

Scientific CMOS Board-Level Camera C11440-52U



Digital Camera for OEM



*Lens is optional.

The C11440-52U is a compact and high-spec board type camera with the Gen II scientific CMOS sensor. The camera has over 70 % quantum efficiency at 600 nm. The camera runs at 30 frames/s at full resolution and it can reach up to 25 655 frames/s (512 × 8 ROI).

The C11440-52U has low camera noise of 2.3 electrons (rms) at 30 frames/s. Compact (90 mm × 90 mm) and light weight design is considered to be built into various measurement and analytical instruments. In addition to that the camera has USB 3.0 interface for convenience.

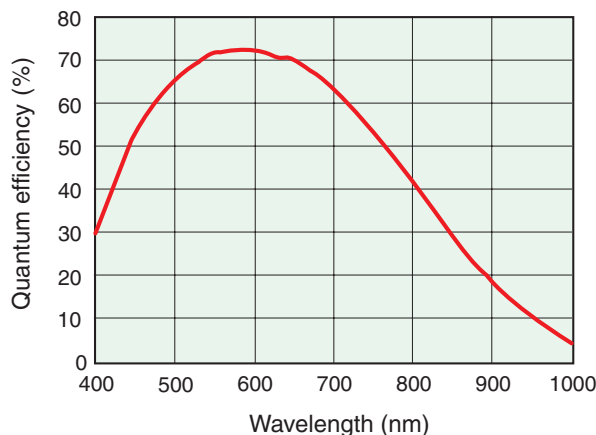
Features

- Resolution: 4.0 megapixels
- Camera noise: 2.3 electrons (rms)
: 1.6 electrons (median)
- Frame rate: 30 frames/s (2048 × 2048)
- Quantum efficiency: over 70 % at peak (at 600 nm)

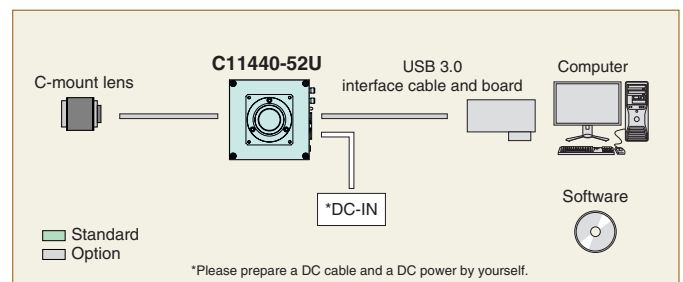
Applications

- DNA sequence
- Gene expression
- Imaging cytometry
- High content screening
- Live cell imaging
- Wafer inspection
- X-ray I.I., X-ray scintillator readout

Spectral response



System configuration



Specifications

Type number	C11440-52U
Imaging device	Scientific CMOS sensor FL-400
Effective number of pixels	2048 (H) × 2048 (V)
Cell size	6.5 μm (H) × 6.5 μm (V)
Effective area	13.312 mm (H) × 13.312 mm (V)
Full well capacity typ.	30 000 electrons
Readout speed	30 frames/s to 25 655 frames/s
Readout mode	Digital binning*1 2 × 2, 4 × 4, Sub-array readout mode at center position
Camera noise typ.*2	2.3 electrons (rms), 1.6 electrons (median)
Dynamic range typ.*3	18 000: 1
A/D converter	16 bit
Exposure time*4	1 ms to 30 s (100 ms recommended)
External trigger mode	Edge trigger, Level trigger, Synchronous readout trigger, Start trigger
External trigger output	3 programmable timing outputs, Global exposure timing output, Trigger ready output, Fixed level output
Interface	USB 3.0
Lens mount	C-mount
Power requirements	DC 12 V, 1 A
Ambient storage temperature	- 10 °C to + 50 °C
Ambient operating temperature	0 °C to + 40 °C (+ 35 °C*5 recommended)
Ambient storage humidity	90 % max. (no condensation)
Ambient operating humidity	70 % max. (no condensation)

*1: Digital processing in the camera

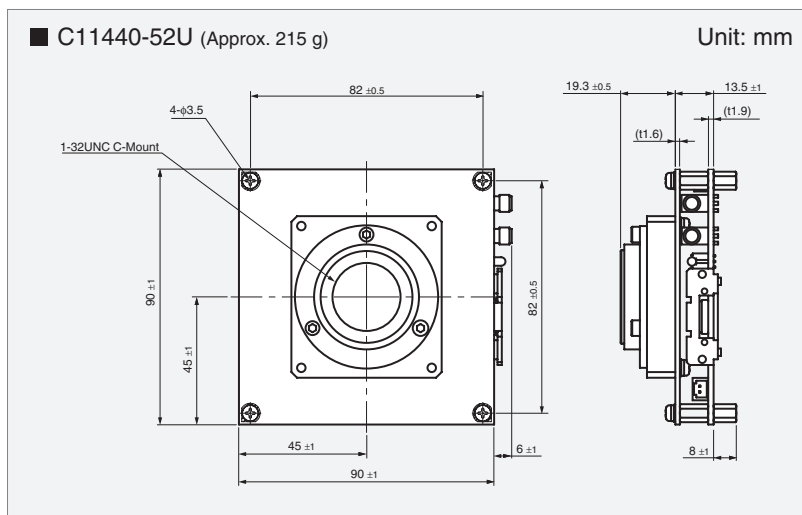
*2: Camera noise is sum of readout noise and dark current at 33 ms exposure.

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

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

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

Dimensional outlines



Options

- SMA-BNC external trigger cable:A12106-05
- SMA-SMA external trigger cable: A12107-05
- Chassis for C11440-52U: A12456-01

★ Product and software package names noted in this documentation are trademarks or registered trademarks of their respective manufacturers.

● 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.

© 2013 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)53-435-1574, E-mail: export@sys.hpk.co.jp

U.S.A.: Hamamatsu Corporation: 360 Foothill Road, P. O. Box 6910, Bridgewater, N.J. 08807-0910, 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 Tapu, 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, United Kingdom, Telephone: 44-(0)1707-294888, Fax: 44(0)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/E, 20020 Arese, (Milano), Italy, Telephone: (39)02-935 81 733, Fax: (39)02-935 81 741 E-mail: info@hamamatsu.it

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

Cat. No. SCAS0090E02
JUN/2013 HPK
Created in Japan