

Scientific CMOS board level camera C11440-50 series



▲ C11440-50B (Lens is optional.)

The core of the C11440-50 series camera is the new scientific image sensor FL-280, an advanced CMOS detector that simultaneously achieves high resolution, fast readout speeds and low noise. With its small size, board-level design and simple, low-cost integration using IEEE1394b (-50B) and USB 3.0 (-50U), the C11440-50 series is the ideal camera for OEM scientific imaging.

Applications

- Fluorescence imaging
- DNA sequence
- Industrial inspection
- X-ray I.I. readout
- X-ray CT

Low noise	3 electrons (rms)
High resolution	2.8 megapixel
High speed readout	45 frames/s
High dynamic range	4500 : 1

Features

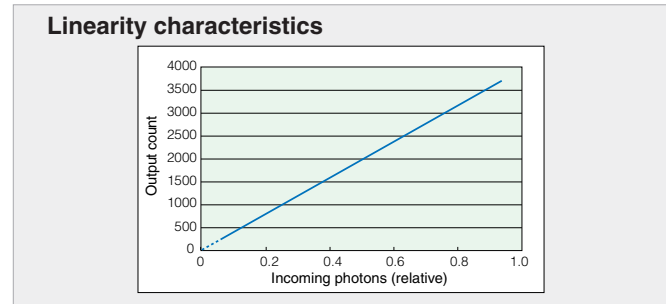
● High image quality (no fixed pattern noise)

Comparison of noise performance (no image correction)

- Conventional CMOS camera
- C11440-50B, -50U

▲ Exposure time: 15 ms ▲ Exposure time: 50 ms

● Linearity



● About twice the resolution of CCD (2/3 inch, 1.3 megapixel)

Comparison of resolution

- Bright field observation (Sample: Test Plate)

▲ Entire image ▲ CCD (2/3 inch, 1.3 megapixel) ▲ C11440-50B, -50U

● Wider field of view than CCD (2/3 inch, 1.3 megapixel)

Comparison of field of view

- Bright field observation (Sample: Test Plate)

▲ CCD (2/3 inch, 1.3 megapixel) (without relay lens) ▲ C11440-50B, -50U (0.5x relay lens used)

Specifications

Type number	C11440-50B	C11440-50U
Camera type	Board type	
Imaging device	Scientific CMOS Image Sensor FL-280	
Effective number of pixels	1920 (H) × 1440 (V)	
Cell size	3.63 μm (H) × 3.63 μm (V)	
Effective area	6.97 mm (H) × 5.23 mm (V)	
Readout speed	45.4 frames/s to 1273 frames/s	
Binning*	2 × 2	
Readout noise (rms) typ.	3 electrons (gain 8×)	
Full well capacity typ.	18 000 electrons	
Analog gain	1× to 8× (256 steps)	
Dynamic range typ.**	4500 : 1 (gain 1×)	
A/D converter	8 bit or 12 bit	12 bit
Exposure time	20 μs to 1 s (at internal trigger/external trigger)	
External trigger mode	Edge trigger, Level trigger Global exposure trigger Synchronous readout trigger Start trigger	
Trigger delay function	0 μs to 1 s (10 μs step)	
Trigger output	Programmable timing output Global exposure timing output Trigger ready output	
Lens mount	C-mount	
Interface	IEEE1394b × 2 bus	USB 3.0
Connector	9-pin IEEE1394b connector (Industrial type × 2)	USB 3.0 MicroB Type
Power requirements	Bus Power / DC 8 V to 30 V	
Power consumption	Lower than approx. 3 VA	
Ambient storage temperature	- 10 °C to + 50 °C	
Ambient operating temperature	0 °C to + 40 °C	
Ambient operating humidity	70 % max. (with no condensation)	

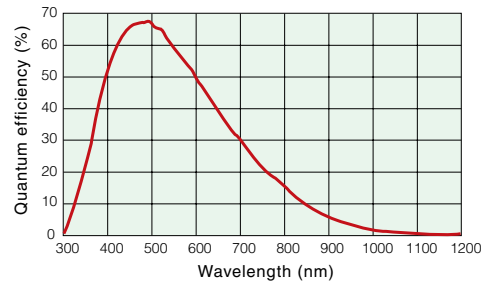
*Digital binning processing in the camera

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

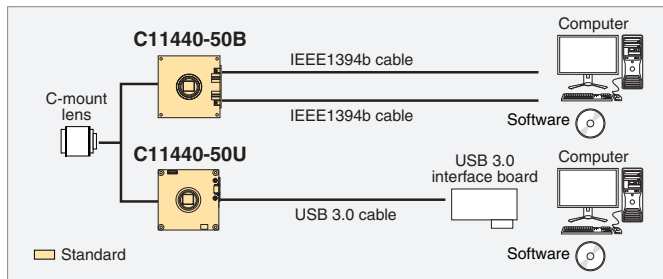
● Readout mode / speed (Unit: frame/s)

Type No.	C11440-50B				C11440-50U
	IEEE1394b 1 bus		IEEE1394b 2 bus		USB 3.0
Sub-array	8 bit	12 bit	8 bit	12 bit	12 bit
1920 (H) × 1440 (V)	22.7	15	45.4	30	45.4
1920 (H) × 1080 (V)	30	19.8	60	39.6	60
1920 (H) × 600 (V)	52.3	34.5	104	69	104
1920 (H) × 240 (V)	118	78.1	236	156	236
1920 (H) × 80 (V)	270	178	540	356	540
1920 (H) × 8 (V)	1273	840	1273	840	1273

● Spectral response



System configuration



Options

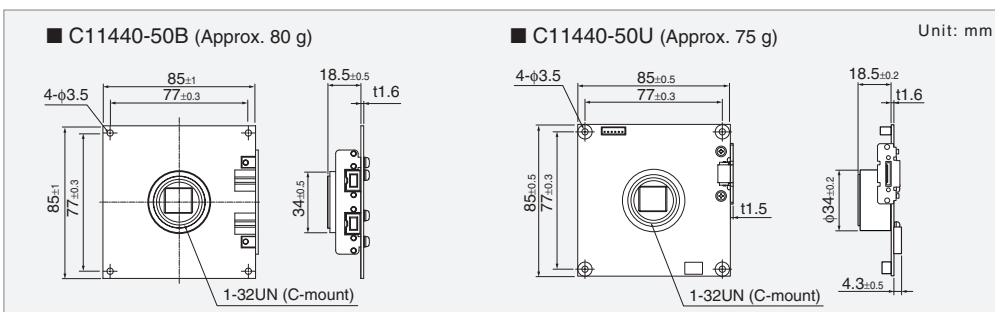
[C11440-50B]

- External trigger cable SMA-BNC 5 m: A12106-05
- External trigger cable SMA-SMA 5 m: A12107-05
- External trigger cable 5 m: A11892-05
- Board camera case: A11893-02

[C11440-50U]

- External trigger cable SMA-BNC 5 m: A12106-05
- External trigger cable SMA-SMA 5 m: A12107-05
- External trigger cable 5 m: A11892-05
- Board camera case: A12599-01

Dimensional outlines



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