

ASI174 IS COMING

<http://www.zwoptical.com/>



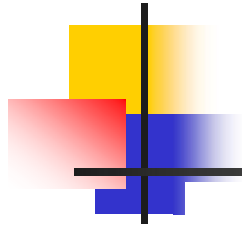
ASI174MC & ASI174MM





Specification

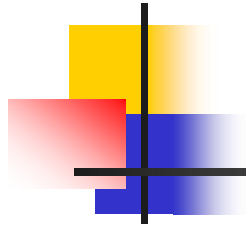
ASI174MM	Low Speed Mode	High Speed Mode
Size	1/1.2" (Diagonal 13.4mm)	
Shutter	Global	
Pixel Size	5.86um	
Full Resolution	1936X1216	
ADC (Bits)	12-bit	10-bit
Max FPS @1936X1216	128 FPS	164 FPS
Max FPS @640X480	309 FPS	397 FPS
Max FPS @320X240	577 FPS	740 FPS
Exposure Range	32us ~ 1000s	
Peak QE	78%	
Read Noise (e-)	6e	15e
Saturation Capacity (Well Depth) (e-)	32K	
Dynamic Range (dB)	72dB	
Gain (e-/ADU)	8	32



Comparison with ASI120S



Same Diameter as other ASI cameras, but thicker



Comparison with ASI120S



	ASI174MM	ASI120MM-S
Sensor Size	1/1.2"	1/3"
Resolution	1936X1216	1280X960
Pixel Size	5.86um	3.75um
Output Bits	12	12
Max FPS (Full Resolution)	164FPS	60FPS
Max FPS (640X480)	397FPS	106FPS
Read Noise (e-)	6	6
Peak QE	78%	74%
Full Well (e-)	32K	13K
Gain (e-/ADU)	8	3.2



WHY IMX174 SENSOR?

SONY

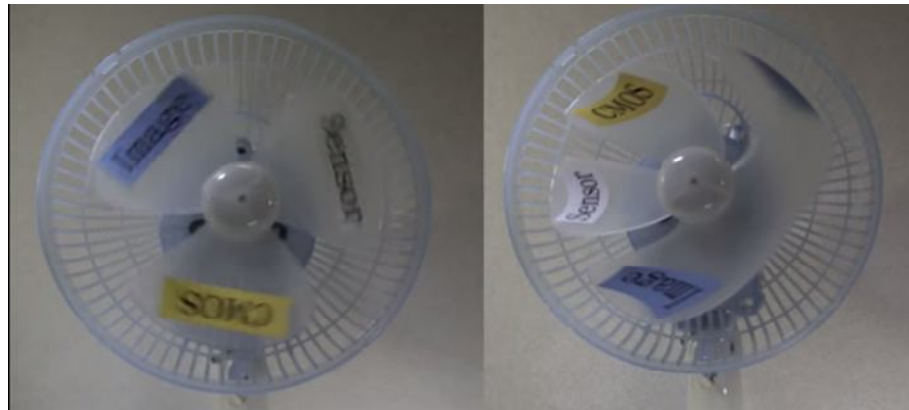
Pregius

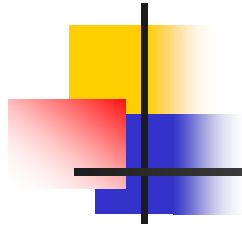
Global Shutter Technology



Global Shutter

Rolling Shutter





Does it matter in astrophotography?

- Lunar and Solar imaging:

Yes, it does matter when the readout speed is not fast enough ($<30\text{fps}$). The image will distort because of bad seeing or wind or any movement.

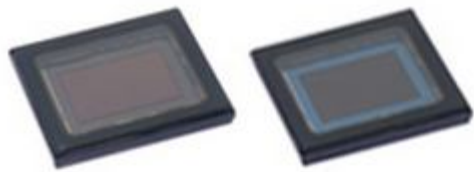
- Planetary imaging:

Usually no, because the planets such like Jupiter and Saturn are relatively small and can be captured at very high speed fps.



WHY IMX174 SENSOR?

Larger Sensor Size
Diagonal 13.4mm (Type 1/1.2)



ASI174 1/1.2"

ASI120 1/3"



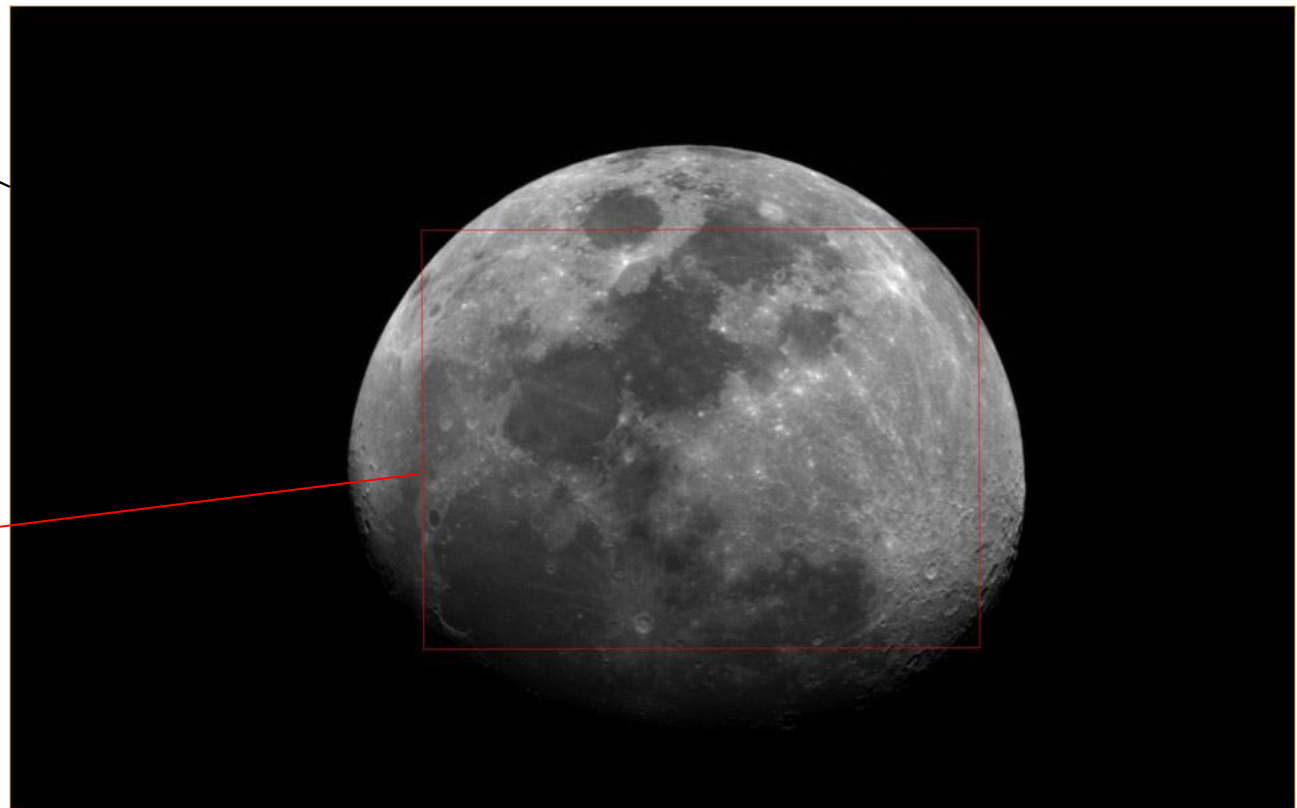


Does it matter in astrophotography?

The Filed of View with different size Sensors:

FOV of ASI174

FOV of ASI120

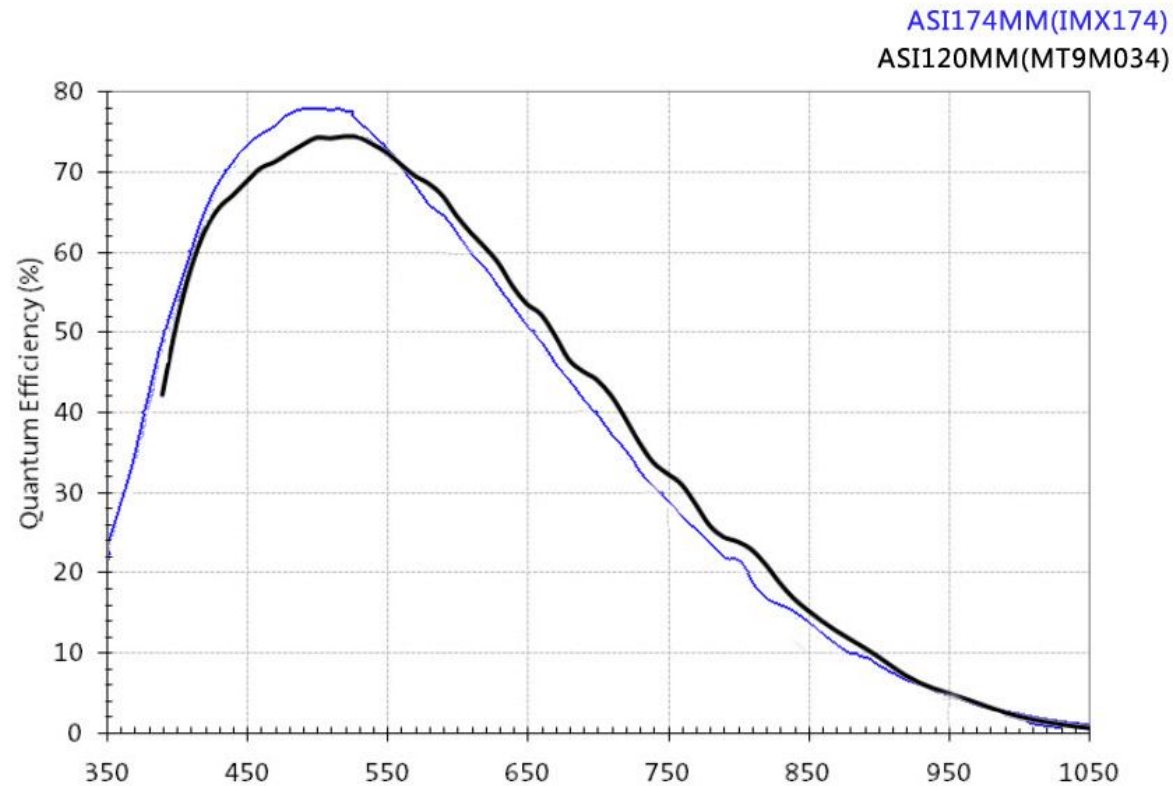


Tested with a 600mm focal length scope, no Barlow lens added

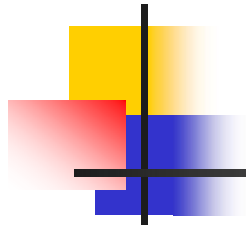


WHY IMX174 SENSOR?

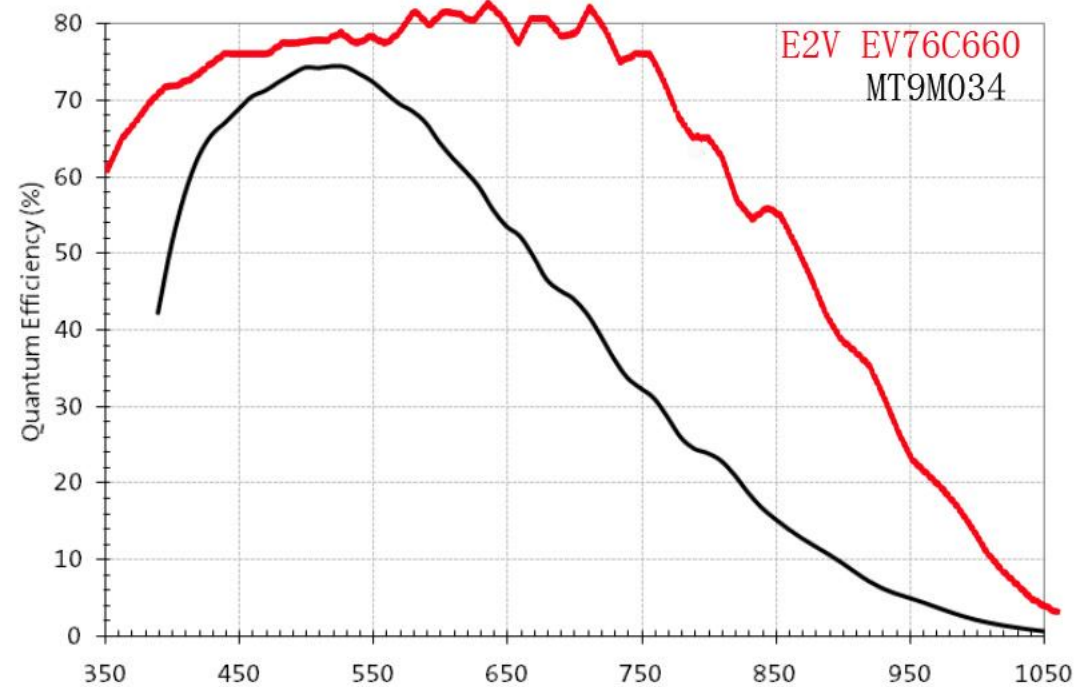
QE Curve



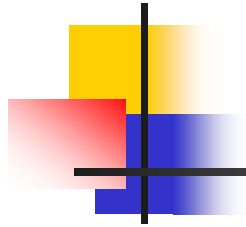
Nearly the same as ASI120
Slightly higher in Blue and Green
Slightly lower in R and IR.



Is QE everything?

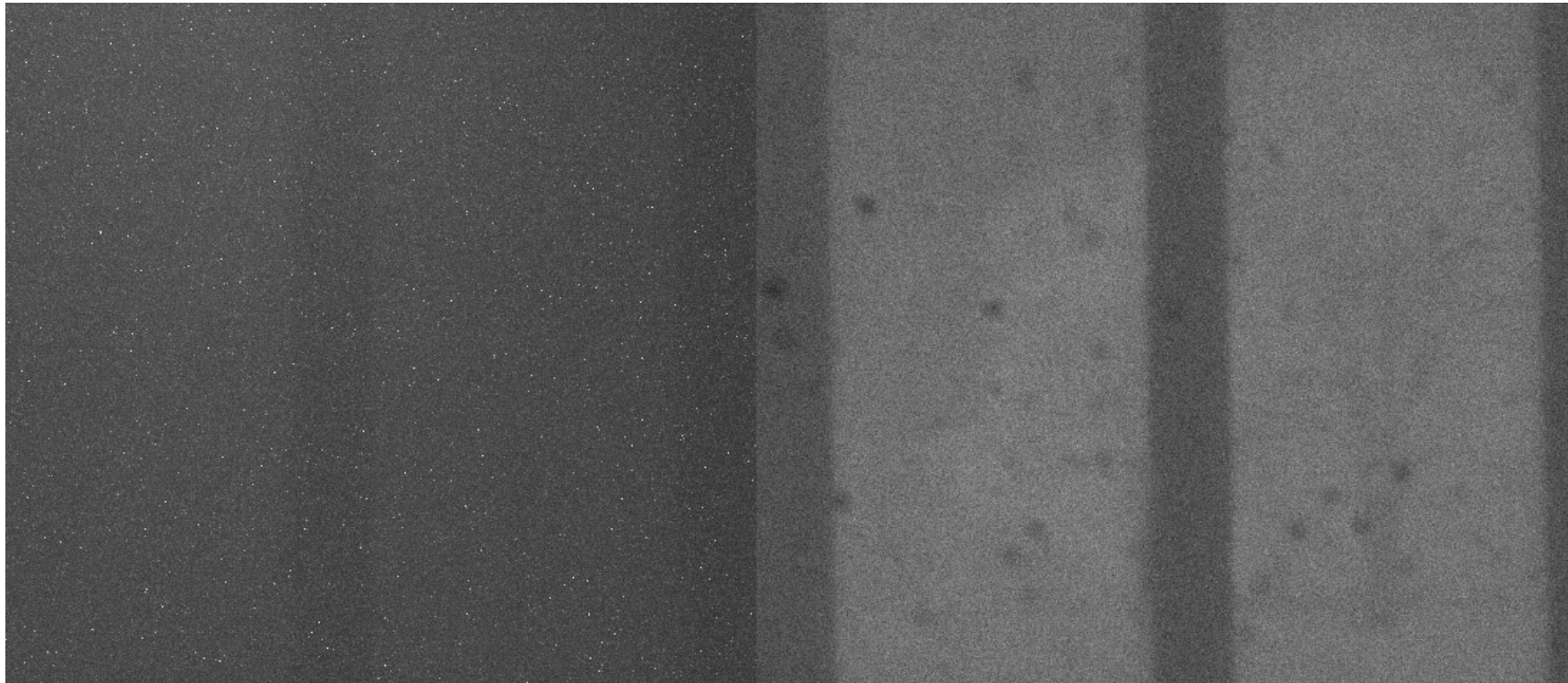


You might be surprised to see the QE curve of this sensor: e2v EV76C660



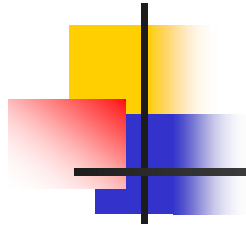
Is QE everything?

But here is a comparison image between them for the same object at night



EV76C660

ASI120MM (MT9M034)



Another Key factor: Read Noise

sensors	IMX174 (ASI174)	MT9M034 (ASI120)	ICX618	ICX274	CMV4000	EV76C660
Read Noise (e-)	6e	6e	11e	8e	16e	20e
Peak QE	78%	74%	70%	59%	53%	82%

QE: the higher, the better

Read Noise: the lower, the better

That's why ASI120 is the best planetary imaging camera so far!

Now ASI174 is coming. Will the ASI174 beat ASI120?



Will ASI174 beat ASI120?

Advantages:

- Global Shutter (no image distort)
- Faster Speed (freezing seeing, more data acquire possibility)
- Better Dynamic Range (better contrast with solar and lunar imaging)
- Bigger Size (larger field of view)
- No FPN (no fixed pattern noise exist even stretch the histogram)

Conclusion:

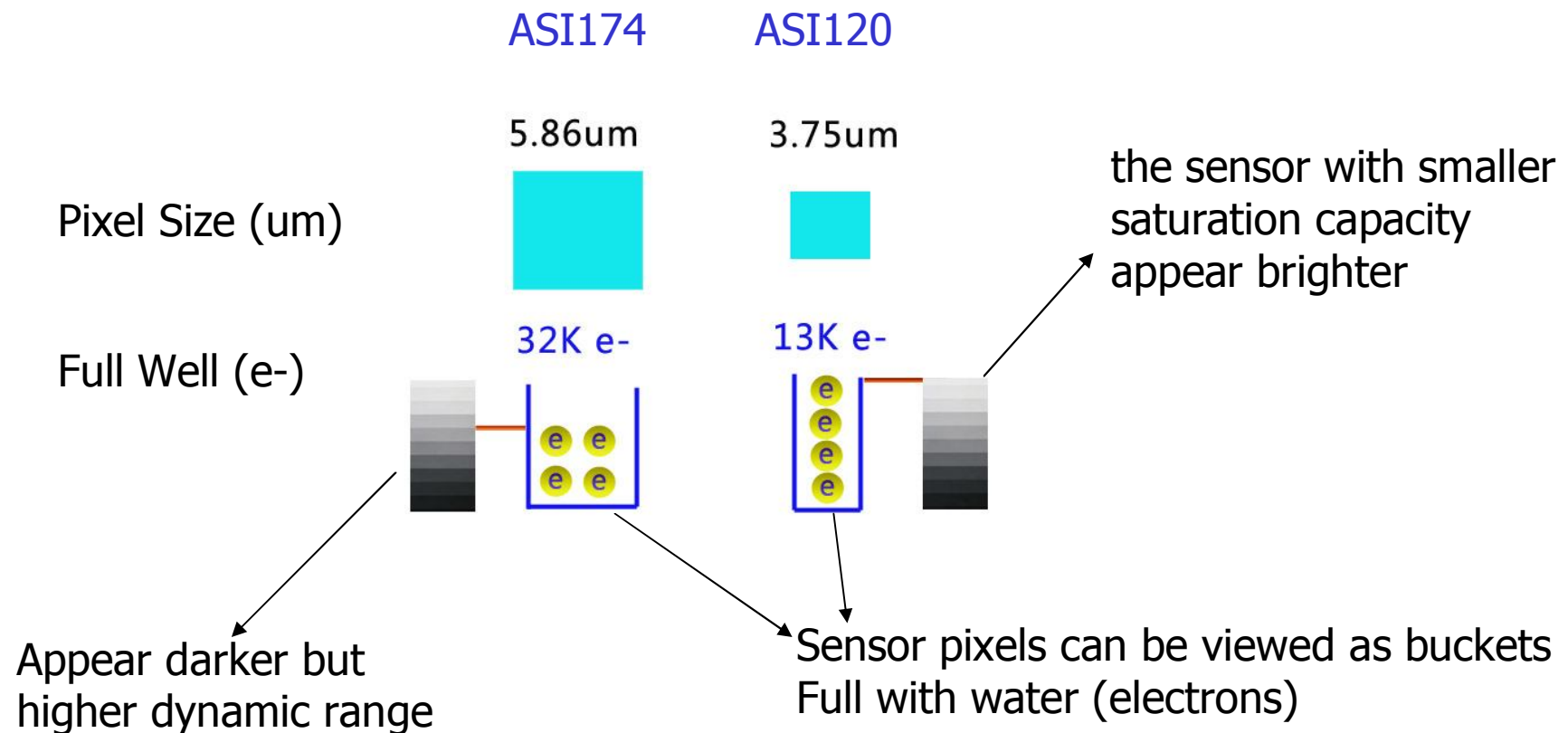
Solar & Lunar: Yes, ASI174 will be the KILLER! (The King of all available sensors)

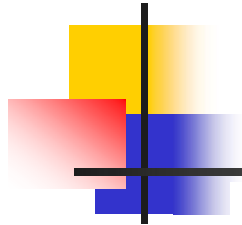
Planet: Yes, Because QE of ASI174 is slightly higher and no FPN completely.



How to measure the sensitivity?

The image from ASI120 looks even brighter than ASI174 under the same condition?





Mechanical Drawing

