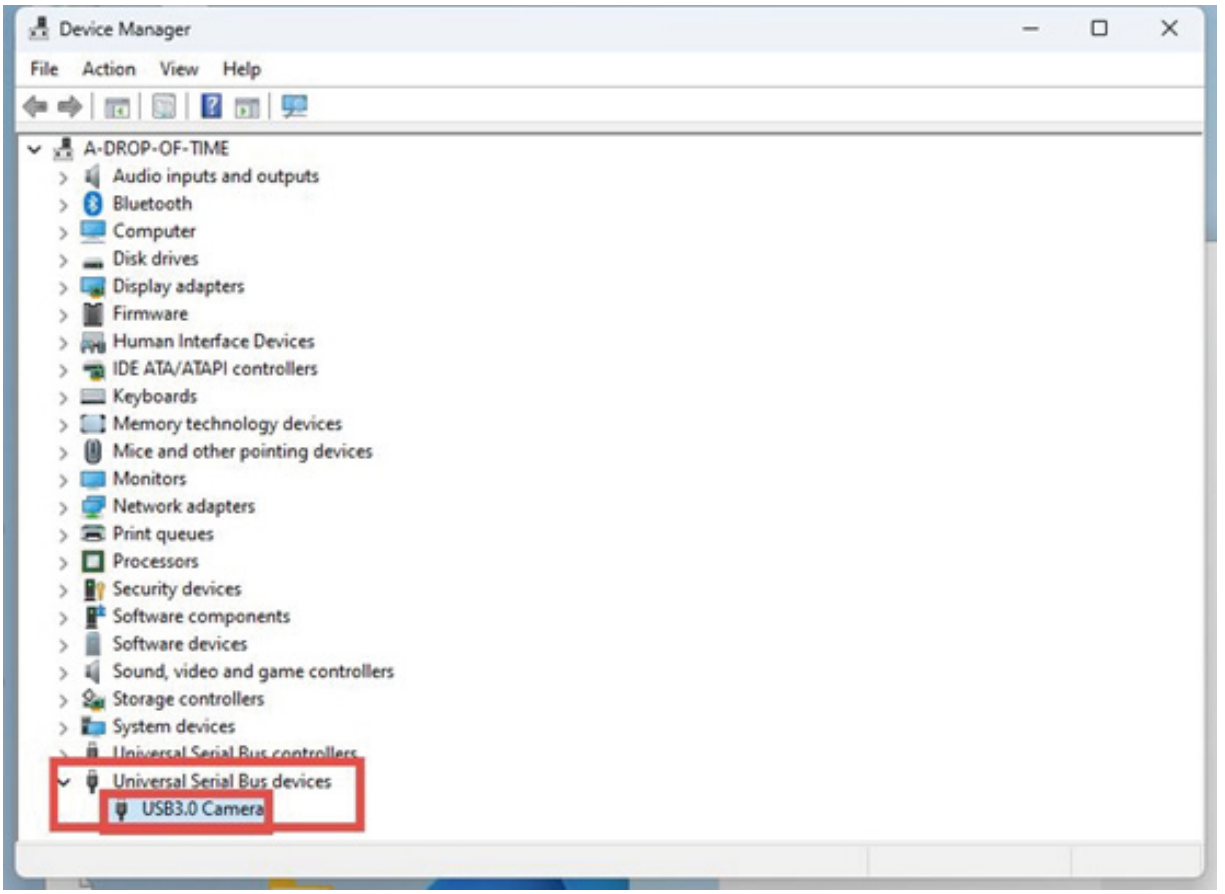


FAQs (Frequently Asked Questions)

1. Q: After connecting the camera to the computer, why is the camera not detected in SharpCap or other software?
A: After updating NINA, SharpCap or other software, you might experience a "packet loss" issue, which means losing the camera's local driver. To fix this, please visit https://ww-w.touptek-astro.com/downloads/. And in "Desktop App -Windows" on this webpage, you can download the ToupTek Astro Equipment Driver, which has already includes the ToupTek Astro and ASCOM Platform Driver. After downloading, you can install the driver again with one-click step.



2.Q: What should I do if I still can't find my camera in the software after installing the ToupTek Astro Equipment Driver (take Windows11 as an example)?
A: Locate the Windows icon on your desktop. Right click the icon and find Device Manager. Open Device Manager and locate the Universal Serial Bus device, which will appear with a question mark or an exclamation point if your camera's USB connection is abnormal. You can try to uninstall the device and re-plugging the camera to reconnect it. If you are using a USB-HUB to connect to the computer, you can troubleshoot by changing the USB plug-in port and checking the power supply of the HUB.



3.Q: When I shoot the planets, why is the video frame rate exceptionally low and how can I fix it?
A: (1) If video recording is performed in AstroStation, due to the performance limitations of the hardware equipment, the maximum frame rate under the corresponding settings may not be achieved even if the settings are correct.
(2) If your video still unable to achieve the maximum frame rate on your PC despite having the correct camera settings, check and disable all power-saving settings on your computer. If you can't find or turn off these settings, try powering up your laptop and then shoot again.

4.Q: Why can't I connect to the G3M camera in PHD2, and what should I do?
A: If your PHD2 version is earlier than 2.6.13, please refer to question 1 to install or update ToupTek Astro Camera Driver and try again.
If your PHD2 version is newer, check whether other software, such as ToupSky and N.I.N.A, etc., has occupied the port of the camera, if so, disconnect the other software and re-connect the camera in PHD2. If other software is not connected, check whether the camera connected to PHD2 is the selected guide camera.

5.Q: Why is there nothing or all snowflakes on the screen in PHD2 even though the proper exposure parameters have been set?
A: Due to the stretching algorithm problem of PHD2, the preview screen will become normal only when your guide device finishes focusing or close to finish focusing.

6.Q: Why does guide star calibration always fail and what should I do?
A: The success of guide star calibration is related to many factors, including environmental factors (atmospheric seeing, presence of clouds, selected sky area, etc.), hardware factors (rigid connection of the whole deep-space shooting system, clutch tightness of the equatorial instrument, etc.), and software factors (settings of the guide star and equatorial mount, etc.).
(1) Guiding settings: After setting Guide focal length correctly, set the exposure time to 0.5s-2s, and adjust the gain according to the brightness of the image. Other settings can refer to the default settings of the corresponding software.
(2)Some equatorial mounts may encounter issues during calibration, such as insufficient or excessive star point movement, leading to star point loss. These issues often occur in the equatorial mounts controlled by Onstep due to incorrect settings of guide rate. It is recommended to set the guide rate to 0.5X.

In AstroStation, utilizing the feature of Onstep driver on Indi platform, directly modify the moving rate to 0.5X in AstroStation APP, while the guide rate will be modified to 0.5X synchronously, and then re-calibrate the guide. If the calibration problem does not be solved, go back to Onstep App or webpage to modify the guide rate of the equatorial mount and try again.
If you can't change the guide rate of equatorial mount in PHD2, please go to Onstep app or webpage to change the guide rate of equatorial mount to 0.5X, and then calibrate the guide again. If the guide rate of equatorial mount has to be 0.5X in PHD2, while the star point is still lost in guide calibration, please find the option "Guide Stop When Equatorial Mount Goto" in the advanced settings of PHD2, and uncheck this option, then try to calibration again.

After-sales Service Policy

1.Standard Warranty

Warranty Period: From the date of purchase and receipt by the customer from our company, we provide a free warranty service for a period of 2 years. For AstroStation products, the warranty period starts from the date the customer's device is successfully activated.

2.Dead on Arrival (DOA) Handling

In the event of a DOA situation, please contact ToupTek within the specified time limit and provide the purchase invoice and relevant proof.ToupTek will arrange for doorstep pickup service and take the following actions based on specific circumstances:

①Replacement for Quality Issues: Within 30 days of receipt, if the product is confirmed to have quality issues by ToupTek Customer Service Center, the company will replace it with a new one free of charge.②Handling of Transportation Damage: Within 3 days of receipt, if the product's external packaging shows obvious signs of water stains, severe crushing, or other transportation damage, the user needs to submit photos of the external packaging and proof of receipt. After verification that it was caused by direct transportation by ToupTek or an authorized distributor, the company will provide return or exchange services. If sold or transported directly by a distributor, the distributor will handle the matter.

3.Non-Warranty Service Scope and Repair Policy

The following situations are not covered under warranty, and ToupTek may provide paid repair services:

Products beyond the warranty period; product damage due to water ingress, moisture, or corrosion; damage caused by external forces (such as scratches, deformation of the shell, USB interface breakage, etc.); unauthorized disassembly, third-party repairs, modifications, or firmware flashing without written authorization from ToupTek; unauthorized alteration or loss of warranty labels; quality issues caused by failure to follow product instructions; physical damage due to force majeure (such as natural disasters); damage due to improper user operation; inability to provide valid purchase invoices and warranty certificates or purchase of second-hand products.

4.Replacement Policy for Accessories

If accessories or other parts provided with the product have quality issues, users can request replacement of new accessories separately. This does not affect the main unit's return and exchange conditions.

This guide may be updated without prior notice.
You can find the latest version of the "User Manual" on the **ToupTek Astro** official website.

If you have any questions or suggestions, please contact us via the following email:

marketing@touptek.com

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marketing@touptek.com

www.touptekastro.com.

13F,14F,15F, Aoqiang Building 1, No. 6, Xiyuan 5th Rd.,Hangzhou, 310030, Zhejiang, P.R.China

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