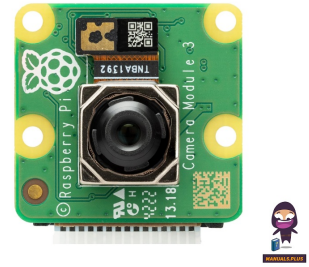




Camera Module 3



Raspberry Pi Camera Module 3 Owner's Manual

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Raspberry Pi Camera Module 3



Product Information

Specifications

- **Sensor:** IMX708 12-megapixel sensor with HDR
- **Resolution:** Up to 3 megapixels
- **Sensor size:** 23.862 x 14.5 mm
- **Pixel size:** 2.0 mm
- **Horizontal/vertical:** 8.9 x 19.61 mm
- **Common video modes:** Full HD
- **Output:** HDR mode up to 3 megapixels
- **IR cut filter:** Available in variants with or without
- **Autofocus system:** Phase detection autofocus
- **Dimensions:** Varies depending on lens type
- **Ribbon cable length:** 11.3 cm
- **Cable connector:** FPC connector

Product Usage Instructions

Installation

1. Ensure your Raspberry Pi computer is powered off.
2. Locate the camera port on your Raspberry Pi board.
3. Gently insert the Camera Module 3's ribbon cable into the camera port, making sure it is securely connected.
4. If using a wide-angle variant, adjust the lens to achieve the desired field of view.

Capture Images and Videos

1. Power on your Raspberry Pi computer.
2. Access the camera software on your Raspberry Pi.
3. Select the desired mode (video or photo).
4. Adjust camera settings like focus and exposure as needed.
5. Press the capture button to take a photo or start/stop recording for videos.

Maintenance

Keep the camera lens clean by using a soft, lint-free cloth. Avoid touching the lens directly with your fingers.

FAQ

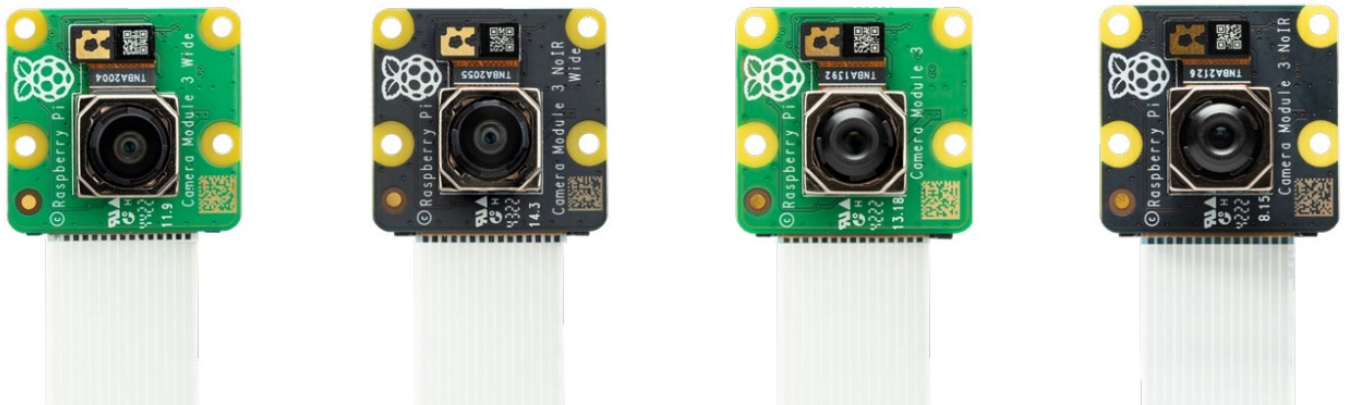
- **Q: Is the Camera Module 3 compatible with all Raspberry Pi models?**

A: Yes, Camera Module 3 is compatible with all Raspberry Pi computers except for early Raspberry Pi Zero models that lack the necessary FPC connector.

- **Q: Can I use external power with the Camera Module 3?**

A: Yes, you can use external power with the Camera Module 3, but make sure to follow the safety instructions provided in the manual to avoid any risks.

Overview



Raspberry Pi Camera Module 3 is a compact camera from Raspberry Pi. It offers an IMX708 12-megapixel sensor with HDR, and features phase detection autofocus. Camera Module 3 is available in standard and wide-angle variants, both of which are available with or without an infrared cut filter.

Camera Module 3 can be used to take full HD video as well as stills photographs, and features an HDR mode up to 3 megapixels. Its operation is fully supported by the libcamera library, including Camera Module 3's rapid autofocus feature: this makes it easy for beginners to use, while offering plenty for advanced users. Camera Module 3 is compatible with all Raspberry Pi computers.¹

The PCB size and mounting holes remain the same as for Camera Module 2. The Z dimension differs: due to the improved optics, Camera Module 3 is several millimetres taller than Camera Module 2.

All variants of Camera Module 3 feature:

- Back-illuminated and stacked CMOS 12-megapixel image sensor (Sony IMX708)
- High signal-to-noise ratio (SNR)

- Built-in 2D Dynamic Defect Pixel Correction (DPC)
- Phase Detection Autofocus (PDAF) for rapid autofocus
- QBC Re-mosaic function
- HDR mode (up to 3 megapixel output)
- CSI-2 serial data output
- 2-wire serial communication (supports I2C fast mode and fast-mode plus)
- 2-wire serial control of focus mechanism

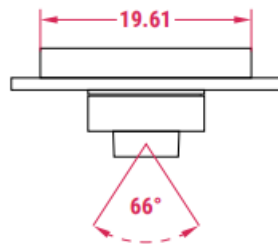
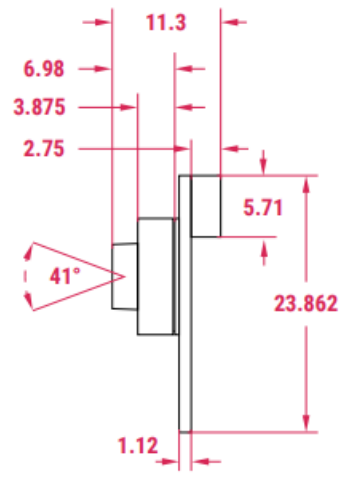
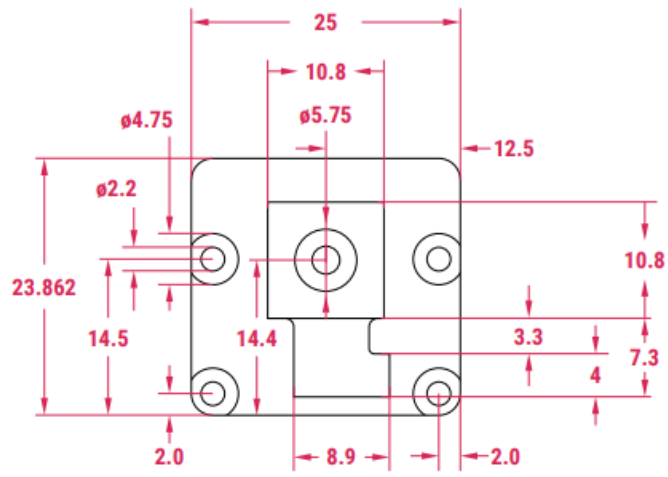
Excluding early Raspberry Pi Zero models, which lack the necessary FPC connector. Later Raspberry Pi Zero models require an adapter FPC, sold separately.

Specification

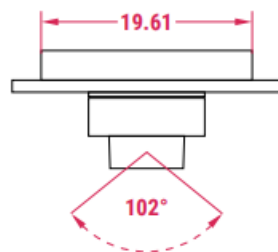
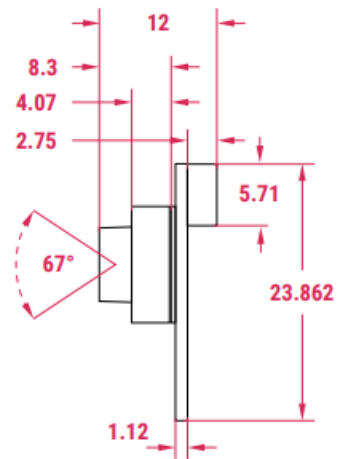
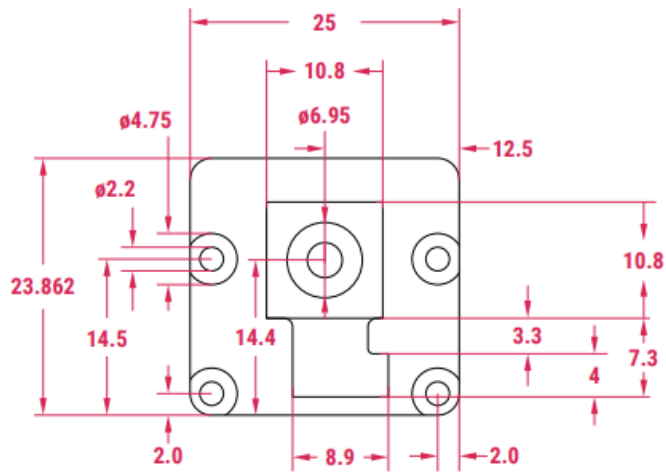
- **Sensor:** Sony IMX708
- **Resolution:** 11.9 megapixels
- **Sensor size:** 7.4mm sensor diagonal
- **Pixel size:** 1.4µm × 1.4µm
- **Horizontal/vertical:** 4608 × 2592 pixels
- **Common video modes:** 1080p50, 720p100, 480p120
- **Output:** RAW10
- **IR cut filter:** Integrated in standard variants; not present in NoIR variants
- **Autofocus system:** Phase Detection Autofocus
- **Dimensions:** 25 × 24 × 11.5mm (12.4mm height for Wide variants)
- **Ribbon cable length:** 200mm
- **Cable connector:** 15 × 1mm FPC
- **Operating temperature:** 0°C to 50°C
- **Compliance:** FCC 47 CFR Part 15, Subpart B, Class B Digital Device Electromagnetic Compatibility Directive (EMC) 2014/30/EU Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU
- **Production lifetime:** Raspberry Pi Camera Module 3 will remain in production until at least January 2030

Physical specification

- Standard lens



- Wide lens



Note: all dimensions in mm tolerances are accurate to 0.2mm

Variants

| | Camera Module 3 | Camera Module 3 NoIR | Camera Module 3 Wide | Camera Module 3 Wide NoIR |
|---------------------------------|-----------------|-------------------------|-------------------------|------------------------------|
| Focus range | 10cm—∞ | 10cm—∞ | 5cm—∞ | 5cm—∞ |
| Focal length | 4.74mm | 4.74mm | 2.75mm | 2.75mm |
| Diagonal field of view | 75 degrees | 75 degrees | 120 degrees | 120 degrees |
| Horizontal field of view | 66 degrees | 66 degrees | 102 degrees | 102 degrees |
| Vertical field of view | 41 degrees | 41 degrees | 67 degrees | 67 degrees |
| Focal ratio (F-stop) | F1.8 | F1.8 | F2.2 | F2.2 |
| Infrared-sensitive | No | Yes | No | Yes |

WARNINGS

- This product should be operated in a well ventilated environment, and if used inside a case, the case should not be covered.
- Whilst in use, this product should be firmly secured or should be placed on a stable, flat, non-conductive surface, and should not be contacted by conductive items.
- The connection of incompatible devices to Raspberry Camera Module 3 may affect compliance, result in damage to the unit, and invalidate the warranty.
- All peripherals used with this product should comply with relevant standards for the country of use and be marked accordingly to ensure that safety and performance requirements are met.

SAFETY INSTRUCTIONS

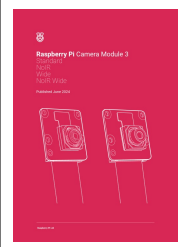
To avoid malfunction or damage to this product, please observe the following:

- **Important:** Before connecting this device, shut down your Raspberry Pi computer and disconnect it from external power.
- If the cable becomes detached, first pull forward the locking mechanism on the connector, then insert the ribbon cable ensuring that the metal contacts face towards the circuit board, and finally push the locking mechanism back into place.
- This device should be operated in a dry environment at 0–50°C.
- Do not expose to water or moisture, or place on a conductive surface whilst in operation.
- Do not expose to heat from any source; Raspberry Pi Camera Module 3 is designed for reliable operation at normal ambient temperatures.
- Store in a cool, dry location.
- Avoid rapid changes of temperature, which can cause moisture to build up in the device, affecting image quality.
- Take care not to fold or strain the ribbon cable.
- Take care whilst handling to avoid mechanical or electrical damage to the printed circuit board and connectors.
- Whilst it is powered, avoid handling the printed circuit board, or handle it only by the edges, to minimise the risk

of electrostatic discharge damage.

Raspberry Pi is a trademark of Raspberry Pi Ltd.

Documents / Resources

| | |
|---|---|
|  | <p>Raspberry Pi Camera Module 3 [pdf] Owner's Manual Camera Module 3 Standard, Camera Module 3 NoIR Wide, Camera Module 3, Module 3</p> |
|---|---|

References

- [User Manual](#)

Manuals, Privacy Policy

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