

X-ray sCMOS camera C12849-111U



The C12849-111U is a high resolution and high sensitivity X-ray sCMOS camera. The camera's high resolution of 33 lp/mm makes it ideal for X-ray imaging of micro objects. Its compact size makes it suitable for embedding into systems such as micro X-ray CT systems.

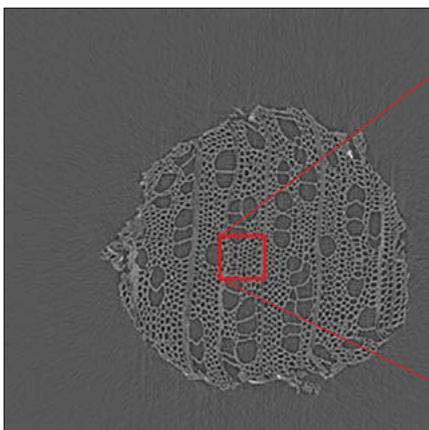
Features

- Spatial resolution 33 lp/mm
- Effective number of pixels 2048(H) × 2048(V)
- Frame rate 30 frames/s
- Compact size
- Interface USB 3.0

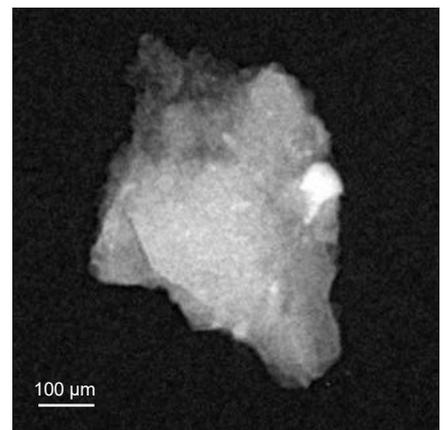
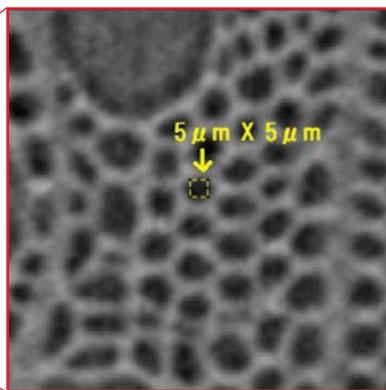
Applications

- X-ray Micro CT
- High resolution X-ray imaging
- X-ray diffraction
- XAFS

Measurement Examples



CT image of toothpick



X-ray transmission image of
Kilabo meteor

Image courtesy of Dr. Uesugi, JAXA

| | |
|-----------------------------------|-------------------------------|
| X-ray source | L9181-02 |
| X-ray tube voltage | 40 kV |
| X-ray tube current | 100 μA |
| FOD | 34.435 mm |
| FDD | 306.42 mm |
| X-ray magnification | 8.9 × |
| Acquisition number | 1000 projections / 360 degree |
| Exposure time for each projection | 8 s |

| | |
|---------------------|-----------|
| X-ray source | L10711-03 |
| X-ray tube voltage | 80 kV |
| X-ray tube current | 120 μA |
| FOD | 50 mm |
| FDD | 465 mm |
| X-ray magnification | 9.3 × |
| Exposure time | 10 s |

Specifications

| | |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Product number | C12849-111U |
| Imaging device | Scientific CMOS image sensor |
| Effective number of pixels | 2048 (H) × 2048 (V) |
| Pixel size | 6.5 μm (H) × 6.5 μm (V) |
| Effective area | 13.312 mm (H) × 13.312 mm (V) |
| Scintillator | GOS(P43) 10 μm |
| Spatial resolution | 33 lp/mm (Spatial resolution given at 10 % MTF for 25 kV X-ray tube voltage) |
| Fiber reduction ratio *1 | 1:1 |
| Full well capacity (typ.) | 30 000 electrons |
| Frame rate | 30 frames/s to 25 655 frames/s |
| Binning | 2×2, 4×4 *2 |
| Sub-array | Yes |
| Readout noise (typ.) | 1.6 electrons (median), 2.3 electrons (rms) |
| Dynamic range (typ.) *3 | 18 000:1 |
| Digital output | 16 bit |
| Exposure time *4 | 1 ms to 30 s (1 ms to 100 ms recommended) |
| External trigger input mode | Edge trigger, Level trigger, Synchronous readout trigger, Start trigger |
| Trigger output | Programmable timing outputs, Global exposure timing output, Trigger ready output, Low output, High output |
| Interface | USB 3.0 |
| Recommended X-ray tube voltage range | 25 kV to 90 kV |
| Power supply | AC 100 V to 240 V, 50 Hz / 60 Hz |
| Power consumption | Approx. 35 VA |
| Ambient operating temperature | 0 °C to +40 °C *5 |
| Ambient operating humidity | 30 % to 70 % Forced-air cooled (with no condensation) |
| Ambient storage temperature | -10 °C to +50 °C |
| Ambient storage humidity | 90 % max. (with no condensation) |

*1 Shear distortion of up to 30 μm may occur.

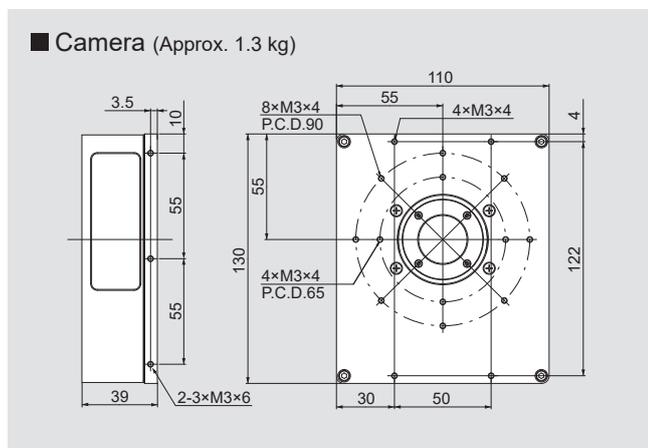
*2 Digital processing in the camera.

*3 Calculated from the ratio of the full well capacity and the readout noise (median).

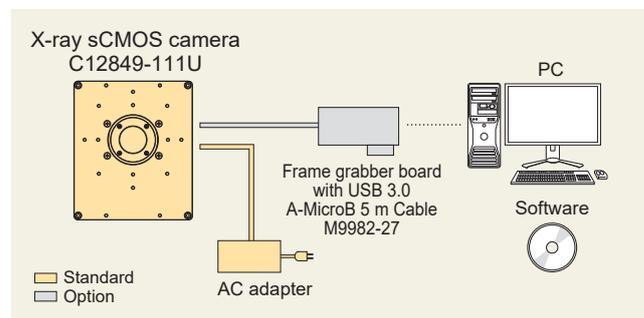
*4 When exposure time is longer than 100 ms, white spots may occur and image quality may degraded.

*5 When ambient operating temperature is higher than +35 °C, white spots may occur and image quality may degraded.

Dimensional outlines (Unit: mm)



System configuration



Options

| Product number | Product name |
|----------------|-----------------------------------------------------|
| A12106-05 | External trigger cable SMA-BNC 5 m |
| A12107-05 | External trigger cable SMA-SMA 5 m |
| M9982-27 | Frame grabber board with USB 3.0 A-MicroB 5 m Cable |

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- Subject to local technical requirements and regulations, availability of products included in this brochure may vary. Please consult your local sales representative.
- The product described in this brochure is designed to meet the written specifications, when used strictly in accordance with all instructions.
- The university, institute, or company name of the researchers, whose measurement data is published in this brochure, is subject to change.
- Specifications and external appearance are subject to change without notice.

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Cat. No. SCAS0139E04
JAN/2025 HPK
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