ASI185 Manual

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1. Instruction

Congratulations and thank you for buying one of our ASI Cameras！This manual will give you a brief introduction to your ASI camera. Please read it thoroughly. If you have any other questions, please feel free to contact us. info@zwoptical.com

ASI185 Cameras are designed for astronomical photography.
Its excellent performance and multifunctional usage will impress you a lot!

For software installation instructions and other technical information please refer to “Support” on our official website.
https://astronomy-imaging-camera.com/

2. Camera Models and Sensor Type

Model	Mono or Color	Regulated TEC Cooling	Sensor
ASI185MC	Color	No	IMX185
ASI185MC-COOL	Color	Yes	IMX185

Why do I choose ASI185MC?

ASI85MC cameras are designed for astronomical photography. The slightly larger sensor, extremely low read noise , high sensitivity and high frame rates make this new camera a very good choice for planetary imaging, it also comes with a 2.5mm all sky lens which can provide a nearly 170 °view of the sky. The excellent performance and multifunctional usage will impress you a lot!

TEC cooling will help to reduce dark current noise for long exposures. For short exposures, such as under one second, the dark current noise is very low. However, cooling is recommended for DSO imaging when long exposures are required.

3. What's in the box?

ASI185MC

1–ZWO ASI185MC Camera Body
2–2 m long ST4 guider cable
3–1.25″ Cover
4–M42-1.25″ T-Mount
5–2 m long USB3.0 cable
6–Driver & Extra Software CD (Mac, PC&Linux Compatible)

ASI185MC-COOL

1–ZWO ASI185MC-COOL Camera Body

2–M42-1.25″ T-Mount

3–1.25″ Cover

4–2 m long USB 3.0 cable

5–USB 2.0 short cable x2

They are used to connect your EFW or guider camera through the USB2.0 hub.

6–Backup desiccant tablets packet

Only when you find fogging inside camera chamber, you need to replace them.

7–Driver & Extra Software CD (Mac, PC&Linux Compatible)

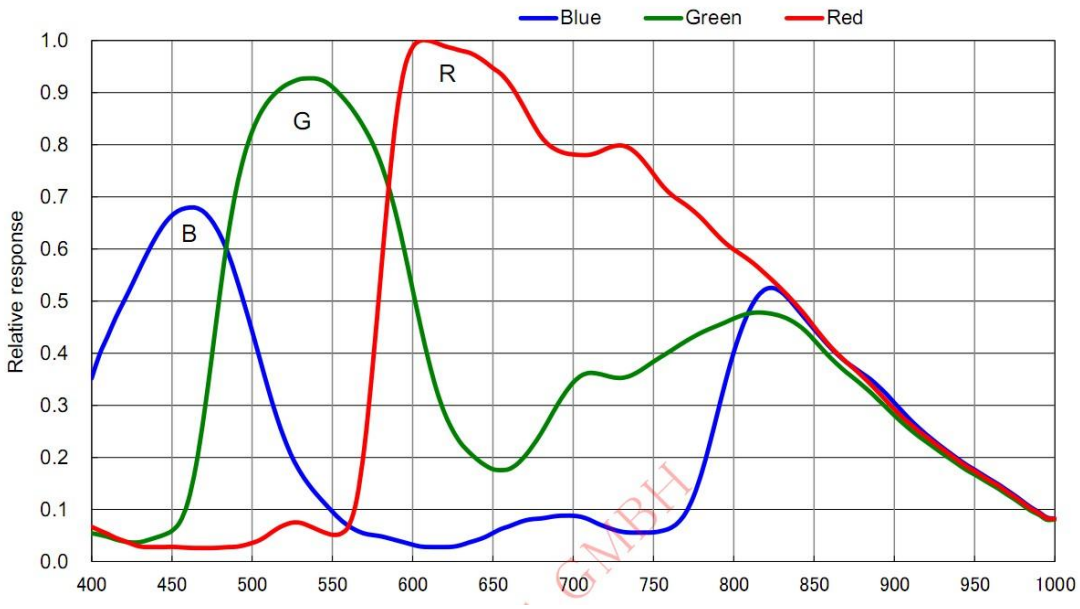
4. Camera technical specifications

Sensor	1/1.9” CMOS IMX185
Resolution	2.3 Mega Pixels 1944*1224
Pixel Size	3.75μm
Image area	7.3mm*4.6mm
Max FPS at full resolution	108FPS(10bitADC)
Shutter	Rolling shutter
Exposure Range	32μs-1000s
Read Noise	1.5e @30db gain
QE peak	TBD
Full well	22.8k e
ADC	12 bit
Interface	USB3.0/USB 2.0
Adapters	2″ / 1.25″ / M42X0.75
Protect window	AR window
Dimensions	Uncooled 62mm/Cooled 78mm
Weight	Uncooled 120g/Cooled 410g
Back Focus Distance	Uncooled 12.5mm/Cooled 17.5mm
Supported OS	Windows, Linux & Mac OSX
Working Temperature	-5℃—45℃
Storage Temperature	-20℃—60°
Working Relative Humidity	20%—80%
Storage Relative Humidity	20%—95%

5. QE Graph & Read Noise

QE and Read noise are the most important parts to measure the performance of a camera. Higher QE and Lower read noise are needed to improve the SNR of an image.

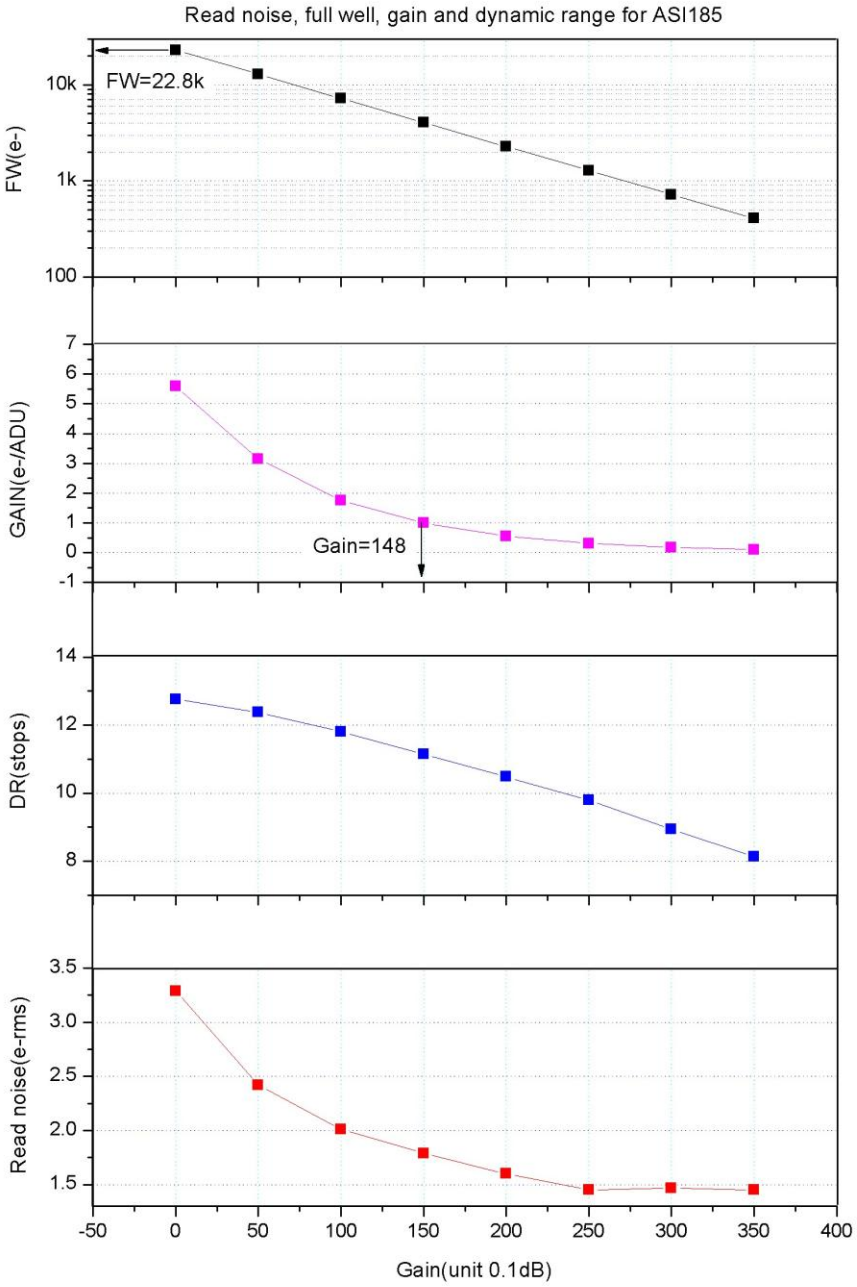
Color 185 Sensor Relative QE



Read Noise includes pixel diode noise, circuit noise and ADC quantization error noise, and the lower the better.

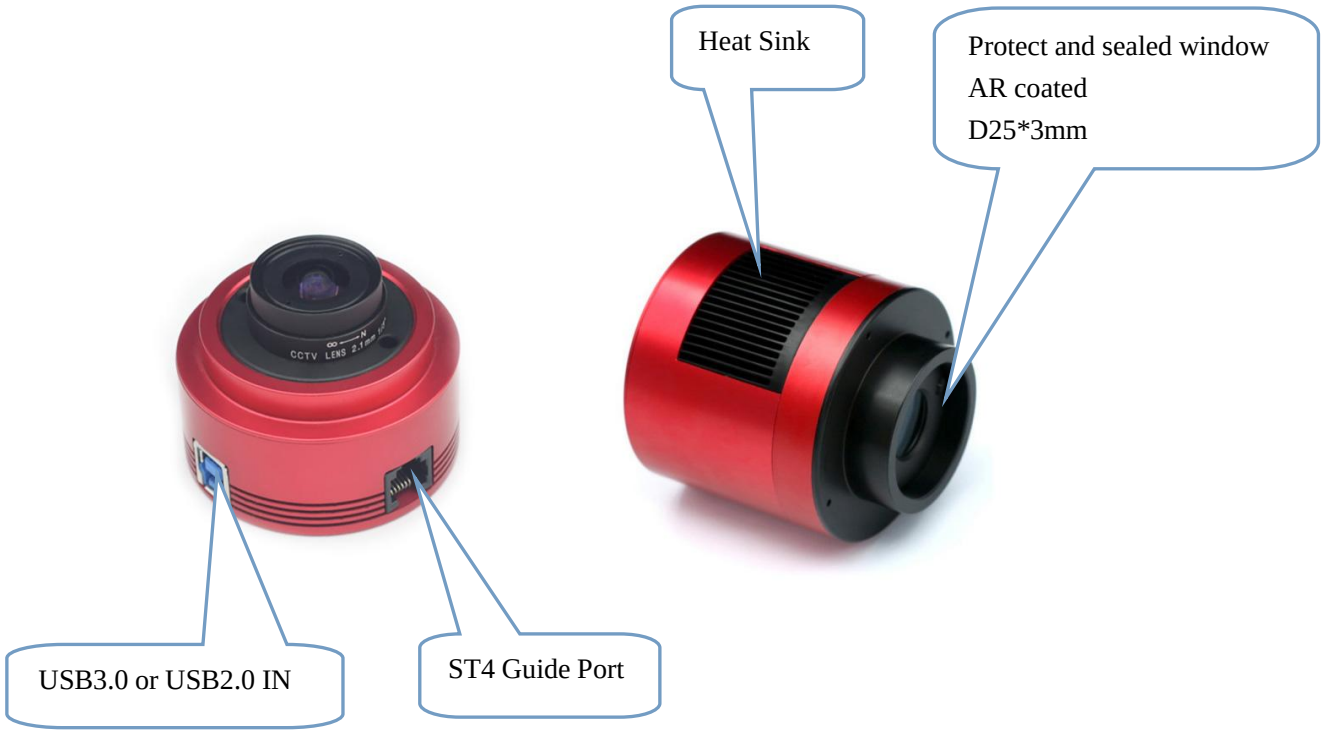
The Read Noise of the ASI185 cameras is extremely lower when compared with traditional CCD cameras. It is even lower when the camera is set at a higher gain.

Depending on your target, you can set the Gain lower for higher Dynamic Range (longer exposure) or set the Gain higher for lower noise (such as short exposure or lucky imaging).



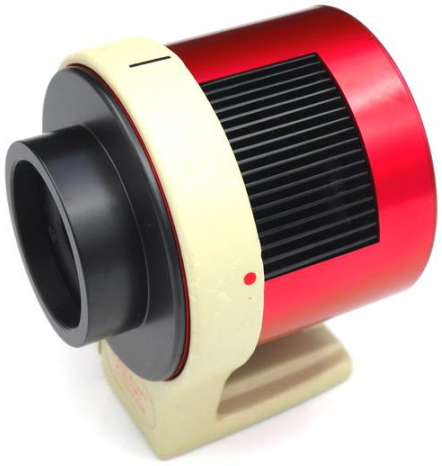
6. Getting to know your camera

6.1 External View



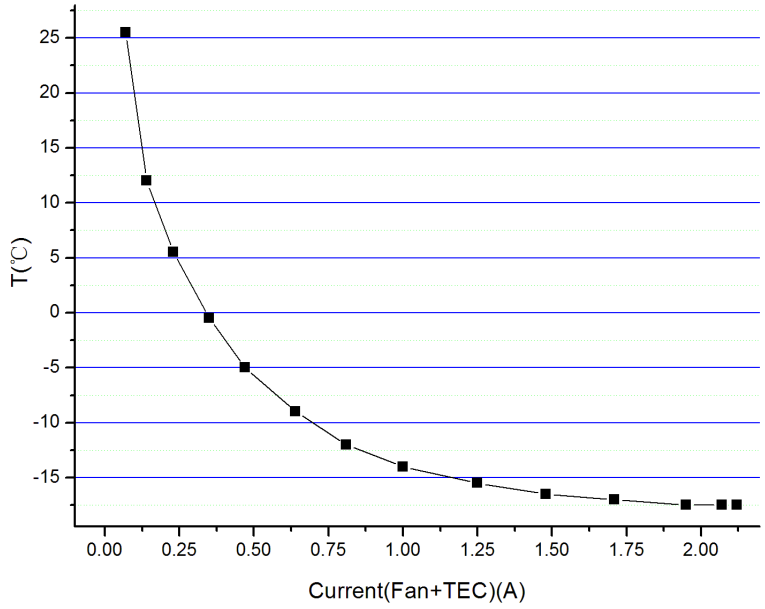
*the first generation of cooled camera we used a ST4 port instead of USB2.0 hub

You can order the holder ring from us or our dealer to mount the cooled camera to tripod. There is 1/4″ screw under the holder



6.2 Power consumption:

ASI cameras are designed to have very low power consumption which is around 180ma@5V. You only need the USB cable to power up the camera, however you will need a separate power supply to activate the cooler. We recommend 12V at 3A or more AC-DC adapter for cooler power supply (2.1mm*5.5mm, center positive). You may also use a battery supply from 9 to 15V to power the cooler.



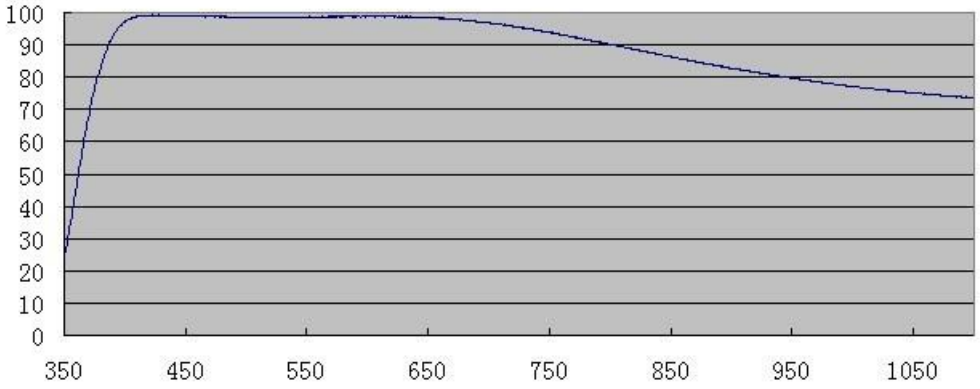
6.3 Cooling system

The cooled ASI185 cameras have a robust, regulated cooling system, which means that the camera sensor can be kept at the desired temperature throughout your imaging session. The super low readout noise, combined with efficient cooling and adjustable gain setting, allows you to do short exposure or lucky DSO imaging, unlike the traditional CCD cameras which need very long exposures for each frame. However, keep in mind that cooling won't help with very short exposures such as less than 100ms. The lowest temperature that can be set is -40℃.

6.4 Protect Window

Our ASI185MC comes with the D21 AR window, thickness is 1.1 mm
While ASI185MC-COOL has the D25 AR window, thickness is 3 mm.

Transmission chart of the AR filter.



6.5 Analog to Digital Converter (ADC)

The ASI185 camera records in 10bit ADC and 12bit ADC. You can image at a faster fps rate if you choose to use 10bit ADC (high speed mode). This camera also supports ROI (region of interest) shooting, and this smaller ROI has faster fps.
Here is the maximum speed of ASI185 running at 10bit ADC and 10bit ADC.

Resolution	USB3.0	
	10Bit ADC	12Bit ADC
1944x1224	108fps	54fps
1920x1080	120fps	60fps
1024x768	170.5fps	85.2fps
800x800	163.8fps	81.9fps
640x480	268.4fps	134.2fps
320x240	515.3fps	257.6fps

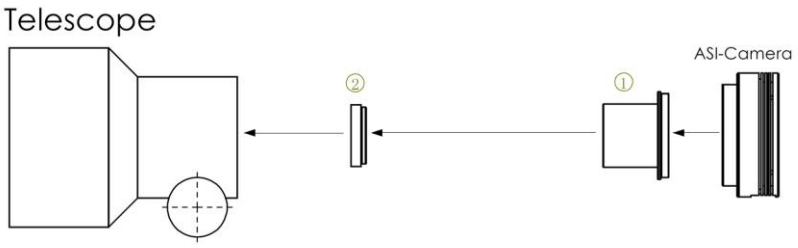
6.6 Binning

The ASI185 camera supports software bin2 mode. You should use 10bit ADC. We recommend customer to use software binning if you don’t care speed.

7. How to use your camera

There are many adapters available for this camera for connecting to your scope or lens. Some are included with the camera and others you can order from our site:

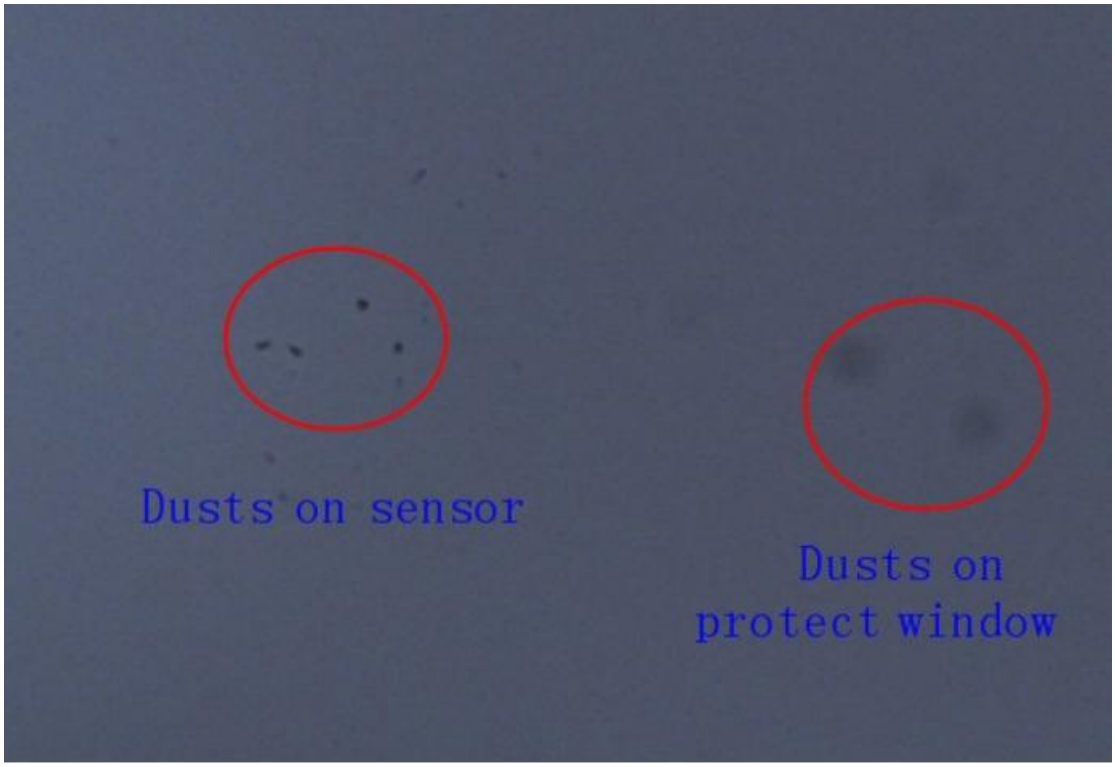
Color camera connecting drawing:



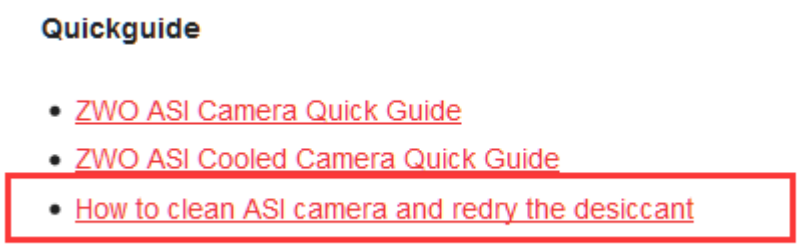
1. 1.25” T-Mount
2. 1.25”filter(optional)

8. Clean the camera and redry desiccant

The camera comes with an AR protect window, which can protect the sensor from dust and humidity. Should you need to clean the sensor, it's better to do so during the daytime. To see the dust, you just need to setup your telescope and point it to a bright place. A Barlow is required to see these dusts clear. Then attach the camera and adjust the exposure to make sure not over exposed. You can see an image like below if it's dirty.

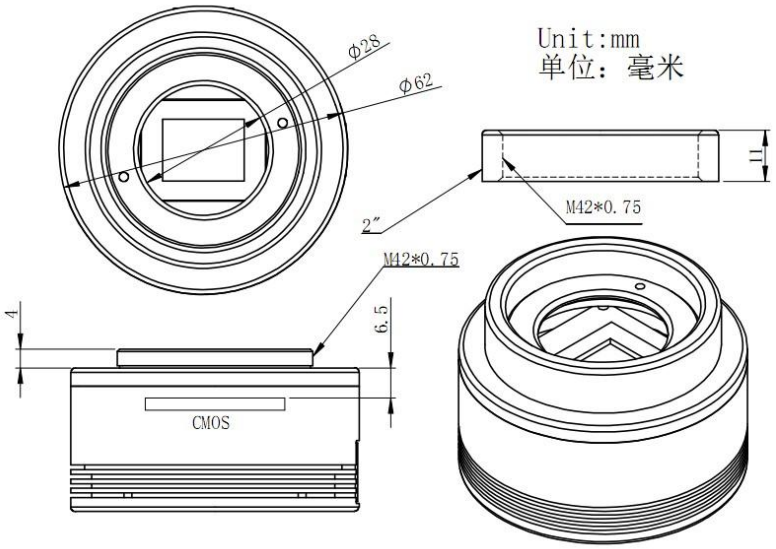


The big dim spot on the image (at right) are the shadows of dust on the protect window.
The very small but very dark spot in the image (at left) are the shadows of the dusts on the sensor.
The suggested way to clean them is try to blow them away with a manual air pump. To clean the dust on the sensor you will need to open the camera chamber.
We have a very detailed instruction on our website:
https://astronomy-imaging-camera.com/manuals/

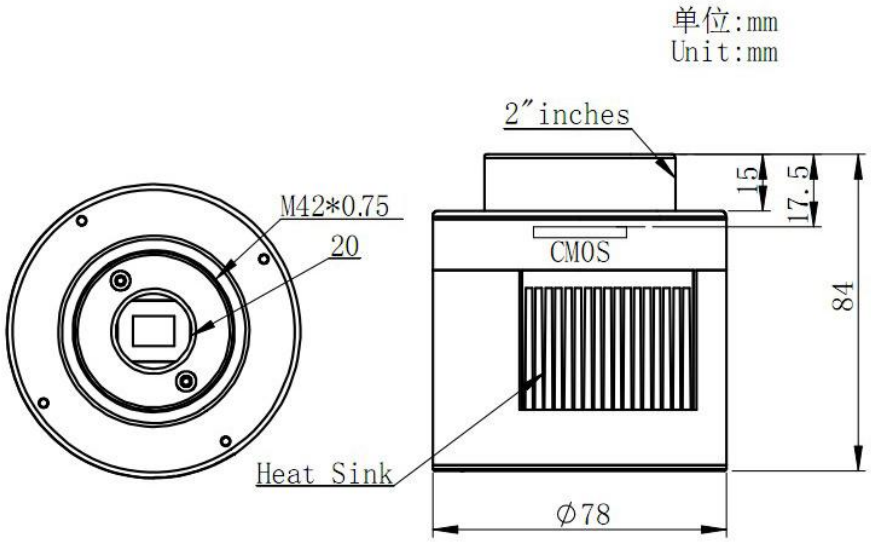


9. Mechanical drawing

ASI185MC



ASI185MC-COOL



10. Servicing

For software upgrades please refer to “Support-manual and software” on our official website.
https://astronomy-imaging-camera.com/
Repairs and servicing are available by emailing info@zwoptical.com

For customers who bought the camera from your local dealer, dealer is responsible for the customer service.

11. Warranty

We provide 2-year warranty for our products. We offer repair service or replacement for free if the camera doesn’t work within warranty period.
After the warranty period, we continue to provide repair support and service on a charged basis.

This warranty does not apply to damage that occurred as a result of abuse or misuse, or caused by a fall or any other transportation failures after purchase.
Customer must pay for shipping when shipping the camera back for repair or replacement.