Arducam 20MP IMX283 USB 3.0 Camera

Arducam USB 3.0 Camera 20MP IMX283 User Manual

Model: 20MP IMX283 USB 3.0 Camera

1. Introduction

This manual provides detailed instructions for the setup, operation, maintenance, and troubleshooting of your Arducam USB 3.0 Camera. Please read this manual thoroughly before using the product to ensure optimal performance and longevity.

2. Product Overview

2.1. What's in the Box

- 1 x IMX283 USB3.0 Camera Module with Metal Case
- 1 x 1m USB A to Type-C Cable

2.2. Key Features

- **Superior Imaging:** Utilizes a 1-inch IMX283 CMOS sensor, achieving a maximum still resolution of 5472x3648 pixels.
- **Flexible Frame Rates:** Supports programmable frame rates, reaching up to 120fps at 720p resolution.
- **Advanced Image Processing:** Features proprietary on-board ISP for image enhancement, including de-Bayer, gamma correction, BLC, AE, AWB, CCM, and RGB2YUV conversion.
- **Telephoto Precision:** Equipped with a 16mm C-mount lens, offering a 60° diagonal field of view (DFOV).
- **Plug and Play Design:** Encased in a durable metal housing, designed for easy plug-and-play operation.
- **Operating System Compatibility:** Compatible with Windows and Linux operating systems.

2.3. Product Components

Figure 1: Arducam 20MP USB 3.0 Camera with 16mm C-Mount Lens. This image displays the camera module with its attached C-mount lens, highlighting its compact metal case design.

Figure 2: Arducam 20MP USB 3.0 Camera and included 1-meter USB A to Type-C cable. This image shows the camera module alongside the necessary USB cable for connection.

Figure 3: Close-up view of the 16mm C-Mount lens. The lens features focus and aperture rings, indicating its adjustable nature for precise imaging.

Figure 4: Detail of the USB Type-C port on the Arducam camera module. This port facilitates high-speed data transfer via USB 3.0.

Figure 5: Illustration of the Arducam camera's compatibility with Windows and Linux operating systems, shown with the camera mounted on a tripod.

Figure 6: Overview of the Arducam 20MP IMX283 USB 3.0 Camera with 16mm C-Mount Lens, highlighting key features and design.

3. Setup Instructions

3.1. Attaching the Lens

1. Carefully remove the protective cap from the camera module's C-mount interface.
2. Align the 16mm C-mount lens with the camera module's C-mount thread.
3. Gently screw the lens onto the camera module until it is securely fastened. Avoid overtightening.
4. Remove the front lens cap.

3.2. Connecting to a Computer

1. Connect the USB Type-C end of the provided cable to the camera module's USB 3.0 port.
2. Connect the USB-A end of the cable to an available USB 3.0 port on your computer. For optimal performance, ensure you use a USB 3.0 port (typically blue).
3. The camera is UVC (USB Video Class) compliant and should be recognized automatically by most operating systems without requiring specific driver installation.

4. Operating Instructions

4.1. Basic Operation (Windows)

1. After connecting the camera, open a compatible camera application (e.g., Windows Camera app, OBS Studio, AmCap, or Arducam's own software if available).
2. Select the Arducam USB 3.0 Camera as your video input device.
3. Adjust resolution, frame rate, and other image settings (exposure, white balance, gain) within the application's settings. The camera supports up to 5472x3648 resolution and 120fps at 720p.

4.2. Basic Operation (Linux)

The camera is designed to be UVC compliant for Linux. You can use standard Linux camera applications like Cheese, VLC, or OBS Studio.

1. Connect the camera to your Linux system.
2. Open your preferred camera application and select the Arducam camera as the input source.
3. Configure video settings as needed.

Note: Some users have reported intermittent issues with the camera not re-initializing correctly on Linux after closing an application. If this occurs, try unplugging and re-plugging the camera, or restarting your system. Ensure your Linux distribution and kernel are up-to-date for best compatibility.

4.3. Lens Adjustment

- **Focus:** Rotate the focus ring on the lens to achieve sharp imagery at your desired distance.
- **Aperture:** Adjust the aperture ring to control the amount of light entering the lens and the depth of field. A smaller aperture number (e.g., f/1.4) means a wider opening and shallower depth of field, while a larger number (e.g., f/16) means a narrower opening and greater depth of field.

5. Maintenance

5.1. Cleaning the Lens and Sensor

- Use a soft, lint-free microfiber cloth specifically designed for optical surfaces to clean the lens.
- For stubborn smudges, use a small amount of lens cleaning solution applied to the cloth, not directly to the lens.
- Avoid touching the sensor directly. If dust is visible on the sensor, use an air blower to gently remove it. Do not use compressed air from a can, as it can leave residue.
- *Important: Some units may have dust or fingerprints between the sensor and its protective window from manufacturing. If this significantly impacts image quality, contact Arducam support.*

5.2. General Care and Storage

- Store the camera in a dry, dust-free environment when not in use.
- Protect the lens with its cap when stored or transported.
- Avoid exposing the camera to extreme temperatures or humidity.
- Handle the camera by its metal case, avoiding direct pressure on the lens or sensor area.

6. Troubleshooting

Problem: Camera not detected or showing a black screen.
Solution:

- Ensure the USB cable is securely connected to both the camera and a USB 3.0 port on your computer.
- Try a different USB port or cable.
- Restart your computer.
- On Linux, if the camera stops working after closing an application, try unplugging and re-plugging the camera, or restarting your system.
- Verify that the camera is selected as the input device in your application.

Problem: Image quality is poor or blurry.
Solution:

- Adjust the focus ring on the 16mm C-mount lens until the image is sharp.
- Ensure the lens and sensor are clean (refer to Section 5.1).
- Check lighting conditions; insufficient light can lead to noisy or blurry images.
- Verify that the correct resolution and frame rate settings are applied in your camera application.

Problem: Dust or spots visible in the image.

Solution:

- Clean the front element of the lens.
- Use an air blower to gently clear any dust from the sensor surface.
- If the dust appears to be internal (between the sensor and its protective window), contact Arducam support for assistance.

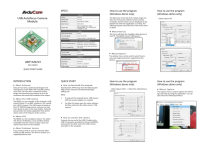
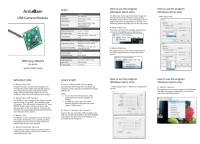
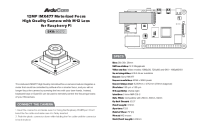
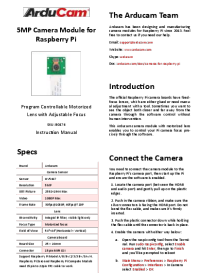
7. Specifications

Feature	Detail
Sensor	1-inch IMX283 CMOS
Max Still Resolution	5472x3648 (20MP)
Video Capture Resolution	Up to 720p
Max Frame Rate	120fps at 720p
Lens Type	16mm C-Mount Lens
Diagonal Field of View (DFOV)	60°
Interface	USB 3.0 (Type-C connector on camera)
Operating System Compatibility	Windows, Linux
Housing	Metal Case
Item Weight	4.8 ounces
Package Dimensions	3 x 2.7 x 2.7 inches

8. Support and Warranty

For technical support, product inquiries, or warranty information, please visit the official Arducam website or contact their customer service directly. Specific warranty terms may vary by region and purchase location.
You can find more information and support resources on theArducam Store on Amazon.

Related Documents - 20MP IMX283 USB 3.0 Camera

	[Arducam B0292 8MP USB Autofocus Camera Module Quick Start Guide] Quick start guide for the Arducam B0292, an 8MP USB autofocus camera module with IMX219 sensor. Includes specifications, setup instructions, and software usage details for Windows.
	[Arducam 8MP Sony IMX219 USB Camera Module Quick Start Guide] Quick start guide for the Arducam USB Camera Module featuring the 8MP Sony IMX219 sensor. Includes specifications, connection instructions, and software usage details for Windows.
	[Arducam IMX477 HQ Camera Module B0249 Datasheet] Technical datasheet for the Arducam IMX477 High Quality Camera Module (B0249), detailing specifications, package contents, pin definitions, and dimensions for integration with platforms like Jetson Nano.
	[Arducam 12MP IMX477 Motorized Focus Camera for Raspberry Pi - B0272] High-quality 12MP Arducam camera module with Sony IMX477 sensor and motorized focus for Raspberry Pi. Features M12 lens mount, detailed specifications, connection instructions, and software setup for remote focus control.
	[Arducam 5MP Camera Module for Raspberry Pi with Motorized Focus] Instruction manual for the Arducam 5MP camera module (SKU: B0176) featuring a program controllable motorized lens with adjustable focus for Raspberry Pi. Includes specifications, connection guide, software setup, and troubleshooting.
	[ArduCam 16MP Autofocus USB Camera Module (IMX298, B0290) Quick Start Guide] ArduCam's Quick Start Guide for the 16MP Autofocus USB Camera Module (Model B0290) featuring the IMX298 sensor. Learn about its specifications, setup, and usage with Windows.