

Ceres 462M Camera Manual

V1.0

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Product Features

Player One Astronomy guiding camera series, AKA Dwarf Planet Series, is design for guiding and imaging. This series including 3 sub-series, Ceres, Sedna and Xena.



Technical parameters

Sensor	Sony IMX462 CMOS (Mono)
Diagonal	6.5mm
Total Pixels	2.1 Mega Pixels
Max Resolution	1944×1096
Pixel Size	2.9μm
Chip Size	5.6mm×3.2mm
Frame Rate	136FPS（10bit）
Shutter	Rolling shutter
Exposure Range	32μs-2000s
Readout Noise	2.6e – 0.7e
QE Peak	≈91%
Full Well	12k e
ADC	12 bit
Data Port	USB3.0/USB2.0
Adapter	1.25″ / M28.5X0.6
Back Focal Length	7.5mm
Protective Window	D21*1.1MM High Quality AR Plus (Anti Reflection) Multi-Layer Coating
Diameter	40mm
Weight	65g
Resolution and FPS	Under USB3.0 mode Resolution 10bit ADC 1280×960 65 FPS More resolution options could be setup in capture software!

Product Description

Ceres 462M is a guiding camera developed by Player One Astronomy, which adopts the Sony IMX462 **1/2.8" format** sensor. The **2.9um pixel size** accommodates a well depth of **12ke** with a total of 2.1**MP** (the resolution is 1944*1096)**,** and the diagonal is **6.5mm**.



Features

The naming of Player One guiding cameras is interesting. Guiding camera is smaller than planetary camera, that's why we choose dwarf planets to name it.
The size of each dwarf planet to a certain extent represents the size of camera sensors. We will name Ceres with a 1/3″ sensor camera, and for Xena, we will name it with a 1/1.2-inch sensor camera. All names will be engraved on the housing of the cameras.
Drivers and software download:
https://player-one-astronomy.com/service/software/
Manuals download:
https://player-one-astronomy.com/service/manuals/

Cutting-edge Design

The guiding cameras developed by Player One Astronomy uses technological regular hexagon to construct the main body line.



DPS technology

The guiding cameras from Player One Astronomy have DPS (Dead Pixel Suppression) technology. The DPS is analyses many dark frames to find out those fixed abnormal pixel and record the map in camera memory. In imaging, each exposure frames, those position of dead pixels will be given a median value according to the active pixels around that abnormal pixel.

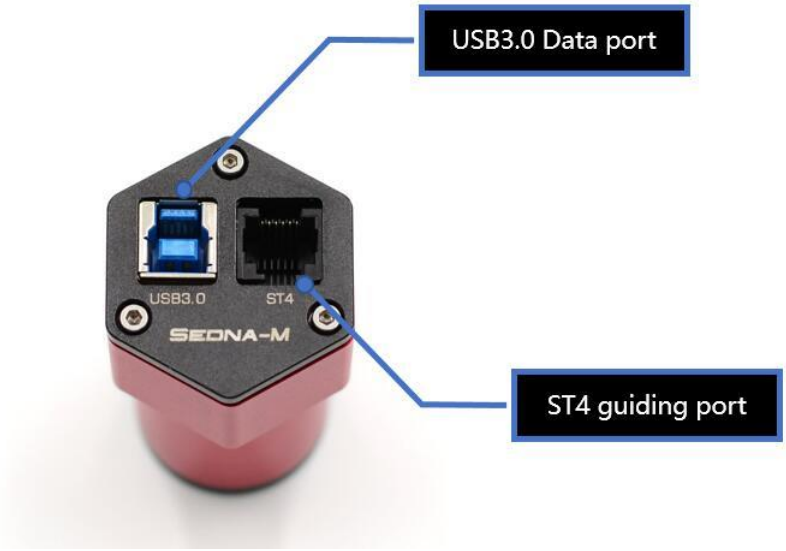


Overvoltage and overcurrent protection mechanism

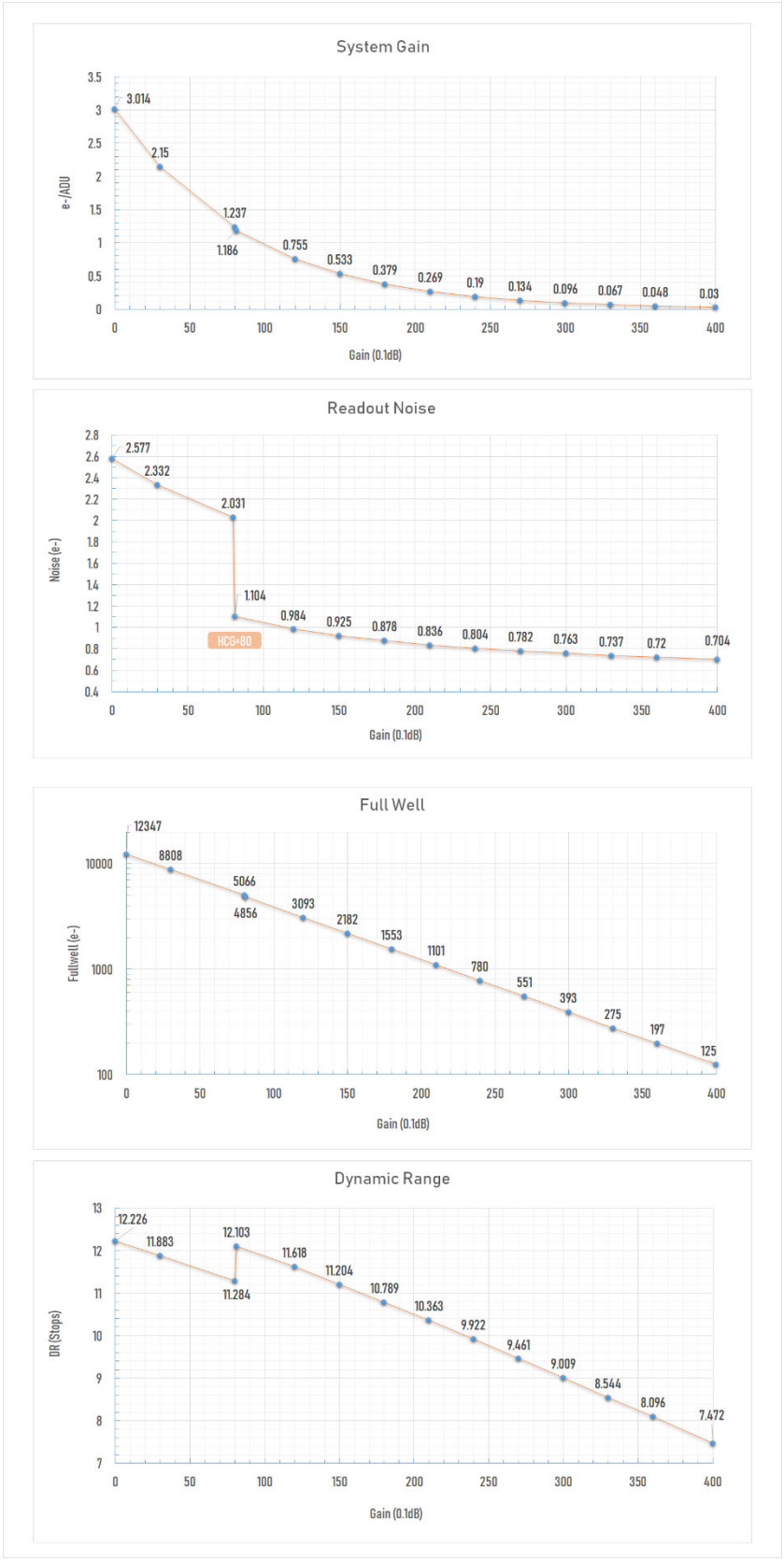
Player One cameras produced by the number one player ensures the safety of your camera and other equipment through overvoltage and overcurrent protection mechanisms.

Data Port

When the camera is connected to the USB3.0 interface and full-resolution preview is used, it can reach **136 FPS** in RAW8 mode (10bit ADC). When recording images, since the actual writing speed will be affected by the writing speed of the hard disk itself, when the hard disk writing speed is slow, the recording may not reach the theoretical speed. It is recommended that you use a high-quality solid state drive to record data to give full play to the performance of the camera.
Use the ST4 guide cable to connect the camera and the AUTO GUIDE port of the equatorial mount to do guiding.



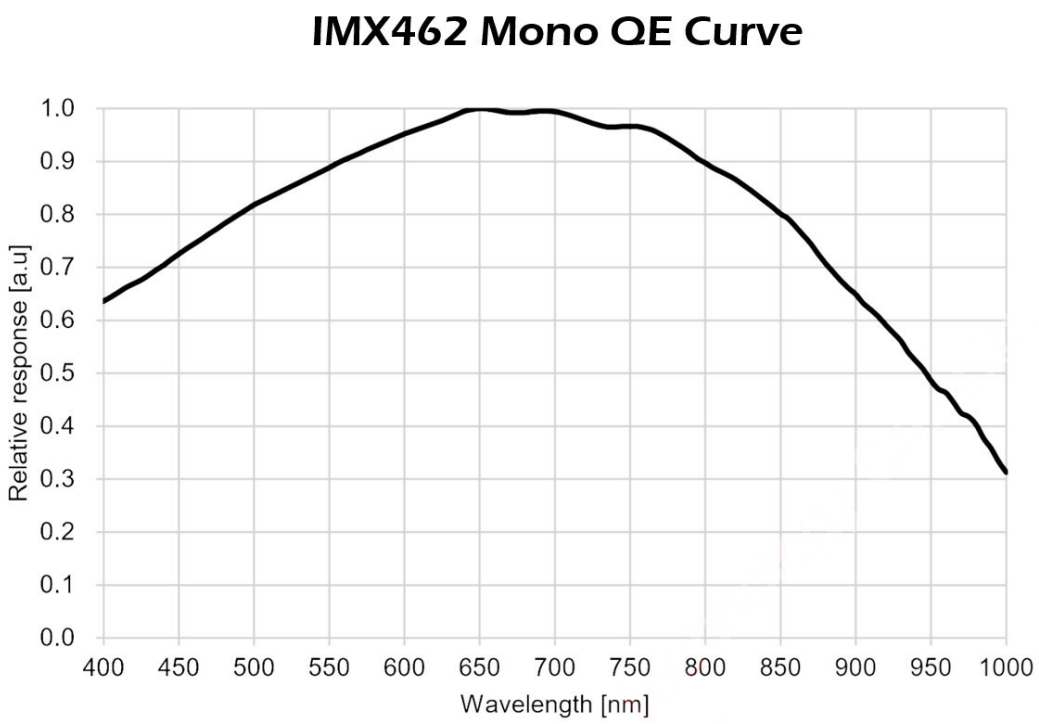
Performance



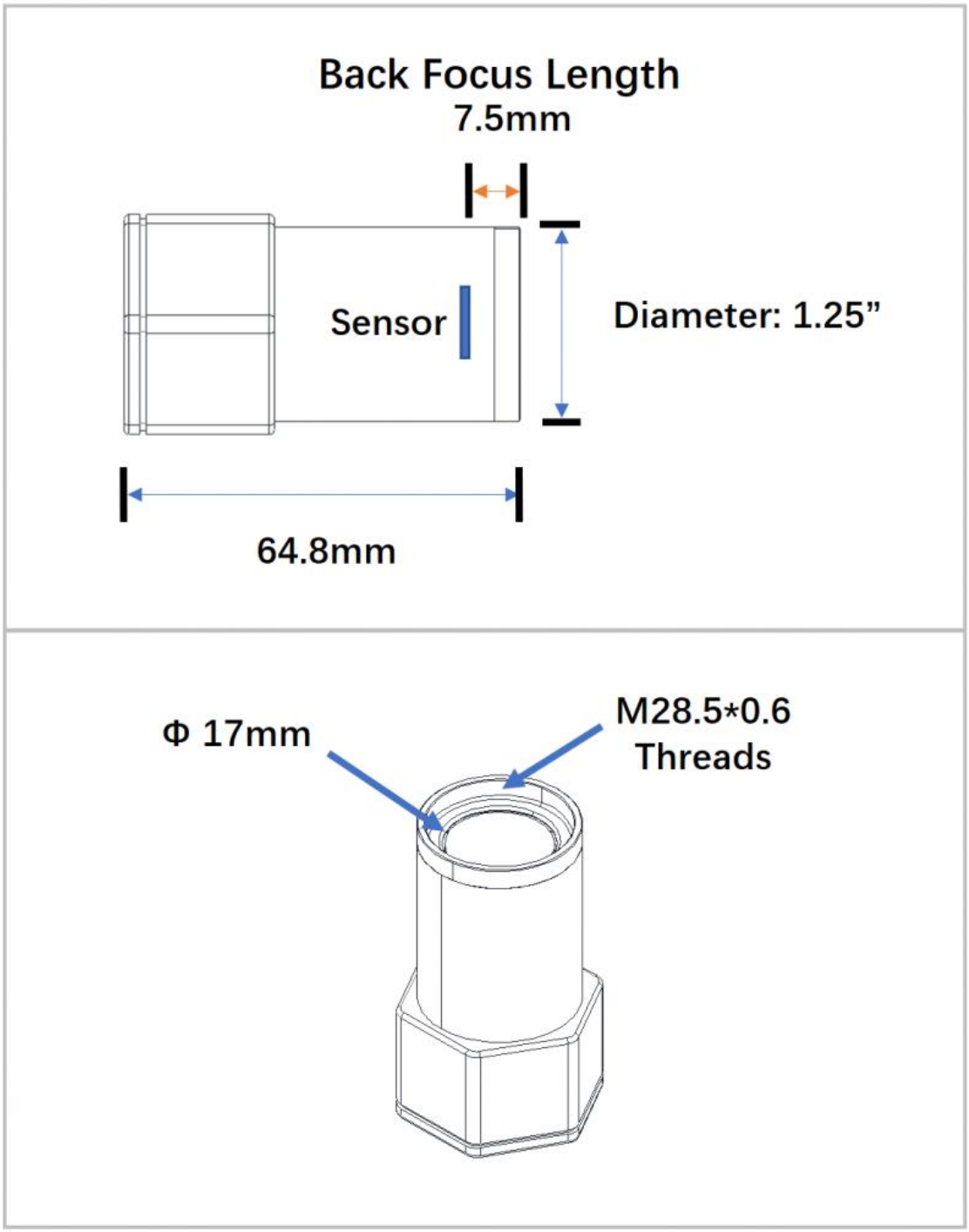
Readout Noise

Regarding readout noise, we solemnly promise that all values are obtained from actual tests. And for users, you could use Sharpcap 4 for testing. SC4 has a function called **Sensor Analysis**, provide a very simple way to test readout noise.
We wrote a tutorial on our website:
https://player-one-astronomy.com/service/manuals/
After many rigorous readout noise tests, the Ceres 462M camera can reach a low readout noise of 1.1e at a gain of 80.
If you are interested in readout noise testing, you may try it yourself, which is very simple.

QE Curve



Mechanical Drawing



Package List



Warranty & Shipping Policy

Payment method

We provide *PayPal* and *PayPal checkout* on our website.

Shipping and Delivery

Shipping Fee:

- Amount >= 299USD: free express shipping
- Amount < 299USD: 29.9USD for express shipping

Shipping Services:

- We usually use DHL, UPS, FedEx, TNT for shipping.
- Make sure your email is correct, we maybe will contact with you through emails in case of emergency.

If customer wants to designate a shipping company or has special requirement, please send an email to *support@player-one-astronomy.com* and tell us your detailed requirement.

Shipping time:

- Usually 7-14 days.
- Tracking number will be updated in 3 days after paid.

For orders from areas where transportation is not easy, such as islands, town in mountainous regions, delivery time will be slightly longer.

Please send an email to *support@player-one-astronomy.com* immediately, if the following occurs:

- Shipping delayed or has some abnormal information.
- The packing is badly damaged on arrival, take pictures and do not sign.

Tax

- The price on our website without tax.
- Please note that buyers are liable to charge tax involved, such as Import tax, VAT, customs handling fee, etc.
- Those fees possibly will be collected at the time of delivery by courier.

For best experiences, we recommend customers to purchase our products form local dealers.

After-sales Service

Warranty Policy

2-year free warranty (time start from delivered) for Player One products. If the product has any issue, please send the image or video and description to support@player-one-astronomy.com for further check to confirm.

- Purchase from Player One official online store, we will provide warranty service directly.
- Purchase form dealer, we will provide warranty service through dealer.

Repair in warranty, customer only pay the shipping fee of shipping back the product to us or dealer, and no other extra fees.

Replacement Policy

You can request our Replacement Service:

√ Within 30 calendar days of receiving the product if the product does not match the original description of the product in one or more significant respects.

√ Within 30 calendar days of receiving the product if the product suffers performance failure.

Please contact our After-Sales team by email to *support@player-one-astronomy.com* within 30 calendar days of receiving the products. Player One shall be responsible for the two-way replacement freight for any products sent in for replacement due to performance faults.

Warranty and Replacement Policy Exceptions:

× Warranty service time or replacement service time expired.

× Legal proof-of-purchase, receipts, or invoices are not provided, or are reasonably believed to have been forged or tampered with.

× A product sent to Player One for replacement does not include all original accessories, attachments and packaging, or contains items damaged by user error.

× A product is found to have no defects after all appropriate tests are conducted by Player One.

× Any fault or damage of the product is caused by unauthorized use or modification of the product, including exposure to moisture, entry of foreign bodies (water, oil, sand, etc.) or improper installation or operation.

× Product labels or serial numbers show signs of tampering or alteration.

× Damage is caused by uncontrollable external factors, including falling down, fires, floods, or lightning strikes, etc.

× Proof of damage during transit issued by the carrier cannot be provided.

× Other circumstances stated in this policy.

In those situations, repair the product might have extra cost, we will estimate cost and email customer to know the information before send product back.