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› ZWO ASI585MC Pro Cooled Color Astronomy Camera User Manual

ZWO ASI585MC-P

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Model: ASI585MC-P

1. INTRODUCTION

The ZWO ASI585MC Pro is an advanced cooled color astronomy camera designed for both deep-sky and planetary imaging. It incorporates the latest STARVIS 2 technology, providing exceptional sensitivity and low noise performance. This manual provides essential information for setting up, operating, and maintaining your ASI585MC Pro camera.



Figure 1.1: Front view of the ZWO ASI585MC Pro Cooled Color Astronomy Camera, showcasing its red cylindrical body and front optical port.

2. PACKAGE CONTENTS

Please verify that all items listed below are included in your package. If any items are missing or damaged, please contact your retailer.

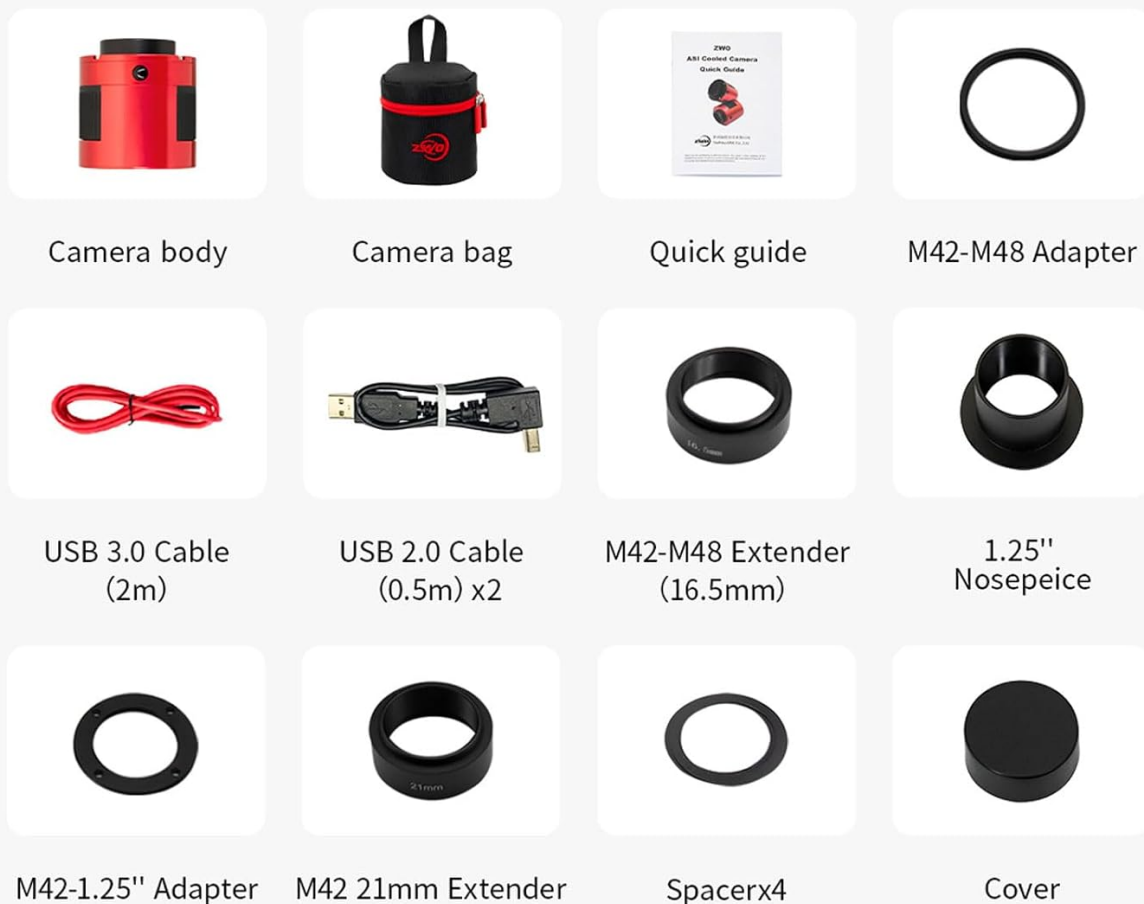


Figure 2.1: Visual representation of all components included in the ASI585MC Pro package, including the camera body, cables, adapters, and quick guide.

- ASI585MC Pro Camera Body
- Camera Bag
- Quick Guide
- M42-M48 Adapter
- USB 3.0 Cable (2m)
- USB 2.0 Cable (0.5m) x2
- M42-M48 Extender (16.5mm)
- 1.25" Nosepiece
- M42-1.25" Adapter
- M42 21mm Extender
- Spacer x4
- Cover

3. SETUP AND CONNECTIVITY

3.1 Physical Connections

The ASI585MC Pro features multiple ports for power and data transfer, as well as a built-in USB 2.0 HUB for connecting accessories.

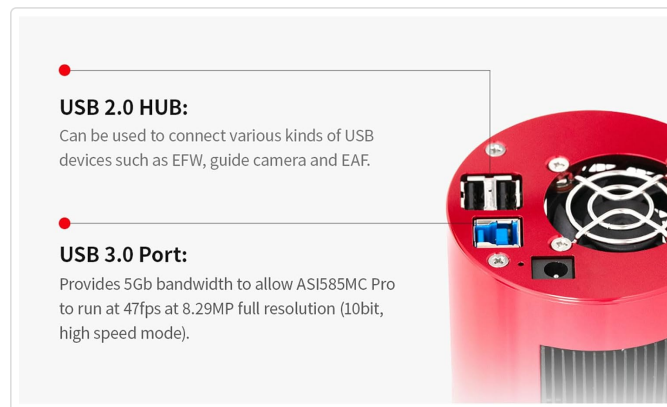


Figure 3.1: Detail of the camera's rear panel showing the USB 2.0 HUB and USB 3.0 input port. The USB 2.0 HUB allows connection of external devices like Electronic Filter Wheels (EFW), guide cameras, and Electronic Auto Focusers (EAF).

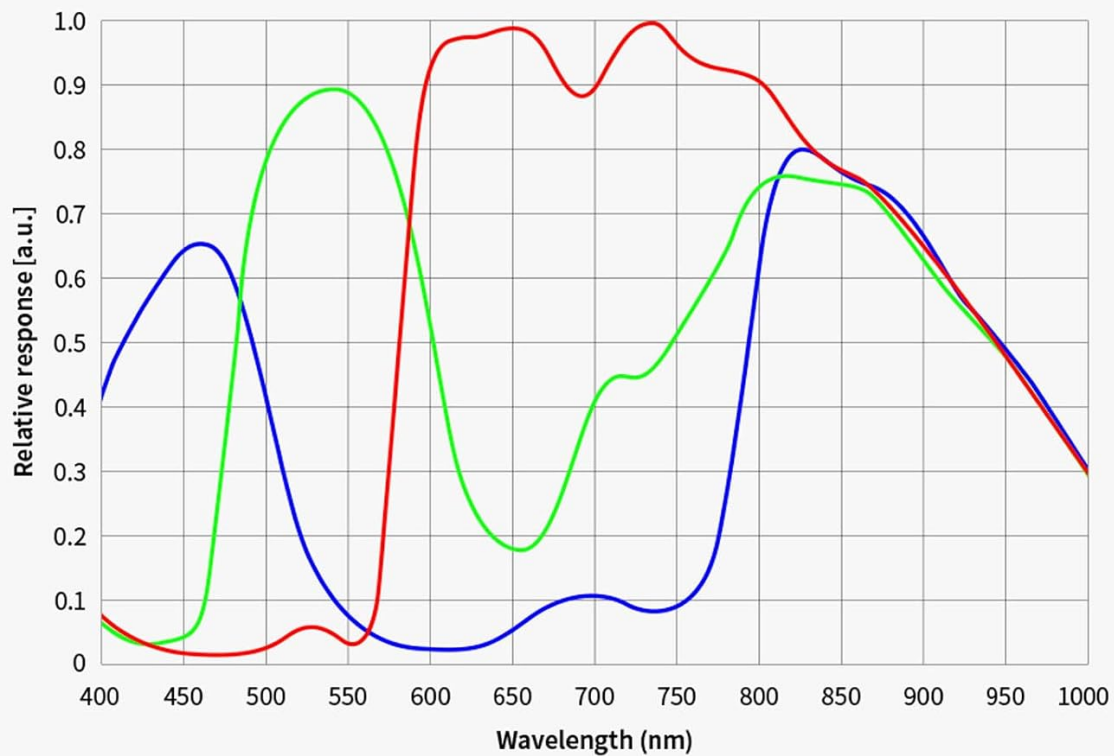


Figure 3.2: Comprehensive diagram showing how to connect the ASI585MC Pro camera. It illustrates connections for the 12V power adapter, USB 2.0/3.0 cable to a computer, and the USB 2.0 OUT ports for accessories like EAF and EFW.

- **USB 3.0 Port:** Connect the provided USB 3.0 cable from this port to a USB 3.0 or USB 2.0 port on your computer. This port provides 5Gb bandwidth, allowing the ASI585MC Pro to run at 47fps at 8.29MP full resolution (10bit, high-speed mode).
- **USB 2.0 HUB:** Use the two USB 2.0 OUT ports to connect various USB devices such as an Electronic Filter Wheel (EFW), guide camera, or Electronic Auto Focuser (EAF).
- **DC 12V Power Input:** Connect a 12V power adapter (not included) to power the camera, especially for cooling functionality.

3.2 Operating System Compatibility

The ASI585MC Pro is compatible with a wide range of operating systems:

- Windows 7/8/10 (32-bit & 64-bit)
- Linux
- Mac

4. OPERATING THE CAMERA

4.1 Key Features and Performance

The ASI585MC Pro integrates several advanced technologies to enhance imaging performance:

- **STARVIS 2 Technology:** Provides advanced imaging performance suitable for both deep-sky and solar/lunar/planetary photography due to its high frame rate.
- **High Full Well Capacity:** With a back-illuminated structure, the camera achieves a full well capacity of 47ke- even with unbinned 2.9µm pixels. This improves light collection efficiency, prevents overexposure in highlight areas, and enhances the signal-to-noise ratio.
- **Zero Amp Glow:** The camera exhibits extremely clean dark frames with zero amp glow, regardless of exposure length or gain value. This feature is implemented at the hardware level.
- **HCG Mode:** A built-in High Conversion Gain (HCG) mode automatically activates when the gain reaches 252. This reduces read noise at high gain while maintaining a high dynamic range, with read noise as low as 0.9e.
- **High Quantum Efficiency (QE):** The ASI585MC Pro boasts a peak QE value of 91%.

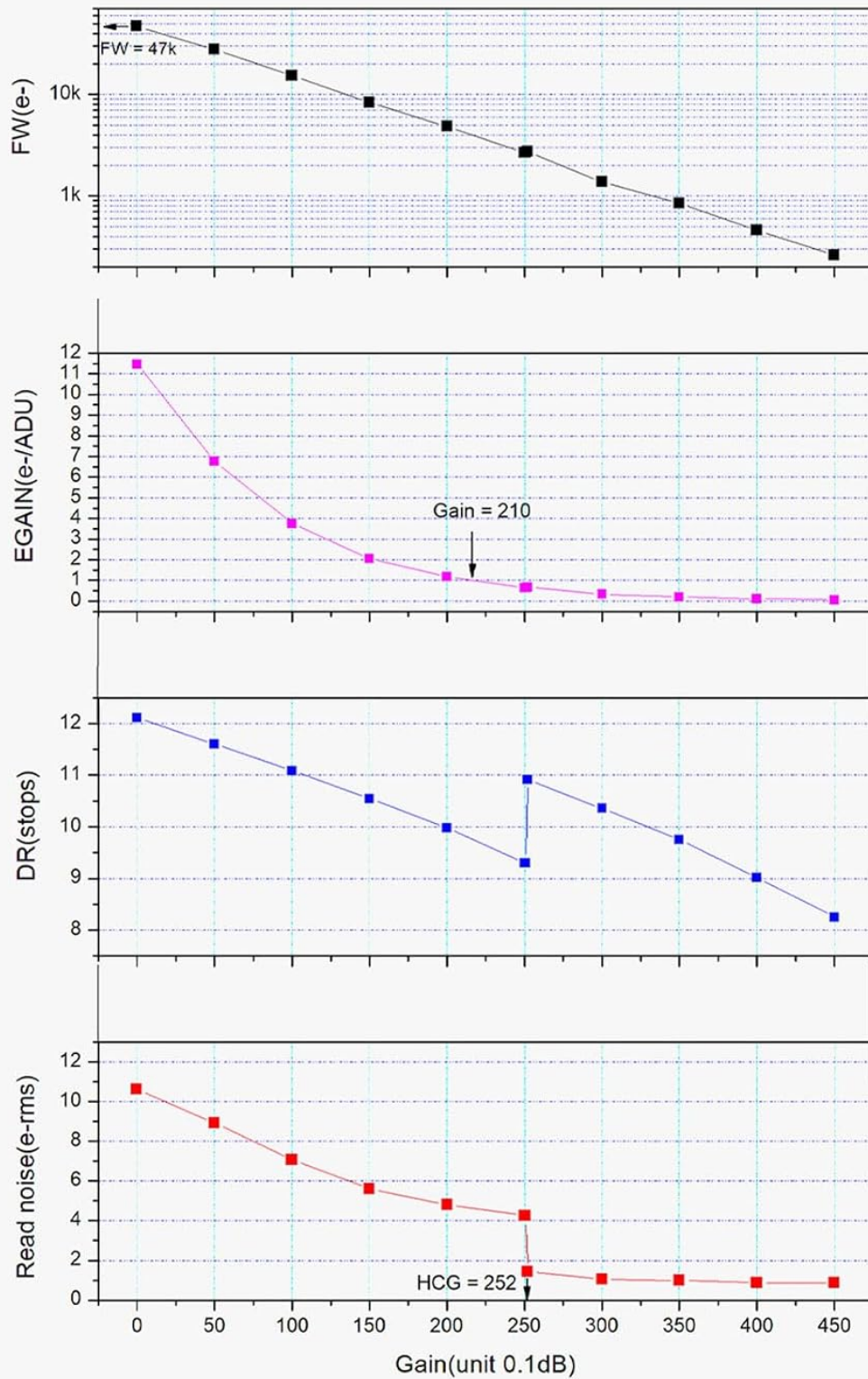


Figure 4.1: Performance graphs illustrating the relationship between gain and Full Well capacity, EGAIN, Dynamic Range (DR), and Read Noise for the ASI585MC Pro camera.

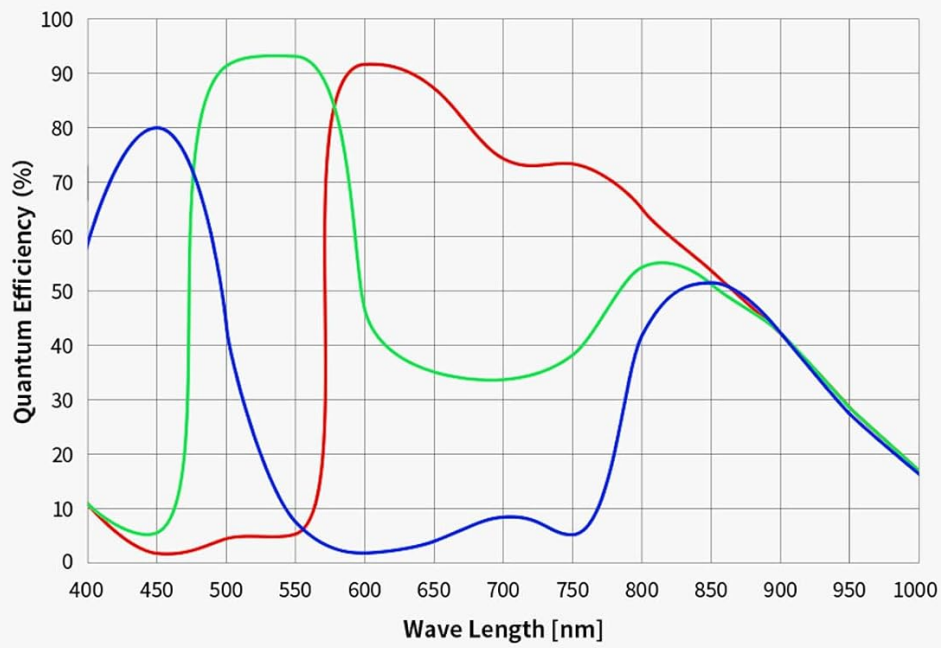


Figure 4.2: Quantum Efficiency (QE) curve of the ASI585MC Pro, showing its response across different wavelengths, with a peak QE of 91%.

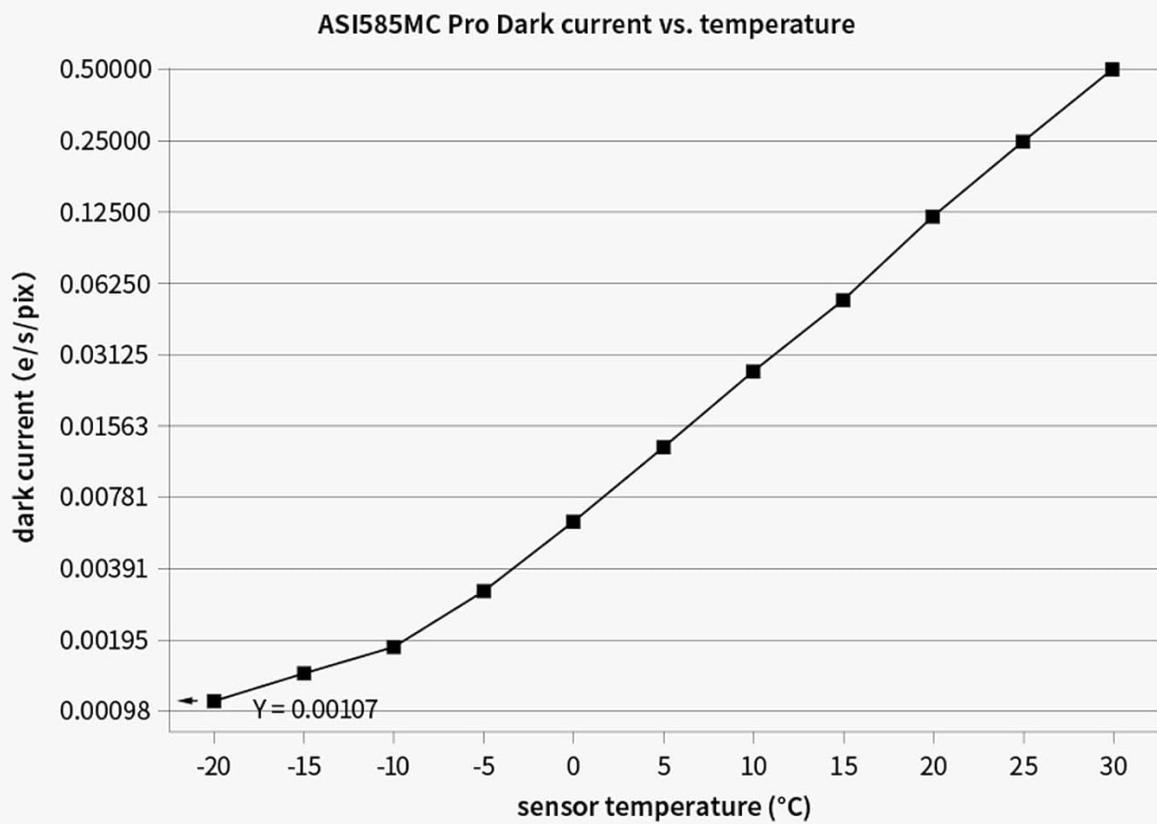


Figure 4.3: Relative spectral response curve of the ASI585MC Pro, indicating its sensitivity to different colors of light.

4.2 Cooling System (TEC)

The two-stage TEC cooling system can lower the CMOS sensor temperature to more than 35°C below ambient

temperature. This significantly reduces dark current generation and sensor noise, especially during extended exposures.



Figure 4.4: Dark current curve of the ASI585MC Pro, illustrating the reduction in dark current as the sensor temperature decreases from -20°C to 30°C.

5. SPECIFICATIONS

Detailed technical specifications for the ZWO ASI585MC Pro camera:

Feature	Specification
Sensor	1/1.2" CMOS --IMX585AAQJ1-C
Resolution	8.29 Mega Pixel, 3840x2160
Pixel Size	2.9µm
Bayer Pattern	R Gr Gb B
QE Peak	91%
Full Well Capacity	40Ke- (47ke- with unbinned 2.9µm pixels)
Max FPS (Full Resolution)	46.9fps (10bit, high-speed mode)

Feature	Specification
Shutter Type	Rolling shutter
Exposure Range	32μs ~ 2000s
ADC	12bit
Interface	USB 3.0 / USB 2.0 Type-B
Protect Window	φ32-2 AR
Dimension (Sensor)	11.136mm x 6.264mm
Net Weight	126g
Working Temperature	-5°C ~ 50°C
Storage Temperature	-10°C ~ 60°C
Working Relative Humidity	0-80%
Back Focus Length	6.5mm/17.5mm
Product Dimensions	25.4 x 20.32 x 17.78 cm
Item Weight	1 Kilogram
UPC	741421784147

5.1 Dimensional Drawing

Refer to the diagram below for the physical dimensions of the camera.

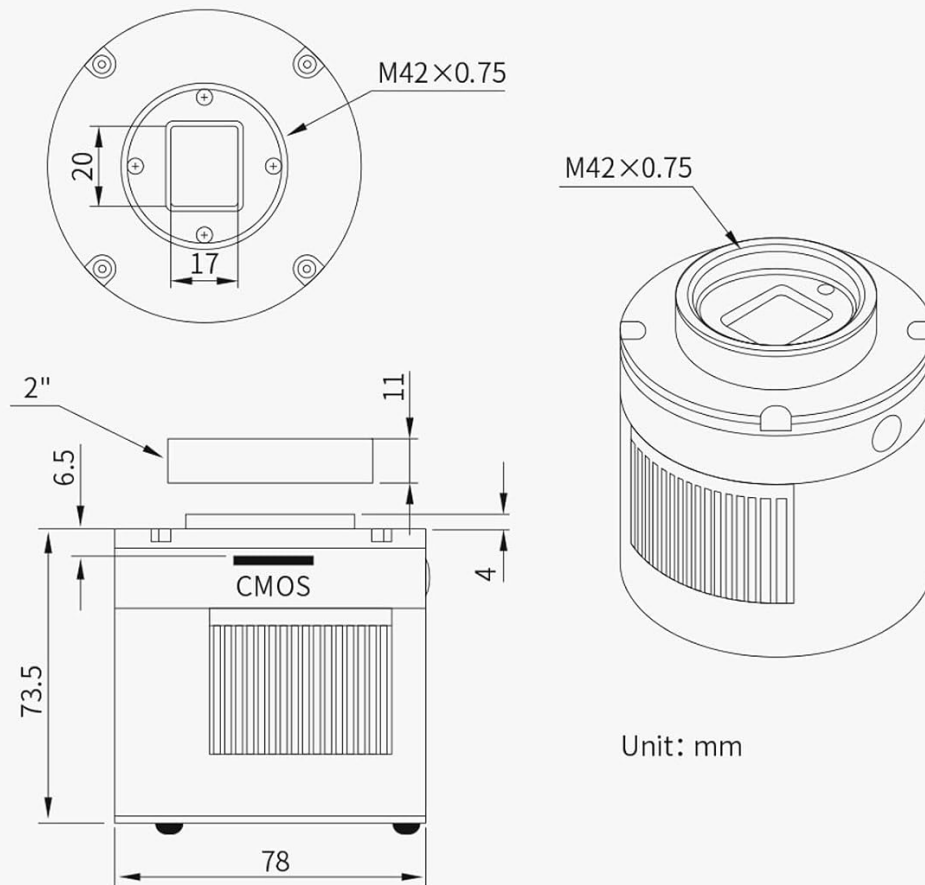


Figure 5.1: Technical drawing showing the dimensions of the ASI585MC Pro camera in millimeters, including the sensor position and various thread sizes.

6. MAINTENANCE

Proper maintenance ensures the longevity and optimal performance of your ASI585MC Pro camera.

- **Cleaning the Sensor Window:** The camera features a protective window. If dust or smudges appear, use a specialized optical cleaning kit designed for camera sensors. Avoid touching the window directly with bare hands.
- **Storage:** When not in use, store the camera in its protective bag or a dry, dust-free environment. Avoid extreme temperatures and humidity.
- **Cable Management:** Ensure cables are not kinked or strained, which can lead to damage over time.
- **Software Updates:** Regularly check the ZWO official website for the latest drivers and software updates to ensure compatibility and optimal performance.

7. TROUBLESHOOTING

This section addresses common issues you might encounter with your ASI585MC Pro camera.

- **Camera Not Detected:**

- Ensure the USB 3.0 cable is securely connected to both the camera and your computer.
- Try a different USB port on your computer.
- Verify that the necessary drivers are installed. Download the latest drivers from the ZWO website.
- Restart your computer.

- **Cooling Not Working:**

- Ensure the 12V power adapter is correctly connected to the camera. The TEC cooling requires external power.
- Check the power supply for proper voltage and current output.
- Verify cooling settings within your imaging software.

- **Image Noise/Artifacts:**

- Ensure the camera is adequately cooled to reduce thermal noise.
- Check for light leaks in your imaging train.
- Verify gain settings; excessively high gain can introduce noise.
- Perform dark frame calibration during post-processing.

- **Software Crashes/Freezes:**

- Ensure your imaging software is up to date and compatible with the ASI585MC Pro.
- Check for conflicting software or background processes.
- Ensure your computer meets the minimum system requirements for both the camera and imaging software.

8. WARRANTY AND SUPPORT

For warranty information, please refer to the documentation provided by your retailer or visit the official ZWO website. Warranty terms and conditions may vary by region and seller.

If you encounter issues that cannot be resolved using this manual or require technical assistance, please contact your authorized ZWO dealer or ZWO customer support directly. Contact information can typically be found on the ZWO official website.