Arducam B0549

Arducam GMSL2 8MP IMX219 Raspberry Pi Camera Extension Kit User Manual

Model: B0549

1. INTRODUCTION

This manual provides detailed instructions for the setup, operation, and maintenance of your Arducam GMSL2 8MP IMX219 Raspberry Pi Camera Extension Kit. This kit enables long-distance camera connectivity for Raspberry Pi systems, leveraging GMSL2 technology for stable and high-quality video transmission.
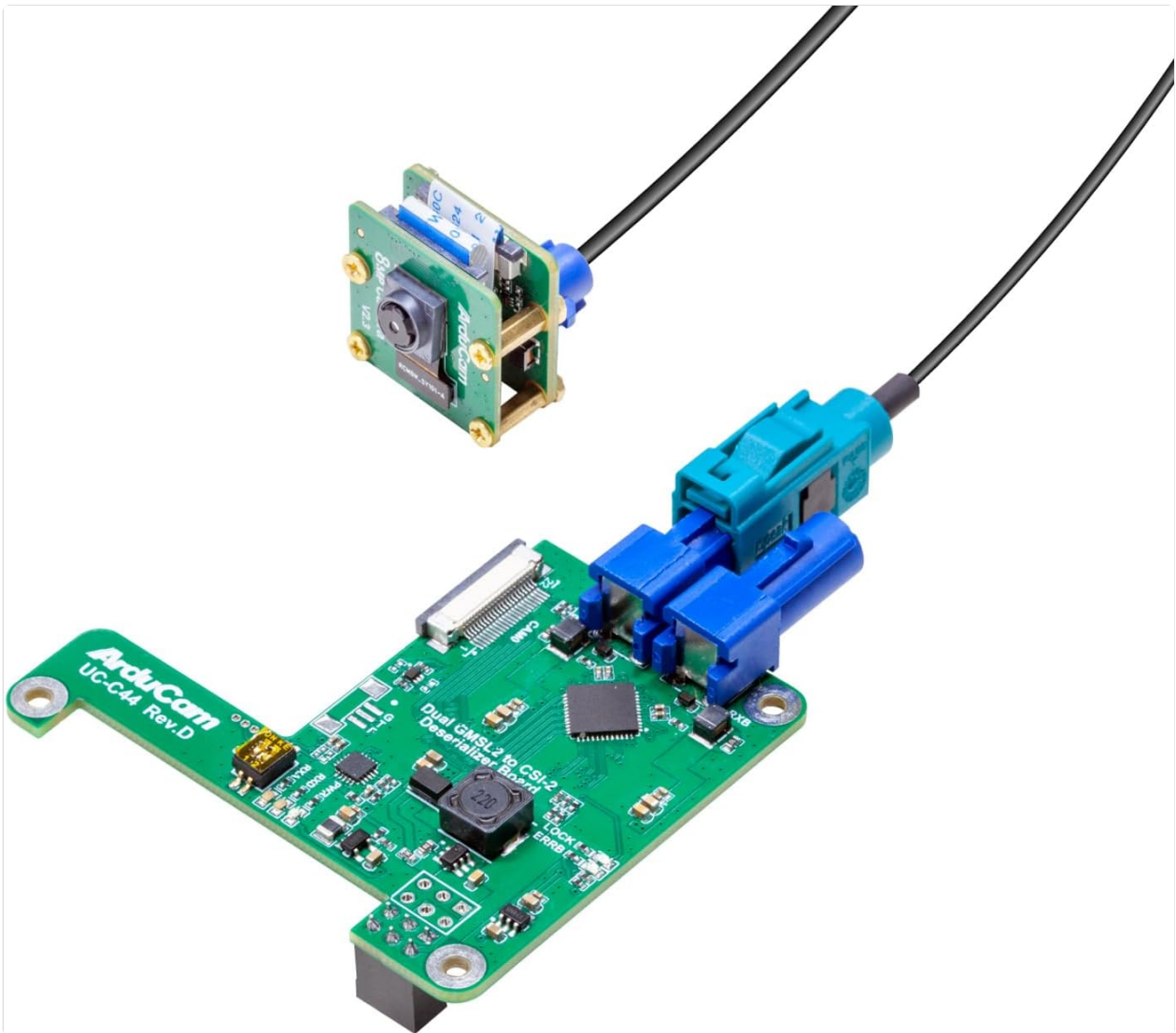
Image 1.1: Arducam GMSL2 8MP IMX219 Raspberry Pi Camera Extension Kit, showing the camera module connected via a coaxial cable to the deserializer board.

2. SAFETY INFORMATION

- Ensure all connections are secure before powering on the Raspberry Pi.
- Avoid exposing the camera module or boards to extreme temperatures, moisture, or static electricity.
- Handle components with care to prevent damage to delicate connectors and circuits.
- Do not attempt to modify the hardware beyond the intended assembly.

3. PACKAGE CONTENTS

Verify that all items listed below are present in your package:

- 1 x Arducam GMSL2 Rx board (Deserializer board)
- 1 x Arducam GMSL2 camera Tx board (Serializer board)
- 1 x 1m Fakra Z Female to Female RF Coaxial Cable
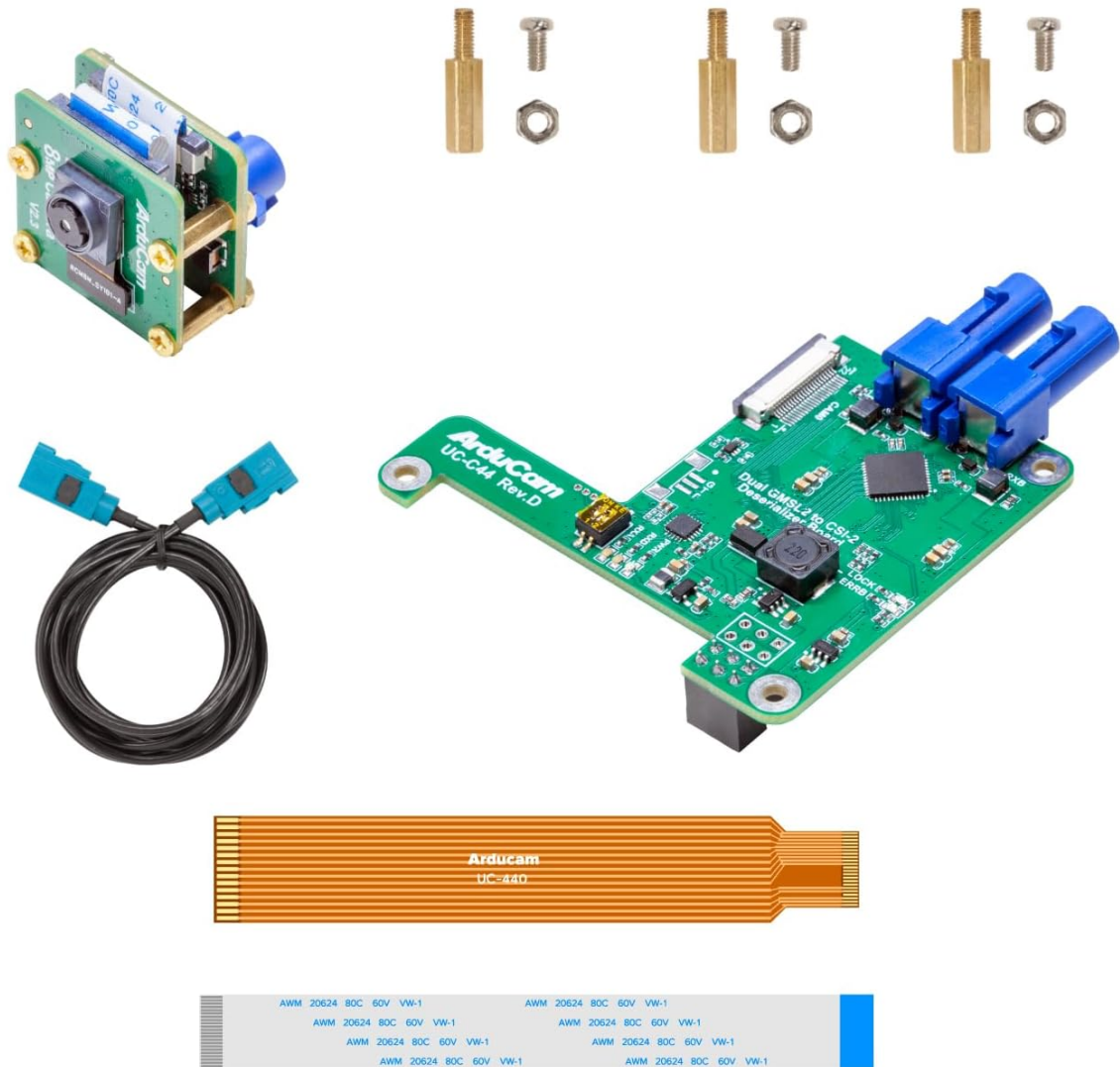- 1 x Arducam IMX219 Camera Module (8MP)
- 1 x 40mm 22-22pin FPC Cable

Image 3.1: All components included in the Arducam GMSL2 8MP IMX219 Raspberry Pi Camera Extension Kit.

4. SETUP INSTRUCTIONS

Follow these steps to assemble and connect your camera extension kit to a Raspberry Pi.

4.1 Hardware Assembly

1. **Attach IMX219 Camera Module to Tx Board:** Carefully connect the 8MP IMX219 camera module to the Arducam GMSL2 camera Tx (Serializer) board. Ensure the ribbon cable is inserted correctly and the latch is secured.

2. **Connect Fakra Coaxial Cable:** Connect one end of the 1m Fakra Z coaxial cable to the Tx board and the other end to the Rx (Deserializer) board. Ensure the connectors click into place securely.

3. **Mount Rx Board to Raspberry Pi:** Attach the Arducam GMSL2 Rx board to your Raspberry Pi (compatible with Pi 4B and Pi 5). Use the provided stand-offs and screws to secure the board to the Raspberry Pi's mounting holes.

4. **Connect FPC Cable:** Connect the 40mm 22-22pin FPC cable from the Rx board to the CSI-2 camera port on your Raspberry Pi. Note that the white cable is typically for Pi 5 and the bronze/orange cable for Pi 4. Ensure the cable is inserted with the contacts facing the correct direction and the connector latch is
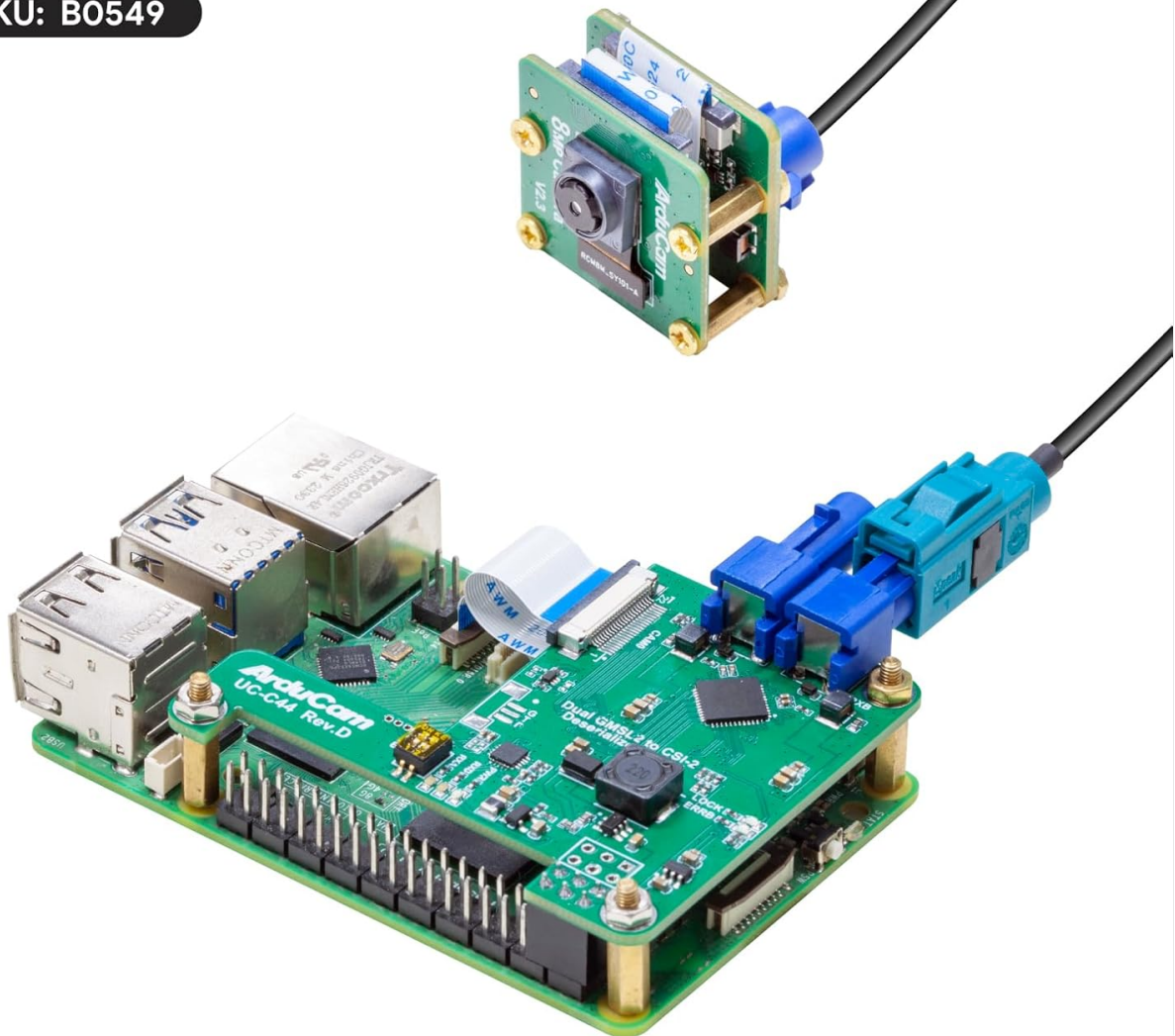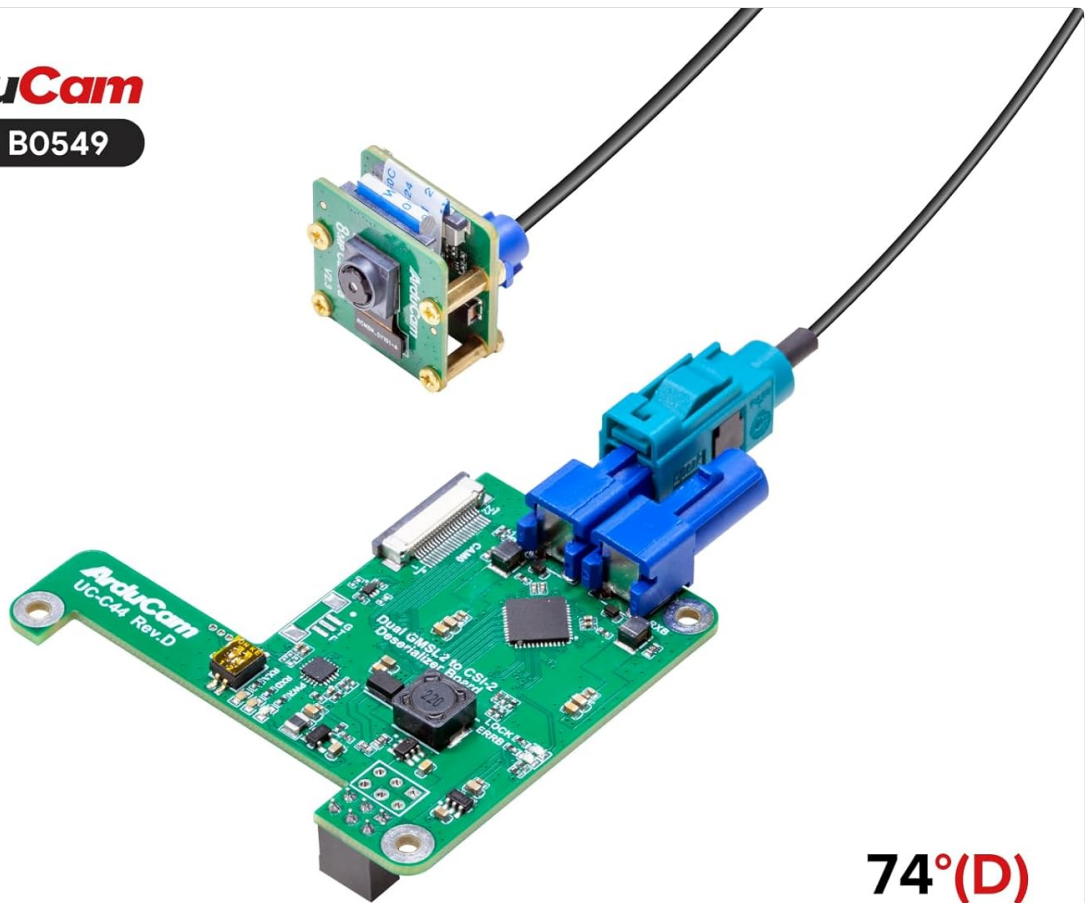
closed.

Image 4.1: The Arducam GMSL2 Rx board securely mounted onto a Raspberry Pi, with the FPC cable connected.

Image 4.2: Complete assembly of the Arducam GMSL2 camera extension kit with the camera module, coaxial cable, and Rx board connected to a Raspberry Pi.
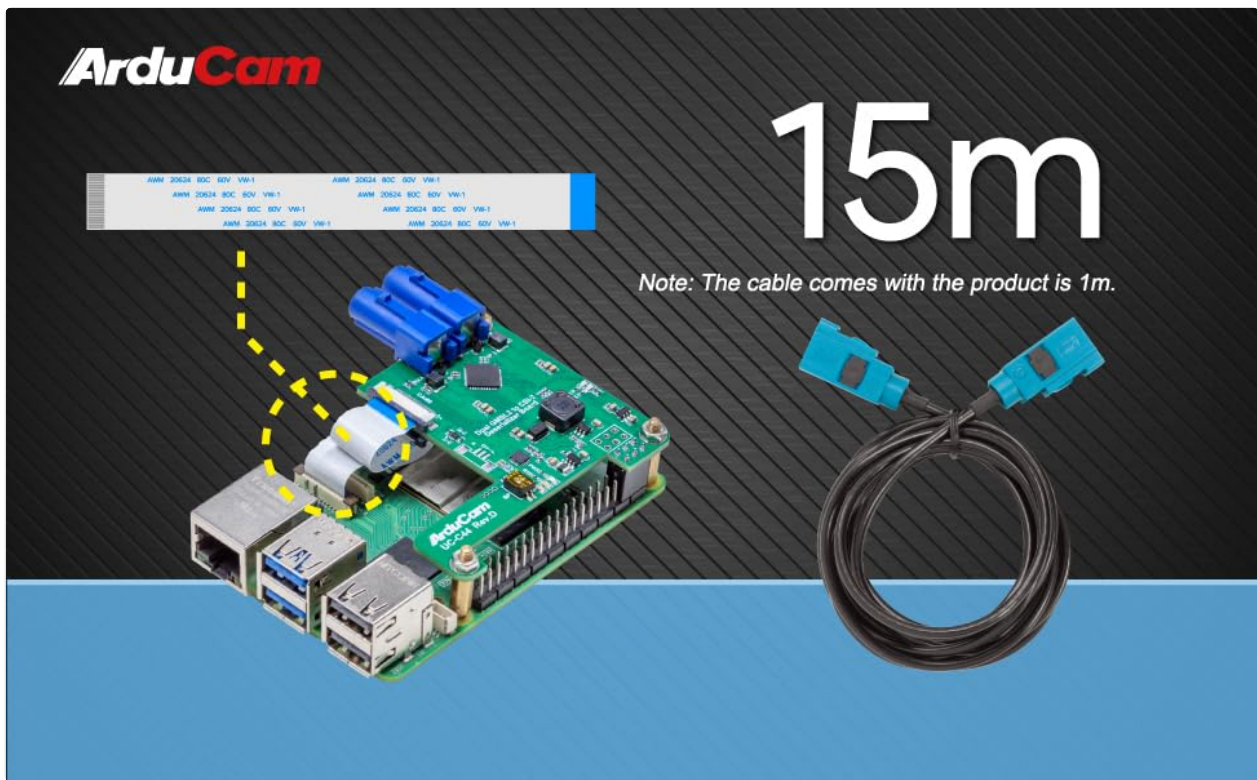
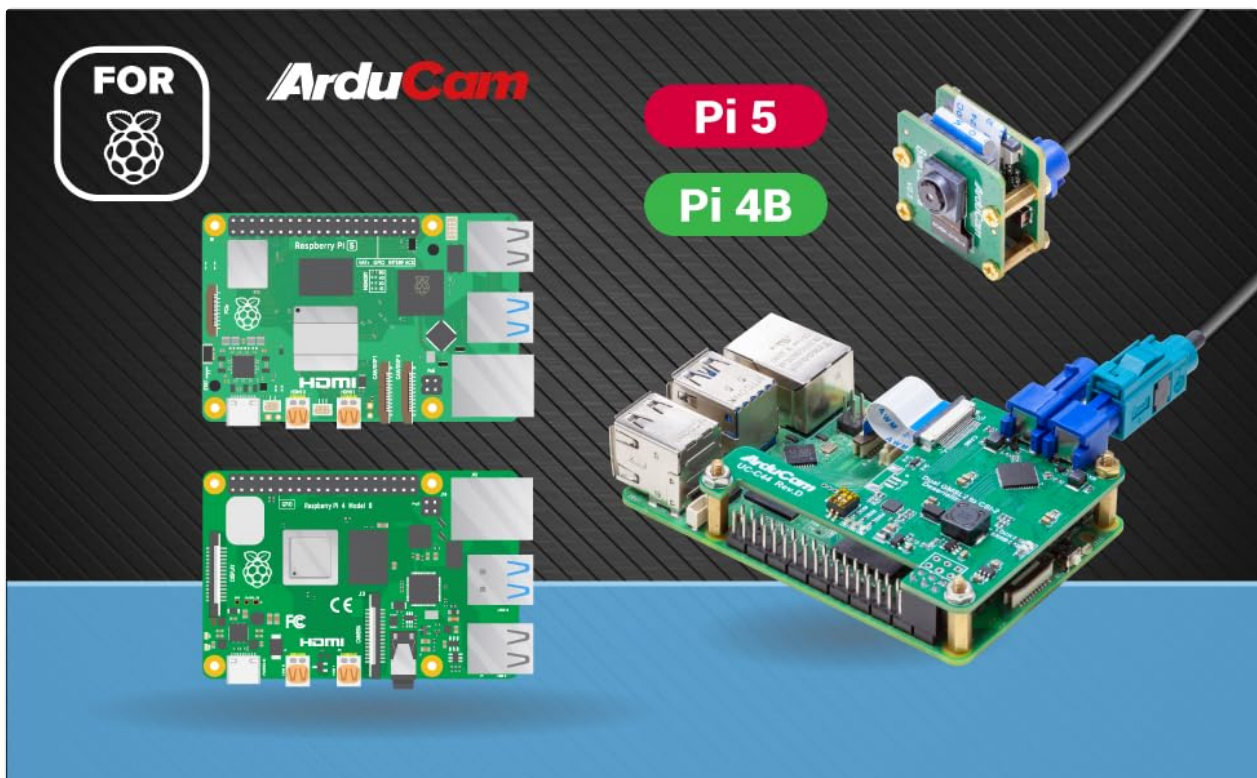*Image 4.3: Visual representation of the kit's compatibility with Raspberry Pi 4B and Raspberry Pi 5 models.*

Image 4.4: The kit supports up to 15 meters extension, though the included coaxial cable is 1 meter in length.

4.2 Software Configuration

After hardware assembly, configure your Raspberry Pi OS to recognize and utilize the camera. This typically involves enabling the camera interface and using libcamera tools.

1. **Update Raspberry Pi OS:** Ensure your Raspberry Pi OS is up to date by running:

   ```
   sudo apt update && sudo apt full-upgrade -y
   ```

2. **Enable Camera Interface:** Use the Raspberry Pi configuration tool:

```
sudo raspi-config
```

Navigate to *Interface Options* > *Camera* and enable it. Reboot your Raspberry Pi if prompted.

3. **Verify Camera Detection:** After reboot, you can check if the camera is detected using libcamera-still:

```
libcamera-still --list-cameras
```

You should see your IMX219 camera listed.

5. OPERATING INSTRUCTIONS

This section covers basic commands for operating your Arducam GMSL2 camera with Raspberry Pi.

5.1 Capturing Still Images

To capture a still image, use the libcamera-still command:

```
libcamera-still -o image.jpg
```

This command will capture an image and save it as image.jpg in your current directory.
For a preview window and autofocus, you can use:

```
libcamera-still -t 0 --autofocus --keypress
```

This command will open a preview window, enable autofocus, and wait for a key press to capture an image. Press 'q' to quit the preview.

5.2 Recording Video

To record video, use the libcamera-vid command:

```
libcamera-vid -t 10000 -o video.h264
```

This command will record video for 10 seconds (10000 milliseconds) and save it as video.h264.

5.3 Live Preview

For a continuous live preview without saving, use libcamera-still with a long timeout and no output file:

```
libcamera-still -t 0
```

Press 'q' to quit the preview.

5.4 Demonstration Video

Watch this video for a visual demonstration of the Arducam GMSL2 camera extension kit in operation, including setup and image capture examples.

Your browser does not support the video tag.

Video 5.1: Demonstration of the Arducam Cable Extension Kit, showcasing its use with a Raspberry Pi for long-distance imaging and command-line operation.

6. MAINTENANCE

- Keep the camera lens clean using a soft, lint-free cloth. Avoid abrasive materials.
- Store the kit in a dry, dust-free environment when not in use.
- Regularly check cable connections for looseness or damage.
- Ensure proper ventilation for the Raspberry Pi and camera boards during operation to prevent overheating.

7. TROUBLESHOOTING

- **Camera Not Detected:**
  - Verify all ribbon and coaxial cable connections are secure and correctly oriented.
  - Ensure the camera interface is enabled in raspi-config.
  - Check if the Raspberry Pi OS is updated to the latest version.
  - Confirm the FPC cable type matches your Raspberry Pi model (white for Pi 5, bronze for Pi 4).

- **Poor Image Quality / No Signal:**
  - Inspect the Fakra coaxial cable for kinks or damage.
  - Ensure the camera lens is clean and free from obstructions.
  - Check the power supply to the Raspberry Pi; insufficient power can affect camera performance.

- **Autofocus Issues:**
  - Ensure sufficient lighting in the environment.
  - Try manually focusing if the libcamera command supports it, or restart the application.

8. SPECIFICATIONS

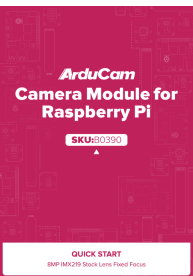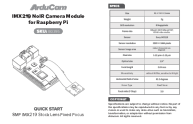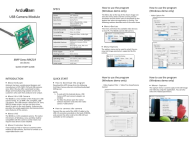| Feature	Detail
Brand	Arducam
Model Name	B0549
Sensor	8MP IMX219
Technology	GMSL2 (Gigabit Multimedia Serial Link 2)
Max Extension Distance	Up to 15 meters (with appropriate cable)
Included Cable Length	1 meter Fakra Z Coaxial Cable
Compatibility	Raspberry Pi Camera V2 compatible, supports Raspberry Pi 4B, Raspberry Pi 5
Video Capture Resolution	1080p
Photo Sensor Technology	CMOS
Maximum Focal Length	3 Millimeters
Maximum Aperture	2 f
Video Capture Format	H.264, JPEG
Item Weight	1.76 ounces
Package Dimensions	4.06 x 2.99 x 1.65 inches

9. WARRANTY INFORMATION

For detailed warranty information regarding your Arducam GMSL2 8MP IMX219 Raspberry Pi Camera Extension Kit, please refer to the official Arducam website or contact their customer support directly. Warranty terms and conditions may vary by region and purchase location.

10. SUPPORT

If you encounter any issues or require further assistance, please visit the Arducam official support page or contact their technical support team. You can often find drivers, documentation, and community forums on their website.

Arducam Official Website: www.arducam.com

Related Documents - B0549

	Arducam 8MP IMX219 Camera Module for Raspberry Pi - Quick Start Guide This guide provides essential information for setting up and using the Arducam 8MP IMX219 camera module with Raspberry Pi, covering hardware connection, software configuration, and basic operation.
	Arducam CSI-to-HDMI Adapter Kit for Raspberry Pi Cameras: Installation and Usage Guide A comprehensive guide to installing and using the Arducam CSI-to-HDMI Adapter Kit with Raspberry Pi cameras, covering setup, compatibility, and safety precautions.
	Arducam IMX219 NoIR Camera Module for Raspberry Pi - Quick Start Guide Quick start guide for the Arducam 8MP IMX219 NoIR Camera Module for Raspberry Pi, detailing package contents, camera connection, software setup, and operation using libcamera-still.
	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 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. |