

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 3.3 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.

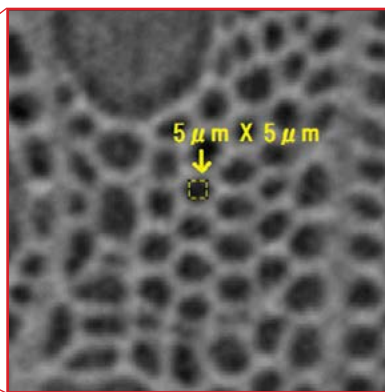
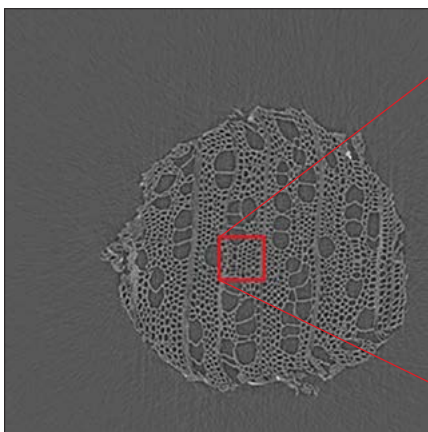
Features

- Spatial resolution 3.3 lp/mm
- Effective number of pixels 2048(H) × 2048(V)
- Frame rate 30 frames/s
- Compact size
- Interface USB 3.0

Applications

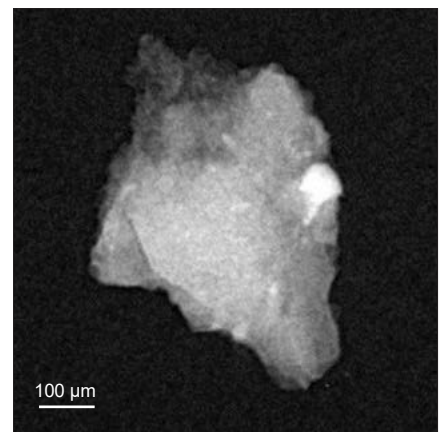
- X-ray Micro CT
- High resolution X-ray imaging
- X-ray diffraction
- XAFS

Measurement Examples



CT image of toothpick

X-ray 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 transmission image of Kilabo meteorite

Image courtesy of Dr. Uesugi, JAXA

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.

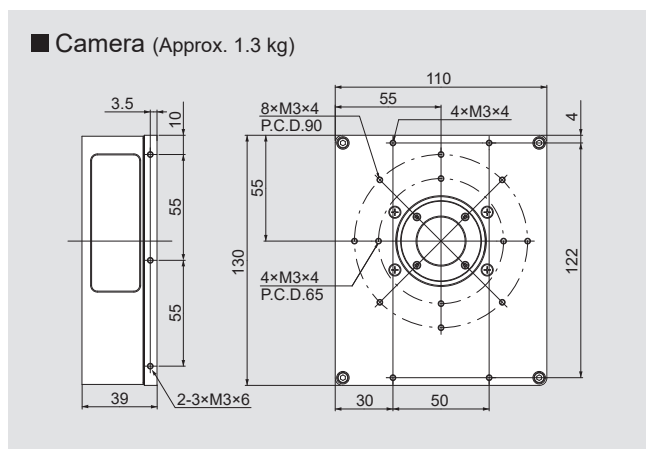
*2 Digital processing in the camera.

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

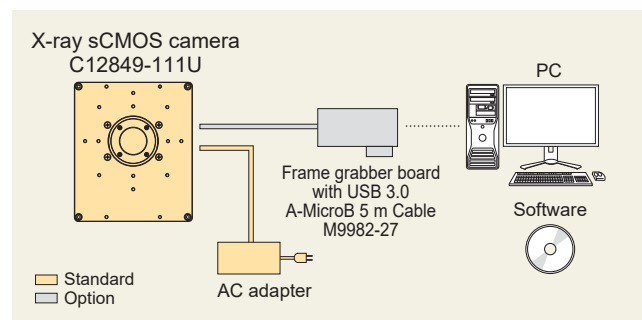
*4 When exposure time is longer than 100 ms, white spots may occur and image quality may degraded.

*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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