

NEW

X-ray sCMOS camera C12849-111U



The C12849-111U is a high resolution and high sensitivity X-ray sCMOS camera. The camera is suitable for micro object by achieving 33 lp/mm high resolution image. Also the product is compact that is suitable as embedded devices for Micro CT/Nano CT system.

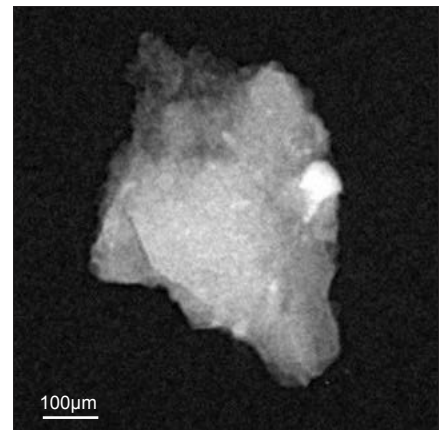
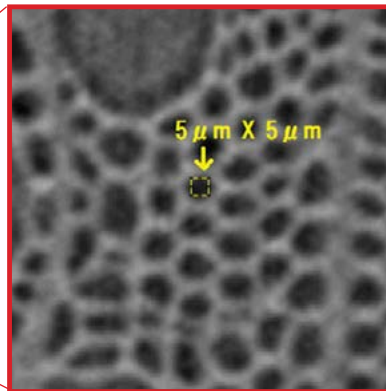
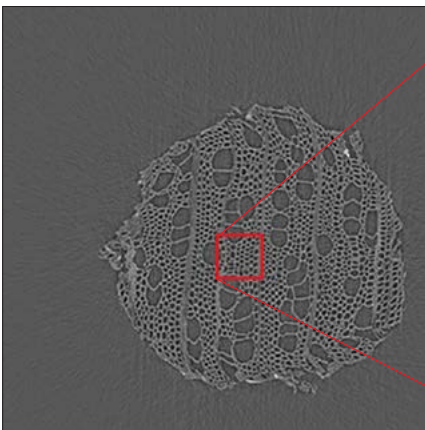
Features

- 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 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 times

▲ X-ray transmission image of Kilabo meteor

- 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 times
- Exposure time: 10 s

Image courtesy of Dr.Uesugi, JAXA

Specifications

Type 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.) *3	1.6 electrons (median), 2.3 electrons (rms)
Dynamic range (typ.) *4	18 000 : 1
Digital output	16 bit
Exposure time *5	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 *6
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 15 μm may occur.

*2: Digital processing in the camera.

*3: Camera noise is sum of readout noise and dark current at 33 ms exposure.

*4: Calculated from the ratio of the full well capacity and the average readout noise.

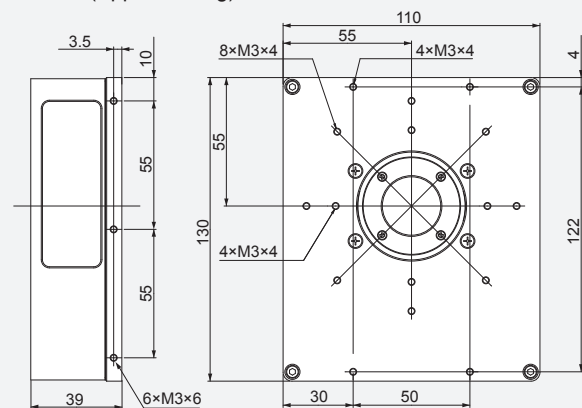
*5: When exposure time is longer than 100 ms, white spots would be visible and image quality would be degraded.

*6: When ambient operating temperature is higher than +35 °C, white spots would be visible and image quality would be degraded.

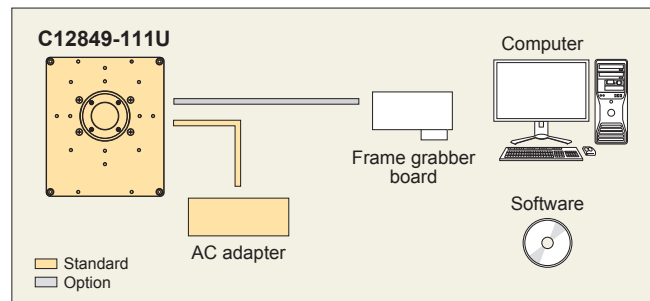
Dimensional outlines

(Unit : mm)

Camera (Approx. 1.3 kg)



Configuration example



Options

- External trigger cable SMA-BNC 5 m : A12106-05
- External trigger cable SMA-SMA 5 m : A12107-05

- Product and software package names noted in this documentation are trademarks or registered trademarks of their respective manufacturers.
- Subject to local technical requirements and regulations, availability of products included in this promotional material may vary. Please consult your local sales representative.
- Information furnished by HAMAMATSU is believed to be reliable. However, no responsibility is assumed for possible inaccuracies or omissions. Specifications and external appearance are subject to change without notice.

© 2019 Hamamatsu Photonics K.K.

HAMAMATSU PHOTONICS K.K. www.hamamatsu.com

HAMAMATSU PHOTONICS K.K., Systems Division

812 Joko-cho, Higashi-ku, Hamamatsu City, 431-3196, Japan, Telephone: (81)53-431-0124, Fax: (81)53-433-8031, E-mail: export@sys.hpk.co.jp

U.S.A.: Hamamatsu Corporation: 360 Foothill Road, Bridgewater, NJ 08807, U.S.A., Telephone: (1)908-231-0960, Fax: (1)908-231-1218 E-mail: usa@hamamatsu.com

Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49)8152-375-0, Fax: (49)8152-265-8 E-mail: info@hamamatsu.de

France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: (33)1 69 53 71 00, Fax: (33)1 69 53 71 10 E-mail: infos@hamamatsu.fr

United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, UK, Telephone: (44)1707-294888, Fax: (44)1707-325777 E-mail: info@hamamatsu.co.uk

North Europe: Hamamatsu Photonics Norden AB: Torshamnsgatan 35 16440 Kista, Sweden, Telephone: (46)8-509 031 00, Fax: (46)8-509 031 01 E-mail: info@hamamatsu.se

Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Moia, 1 int. 6, 20020 Arese (Milano), Italy, Telephone: (39)02-93 58 17 33, Fax: (39)02-93 58 17 41 E-mail: info@hamamatsu.it

China: Hamamatsu Photonics (China) Co., Ltd.: 1201 Tower B, Jiaming Center, 27 Dongsanhuan Beilu, Chaoyang District, 100020 Beijing, P.R.China, Telephone: (86)10-6586-6006, Fax: (86)10-6586-2866 E-mail: hpc@hamamatsu.com.cn

Taiwan: Hamamatsu Photonics Taiwan Co., Ltd.: 8F-3, No.158, Section2, Gongdao 5th Road, East District, Hsinchu, 300, Taiwan R.O.C. Telephone: (886)3-659-0080, Fax: (886)3-659-0081 E-mail: info@hamamatsu.com.tw

Cat. No. SCAS0139E01
JUN/2019 HPK
Created in Japan