



# **ASI462 Manual**

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Please download the latest version from our Official website.



# Table of Contents

ASI462 Manual.....	1
1. Instruction.....	3
2. What's in the box? .....	4
3. Camera technical specifications.....	5
4. QE Graph & Read Noise.....	6
5. Getting to know your camera.....	8
5.1 External View.....	8
5.2 Power consumption.....	8
5.3 USB 3.0 port & ST4 port .....	8
5.4 Protect window .....	8
5.5 Analog to Digital Converter (ADC).....	9
5.6 Binning.....	9
6. How to use your camera.....	10
7. Cleaning .....	11
8. Mechanical drawing.....	12
9. Servicing .....	13
10. Warranty .....	13

# 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 take the time to read it thoroughly and if you have any other questions, please feel free to contact us at [info@zwoptical.com](mailto:info@zwoptical.com).

Welcome to join ZWO FB and User Forum below!

Facebook : <https://www.facebook.com/ZwoDesignAstronomyCameras>

User Forum: <https://bbs.astronomy-imaging-camera.com/>

ASI462 Camera is specifically designed for astronomical photography. With the strong ability in capturing near-infrared lights, super high sensitivity and ultra-low readout noise, it can be one of the best ASI planetary cameras ever. You will be impressed by its superior performance and wide use!

<b>Model</b>	<b>Mono/Color</b>	<b>Sensor</b>
<b>ASI462MC</b>	Color	SONY IMX462

For software installation instructions and other technical information, please refer to our official website <https://astronomy-imaging-camera.com/>

## 2. What's in the box?

ASI462MC



ST4 cable



camera body



quick guide



2m USB3.0 cable



1.25" cover



1.25" nose piece

### 3. Camera technical specifications

Sensor	SONY IMX462 CMOS
Format	1/2.8"
Diagonal	6.46mm
Resolution	21 Mega Pixels, 1936*1096
Pixel size	2.9 $\mu$ m
Sensor size	5.6mm * 3.2mm
Max fps	136FPS
Shutter	Rolling shutter
Exposure range	32 $\mu$ s-2000s
Readout noise	0.47~2.65e
QE peak	TBD
Full well	11.2ke
ADC	12bit
USB interface	USB3.0
Adapters	2"/ 1.25"/ M42*0.75
Protect window	AR
Dimension	$\phi$ 62mm*35.5mm
Weight	0.11kg
Back focus length	12.5mm
Working temperature	-5 $^{\circ}$ C~50 $^{\circ}$ C
Working relative humidity	0~80%
Supported OS	Windows, Linux & Mac OSX

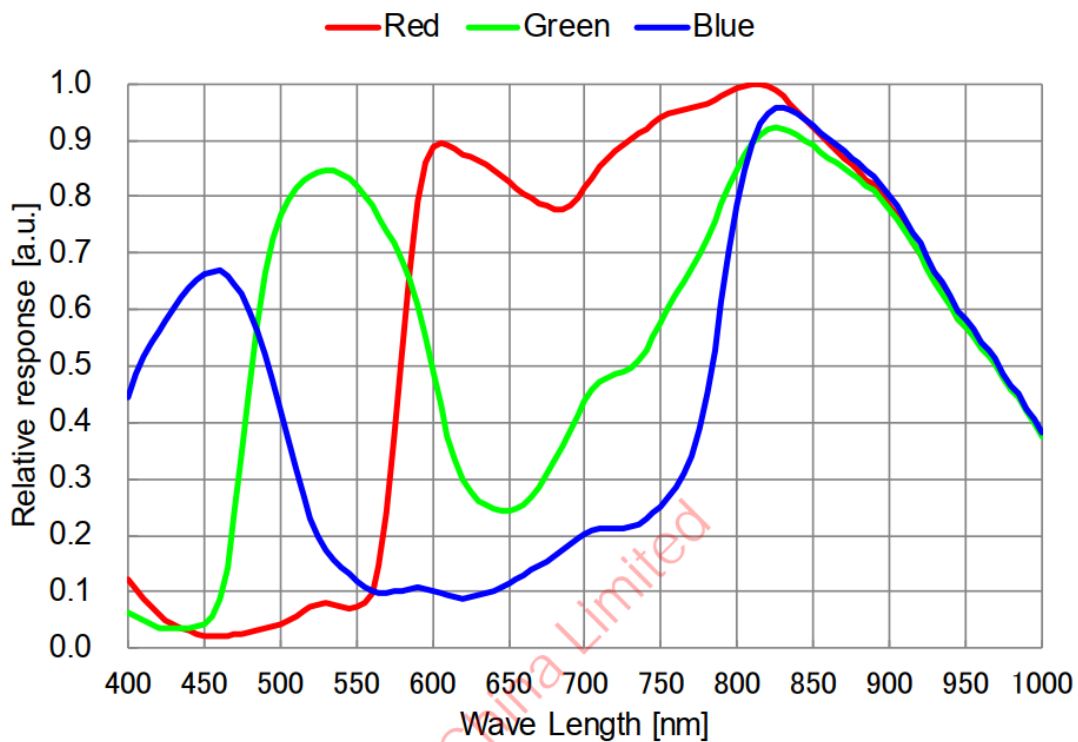
## 4. QE Graph & Read Noise

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.

ASI462 has very high QE value at 800-1000nm wavelength (almost 2 times higher than that of ASI290MC). It's sensitivity in near infrared light regions ranks first among all ASI planetary cameras.

(Excludes lens characteristics and light source characteristics.)

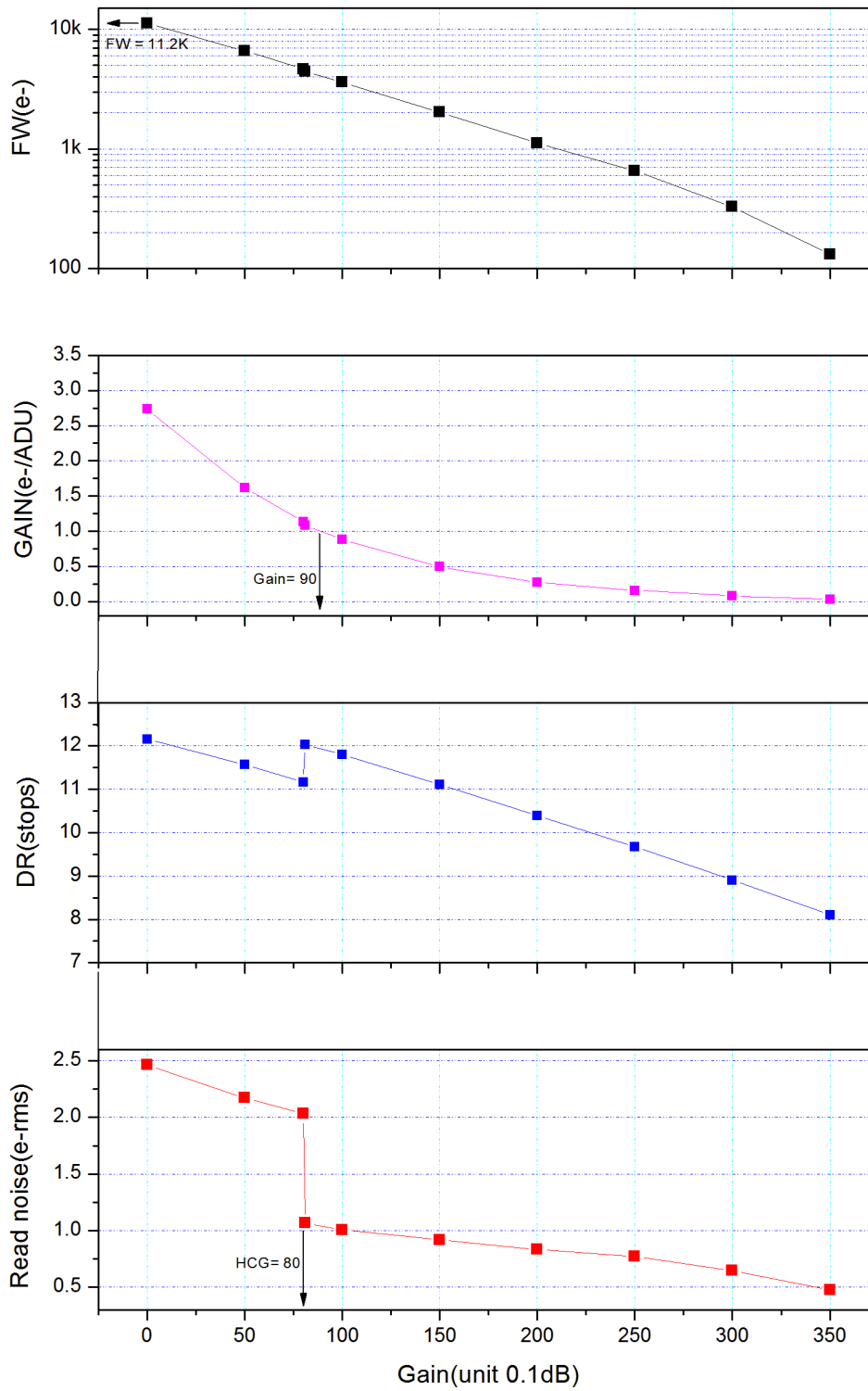


Read noise includes pixel diode noise, circuit noise and ADC quantization error noise. The lower the better.

As you can see, the Read Noise of the ASI462 camera is extremely low. The built-in HCG mode can even more reduce the read noise at high gain and keep the same wide dynamic range for this camera as at low gain. When the gain is 80, the HCG mode will be automatically turned on. Additionally, the read noise is as low as 0.47e while the dynamic range can still be close to 12bit.

Depending on your target, you can set the gain lower for higher dynamic range or set the gain higher for lower noise.

## Read noise, full well, gain and dynamic range for ASI462MC



## 5. Getting to know your camera

### 5.1 External View



### 5.2 Power consumption

ASI462 camera is with low power consumption, max at 13.9W. USB3.0 cable is recommended for power supply.

### 5.3 USB 3.0 port & ST4 port

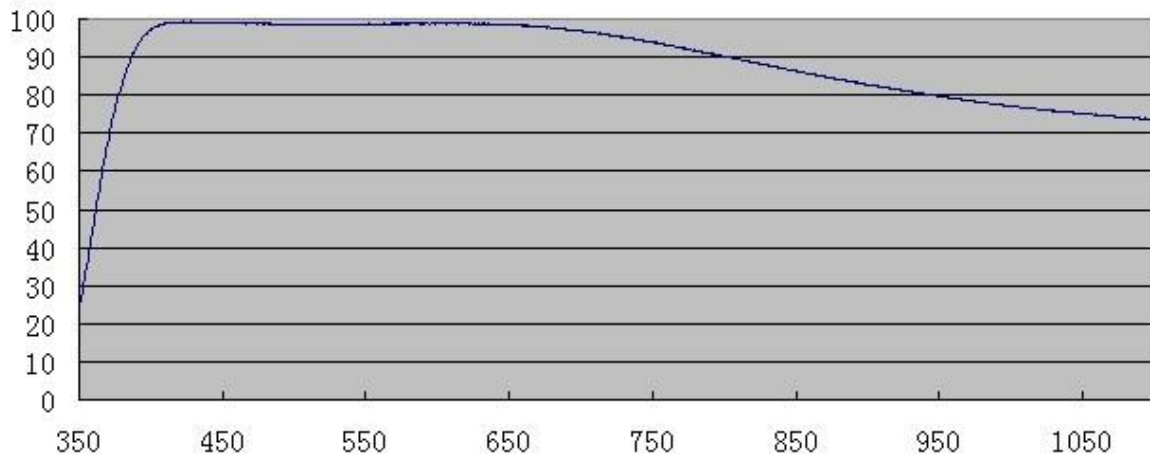
USB 3.0 Port: Providing 5Gb bandwidth to let ASI462 run at 136.1fps (10bit, high speed mode) or 63.9fps (12bit, normal mode) at full resolution(2.1Mega).

ST4 Port: Can be used to connect with auto guide port of mount for guiding.

### 5.4 Protect window

There is a protective window AR filter in front of the ASI462 camera sensor, with 21mm diameter and 1.1mm thickness.





## 5.5 Analog to Digital Converter (ADC)

The ASI462 camera records in 12bit ADC and 10bit 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 ASI462 running at different ADC mode on USB3.0.

Resolution	USB 3.0	
	12bit	10bit
1936*1096	63.9fps	136.1fps
1920*1080	64.8fps	138.1fps
1280*720	96.5fps	205.6fps
640*480	143.1fps	305fps
400*400	170.6fps	363.5fps
320*240	276.8fps	589.6fps

## 5.6 Binning

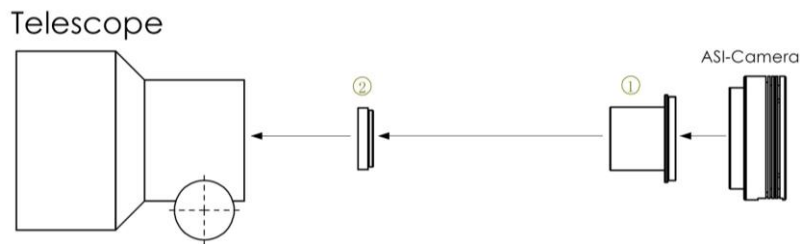
The ASI462 camera supports software bin2 mode. We recommend customer to use software binning if you don't care speed.

## 6. 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:

<https://astronomy-imaging-camera.com/>

Color camera connecting drawing:



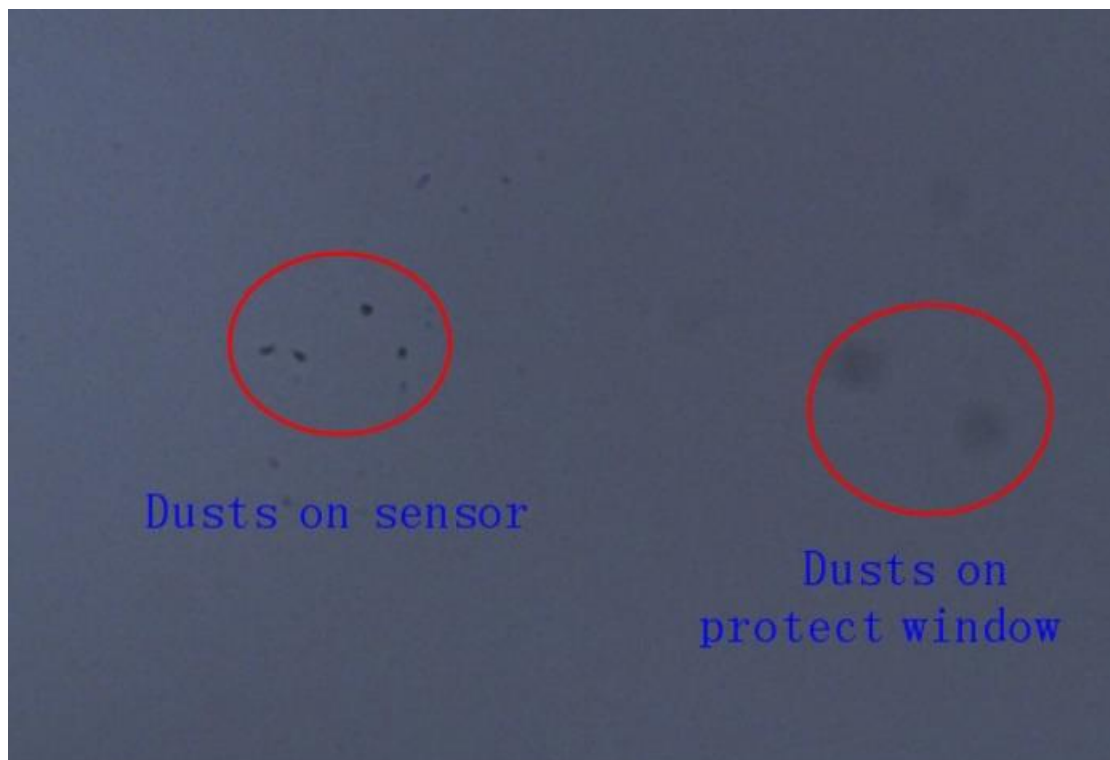
1. 1.25" T-Mount
2. 1.25" filter(optional)



## 7. Cleaning

The camera is sealed and comes with an AR protect window to protect the sensor from dusts and humidity. We don't recommend customers to open the camera for cleaning. Otherwise, chamber of the sensor can get wet which will cause the sensor getting dew when do cooling in the future.

To see the dusts, you just need to set up your telescope and point it to a bright place. A Barlow is required to see these dusts clearly. Then attach the camera and adjust the exposure to make sure not overly exposed. You can see an image like below if it's dirty.



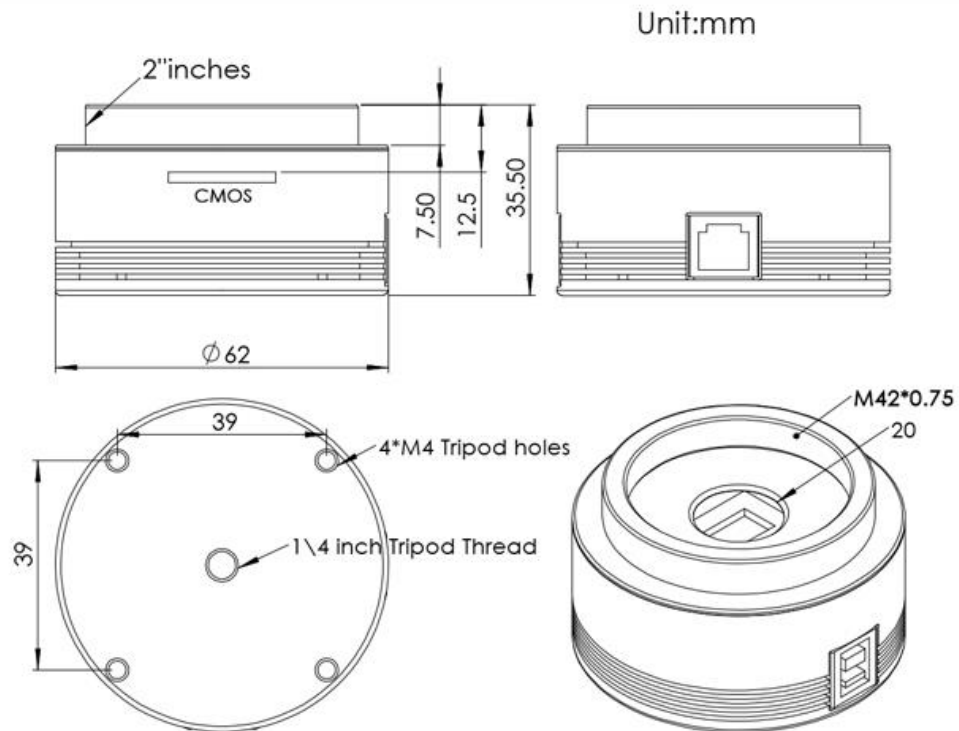
The big dim spot on the image (right side) are the shadows of dust on the protect window. The very small but very dark spot on the image (at left) are the shadows of the dusts on the sensor. If above situation occurs, it is recommended that the dust on the sensor surface be blew off with air pump, and the remaining dust is suggested to be removed by the software after the flat field is taken.

We have very detailed instruction on our website:

[https://astronomy-imaging-camera.com/manuals/How\\_to\\_clean\\_ASI\\_camera\\_and\\_redry\\_the\\_desiccant.pdf](https://astronomy-imaging-camera.com/manuals/How_to_clean_ASI_camera_and_redry_the_desiccant.pdf)

## 8. Mechanical drawing

ASI462MC



## 9. 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](mailto:info@zwoptical.com)

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

## 10. 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.