Planetary Camera ASI662MC/MM

Product Manual



Thank you so much for purchasing ZWO ASI camera! Before using the product, please read this manual carefully.

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1 Product Introduction

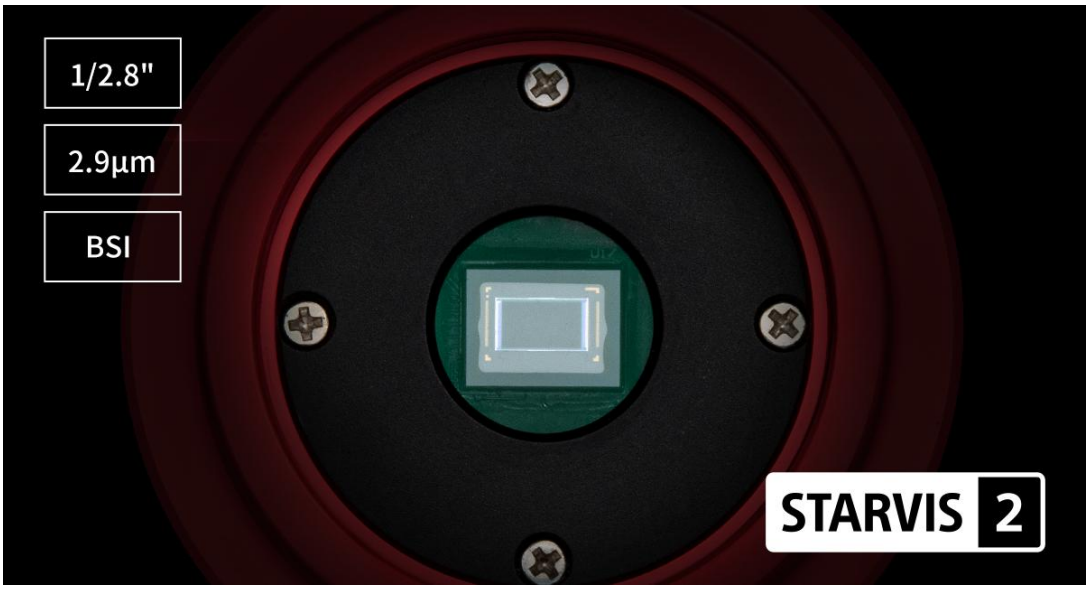


Planetary Camera with High Sensitivity

The ASI662MC/MM is equipped with the Sony-IMX662 rolling shutter CMOS. Boasting a 1/2.8” frame size combined with a 2.9μm pixel size, it features 2.07 million pixels (1920×1080), and possesses both high sensitivity and low read noise characteristics. In high-speed mode, it can output 107.6 frames per second, providing reliable support for planetary observation.

Large full well capacity,not easy to overexposure

The ASI662 adopts Sony IMX662 sensor with the latest technology.Compared to the previous generation of sensors, it has very low readout noise and an extreme large full well capacity. This helps effectively avoid overexposure issues and also allow longer exposures. In low light conditions, the camera performs excellent, capturing very clearimages of celestial objects.



256MB DDR3 & USB 3.0

The camera is equipped with a USB 3.0 transmission interface and a built-in 256MB DDR3 cache to ensure stable and secure data transmission.



No Amp Glow

AS1662 exhibits zero amp glow, no matter how long the exposure and how high the gain value. Since it is implemented directly at the hardware level.it does not require software control.

Note: This technology is implemented directly at the hardware level and requires no software control.



ASI462MC 300.0s



ASI662MC 300.0s

2 Notice for Use

Before using the camera, please read this manual carefully.
Note that the camera can only be used and stored under the following conditions. Usages out of the environment limits might lead to damage to the camera.

Storage temperature	-20°C ~ 60°C
Storage humidity	20% ~ 95%
Working temperature	-5℃ ~ 50℃
Working humidity	20% ~ 80%

Please do not use corrosive solutions to clean the camera to avoid corroding the oxide layer on the surface and damaging the camera. Meanwhile, please do not keep the camera exposed to the sun for a long time to avoid discoloration of the oxide layer on the camera surface.

3 Getting to Know Your Camera

3.1 External View



① USB 3.0/2.0 port

② ST4 guide port

③ AR protective window (D21x1.1mm)

④ 1/4” screw for fixing the camera to the tripod

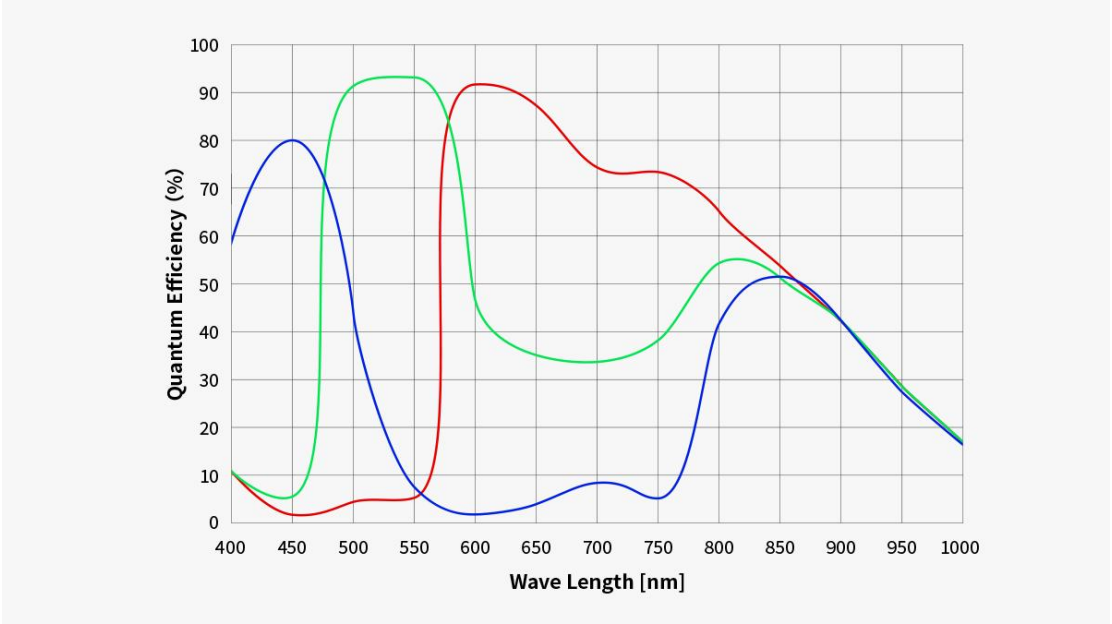
3.2 Camera Specifications

Sensor	Sony-IMX662
Type	Color/Mono
Sensor format	1 / 2.8″
Diagonal	6.45mm
Resolution	2.07MP 1920 x 1080
Pixel size	2.9μm
Sensor size	5.568mm x 3.132mm
Fast frame rate	107.6fps
Shutter	Rolling Shutter
Exposure range	32μs~2000s
Read noise	0.8-6.9 e(1.22e@19db gain)
QE peak	91%
Full well capacity	38.2Ke
ADC	12bit
USB interface	USB 3.0 /USB 2.0 Type-B
Adapter	1.25“/2“/M42 x 0.75
Protect window	φ21-1.1 AR
Dimension	62mm
Weight	126g
Back focus distance	12.5mm
Supported OS	WIN7/8/10 32&64、Linux、Mac

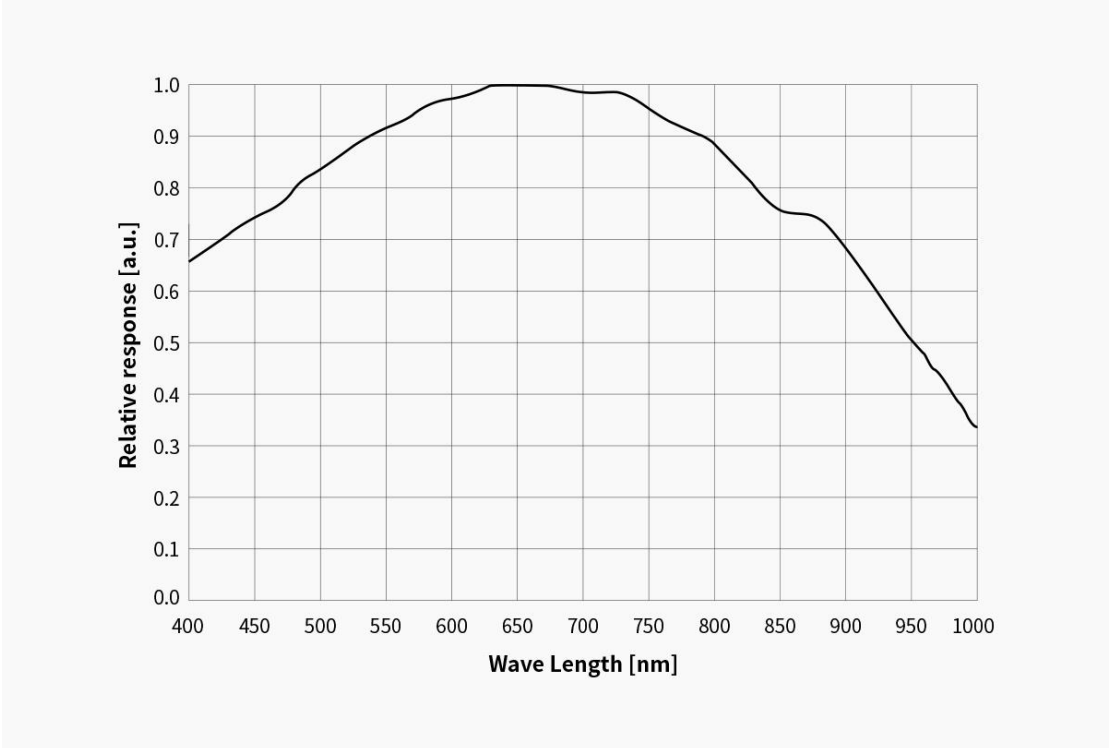
3.3 Quantum Efficiency & Read Noise

Quantum Efficiency

The QE curve and readout noise are very important parameters to measure the camera's performance. Higher QE and lower readout noise are necessary to improve the image signal-to-noise ratio.
The peak quantum efficiency of ASI662MC is 91%

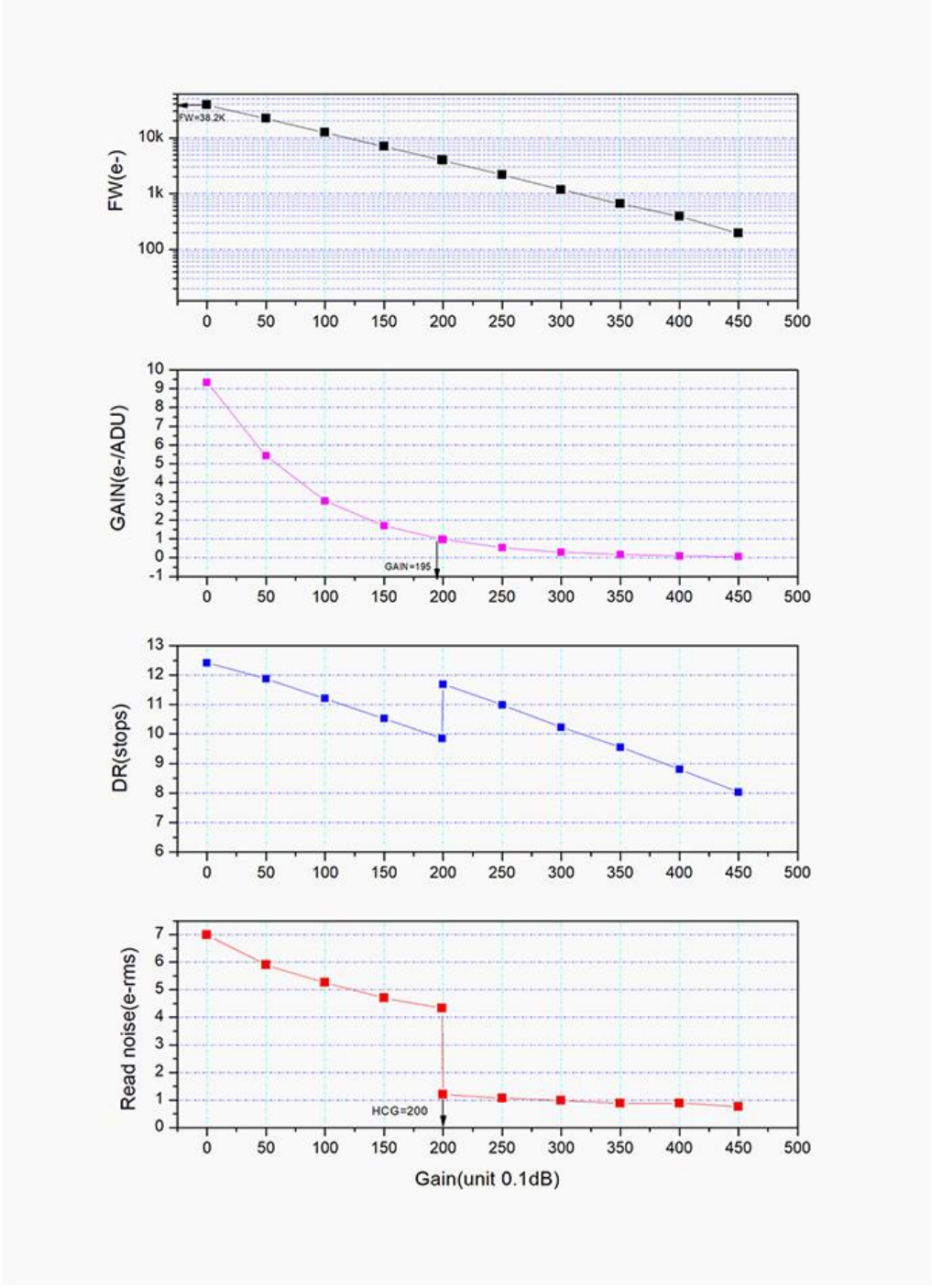


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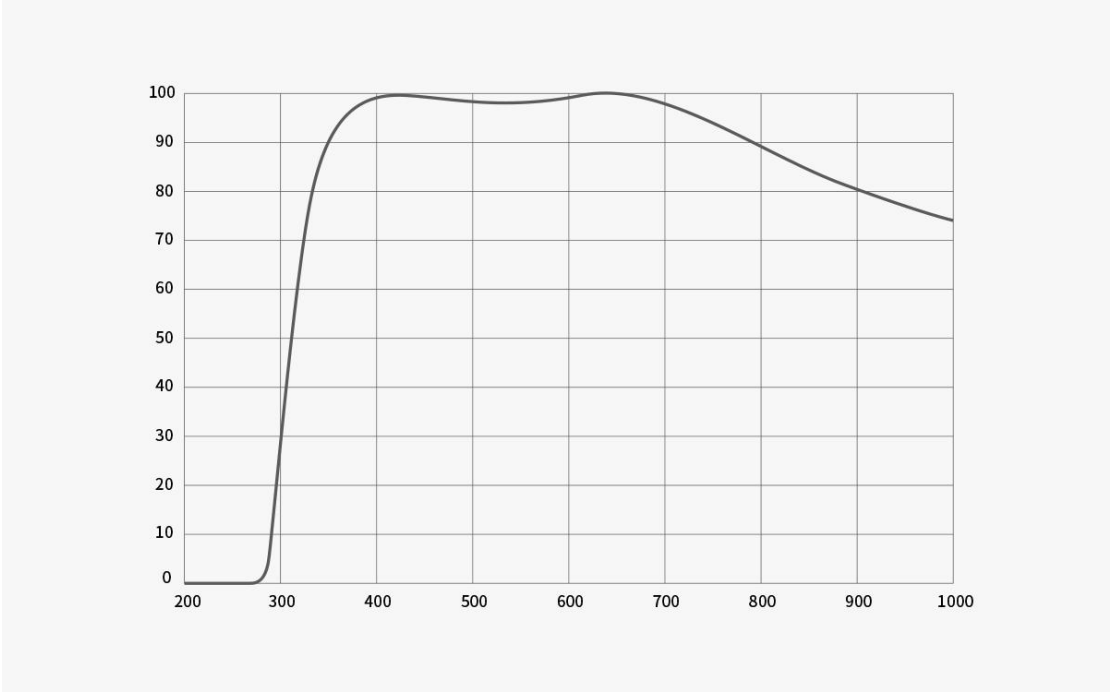
Read Noise

Read noise contains pixel noise, circuit noise and ADC noise. The lower the read noise is, the better. You may see from the chart below that ASI664MC has very low read noise. It has a built-in HCG mode, which can effectively reduce read noise at high gain and keep the dynamic range at the same level as it does at low gain. When the gain is 200, the HCG mode is automatically turned on and the dynamic range to 11stops.



3.4 Protective Window

ASI662MC/MM has an AR-coated protective window in front of the sensor. Its thickness is 1.1mm and diagonal is 21mm. It can protect the sensor from dust or dew.



3.5 Analog to Digital Converter (ADC)

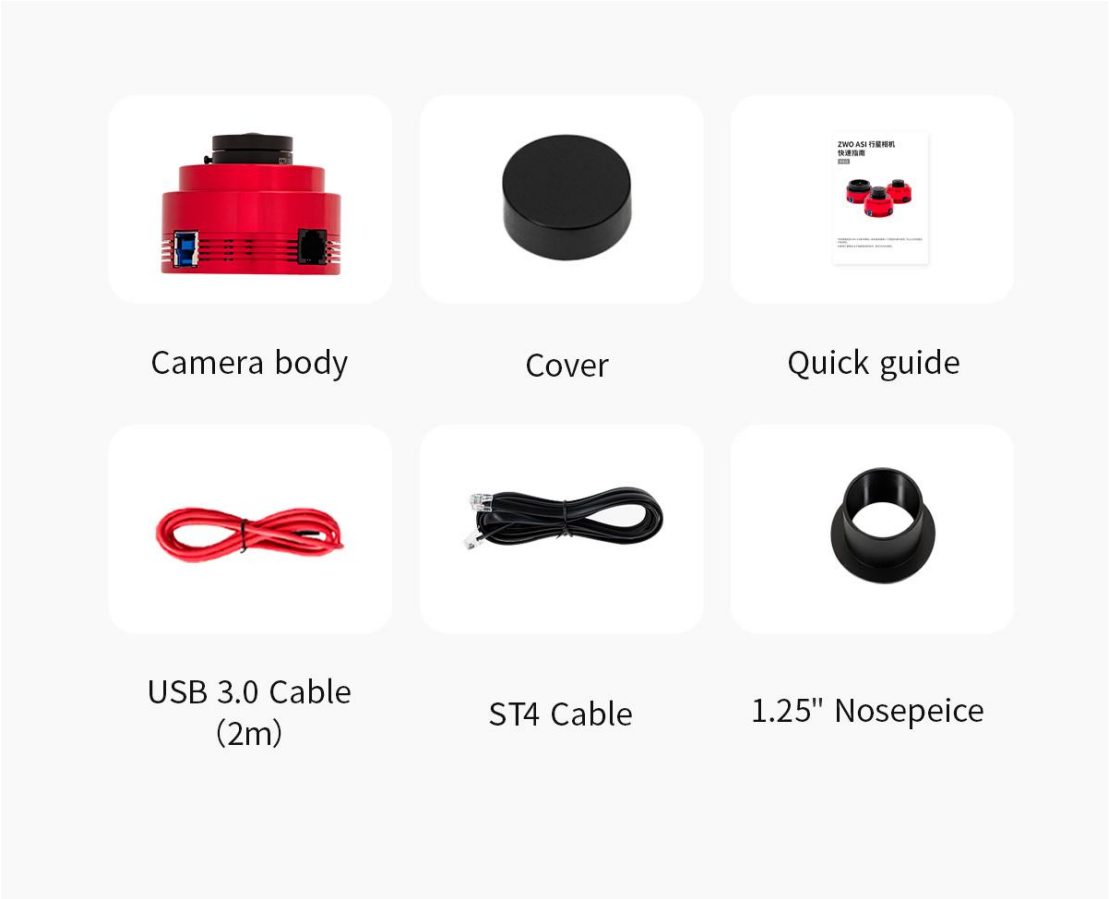
ASI664MC records in 12bit ADC and 10bit ADC. You can image at a faster frame rate if you use 10bit ADC (high speed mode). You may also set an ROI if you want even faster frame rates.

Resolution	USB3.0			USB2.0		
	Normal mode: 12BIT ADC		High-speed mode: 10BIT ADC	Normal mode: 12BIT ADC		High-speed mode: 10BIT ADC
	RAW16	RAW8	RAW8	RAW16	RAW8	RAW8
1920 x 1080	76.3fps	76.3fps	107.6fps	10.4fps	20.9fps	20.9fps
1280 x 720	111.6fps	111.6fps	157.3fps	23.5fps	47fps	47fps
640 x 480	161.0fps	161.0fps	227.4fps	70.5fps	141.2fps	141.2fps
320 x 240	290.2fps	290.2fps	409fps	283.1fps	290.2fps	409fps

3.6 Power consumption

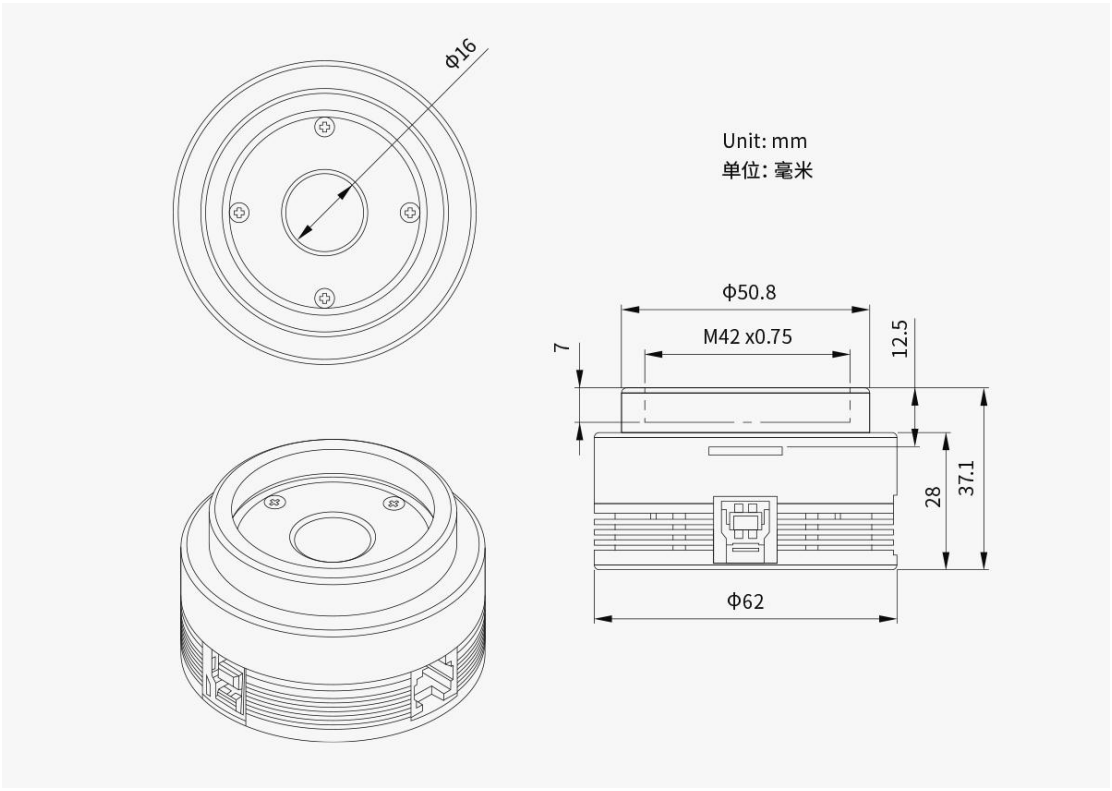
All ASI cameras have low power consumption， when it is powered with a USB cable, the max power consumption is only 1.36W.

4 What’s in the Box?

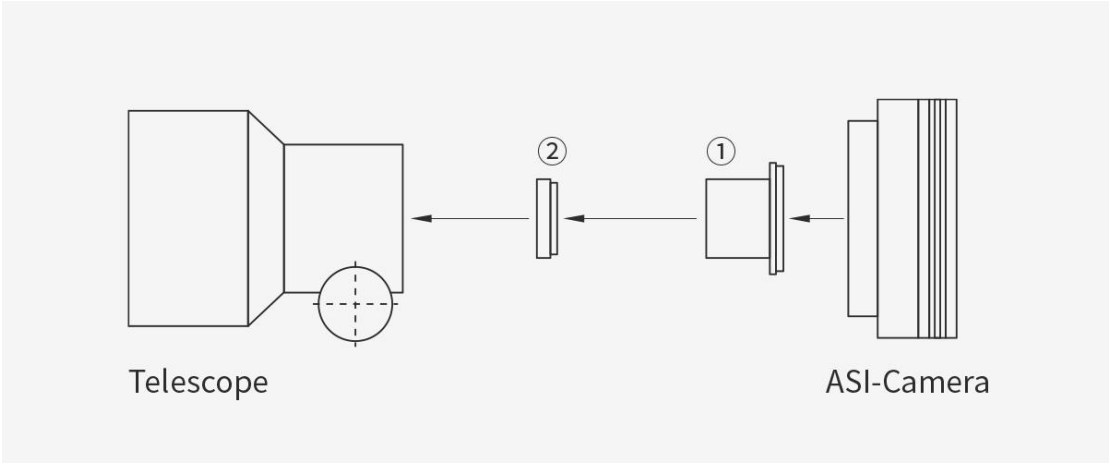


Equipped with a 2m USB cable that can be used to connect the computer and the camera for guiding.
Note: Please take off the self-contained lens on the top of the camera before you use the camera for astrophotography.

5 Structural Dimension Diagram



6 Connection Methods



① 1.25” T-mount

② 1.25” filter (optional)



7 Warranty

1. ZWO will provide a 2-year free warranty service (Warranty Period) for ZWO products purchased by Users from ZWO ("Products") in accordance with this Policy, commencing on the day following receipt of the Products by Users. For ASIAIR Plus users, commencing on the day of device activation.

2. If a User encounters the following Dead on Arrival (DOA) and contacts ZWO within the corresponding time limit to issue the Product purchase invoice and relevant evidence, ZWO will provide door-to-door pick-up service and, as appropriate, after-sale replacement (or partial replacement), repair or return (or partial return) service for the following Products:

1) Product quality problem

Provided that a User detects a quality problem and contacts ZWO within 180 days after receipt of the Products, and ZWO support team confirms that the Products indeed have a quality problem or defect after their inspection, ZWO will provide free replacement service towards such Products;

2) Product transportation problem

Provided that a User finds obvious signs of bubbling, serious overstocking, or deformation on the outer package of the Products upon receipt of the Products, and provides ZWO with pictures of the outer package and proof of receipt within 3 days after receipt of such Products, ZWO support team will verify the actual shipper and determine the responsible party for such transportation problem. In the event that ZWO is the actual shipper, ZWO will be responsible for providing the relevant return or replacement service, however, if the Products are directly sold or transported to the User by an agent of ZWO, the agent will be responsible for providing the relevant return or replacement service;

3) Any quality problem with the accessories or other parts of the Products is not a condition for the return or change of the Products, and the User may solely request to replace the accessories with new ones, which shall be handled after verification by ZWO support team.

3. If the Products are under the following circumstances, they are not within the scope of warranty service. ZWO may provide maintenance services to the Users:

1) The Warranty Period of the Products has expired;

2) The Products are injected into liquid or affected by moisture or corrosion;

3) The Products are damaged by an external force (such as the broken of the camera protection window glass, the deformation of the product shell, the broken of the USB port, etc.);

4) Disassembling, repairing by a third party, refurbishment of the Products (such as downloading erroneous firmware) without the written authorization of ZWO;

5) The product system is modified, or the maintenance notice is lost or changed;

6) Product quality problem caused by installation not following the requirements or instructions for the Products;

7) Physical damage or failure of the Products caused by the force majeure (such as strong vibration or extrusion such as flood, fire, earthquake, or thunder stroke);

8) Damage caused by the improper User operation during the period of shooting or use, such as using without the equipment protection or direct shooting of the sun;

9) No valid purchase invoice or warranty certificate;

10) The Products are second-hand products.

8 Servicing

For software upgrades, please refer to “Guide & Manuals” on our official website.
https://www.zwoastro.com/guides-and-manuals/
For repairs and consultation, you can visit here:
https://support.astronomy-imaging-camera.com/
Email: info@zwoptical.com.
Phone: 0512-65923102

1. For the normal repair or replacement of the Products during the Warranty Period, the User will bear the return cost. When returning the Products, Users shall specify the actual reasons for the damage to the Products, and shall provide the corresponding valid certificates, such as pictures or videos, etc.

For the Products that need to be replaced after being confirmed by ZWO in writing, the User shall return the Products with the complete package, together with all accessories, manuals, etc., to the address designated by ZWO.

By sending back the product to ZWO, the User agrees to pay out-of-warranty fees that may arise during the repair process of the product. ZWO will send back the product after charging.

2. For the Products that need to be returned for after-sales service, ZWO will provide the corresponding RMA code for reference. ZWO will not accept any products having no RMA code that have been returned privately without ZWO written confirmation.

3. If a User purchases the ZWO Products from a ZWO agent, the User may contact the ZWO agent directly for the relevant after-sales service.