

# Scientific CMOS Board-Level Camera C11440-50 series

**OEM  
Solution**



▲ 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

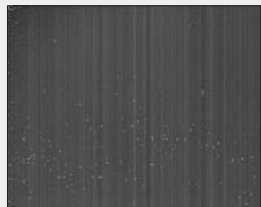
- Fluorescence imaging system
- DNA sequence
- Industrial inspection system
- X-ray I.I. readout
- X-ray CT

## Features

### ● High image quality (no fixed pattern noise)

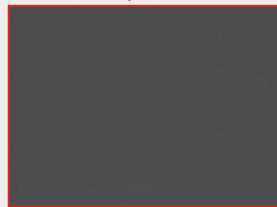
#### Comparison of noise performance (no image correction)

● Conventional CMOS camera



▲ Exposure time: 15 ms

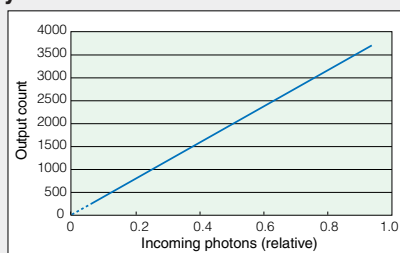
● C11440-50B, -50U



▲ Exposure time: 50 ms

### ● Linearity

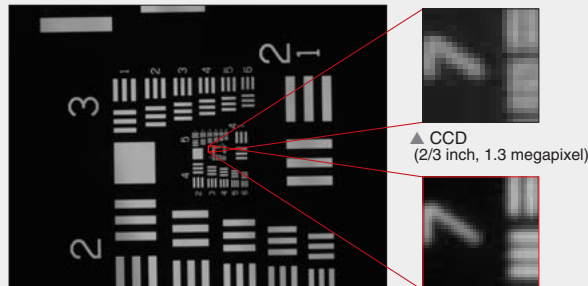
#### Linearity characteristics



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

#### Comparison of resolution

● Bright field observation (Sample: Test Plate)



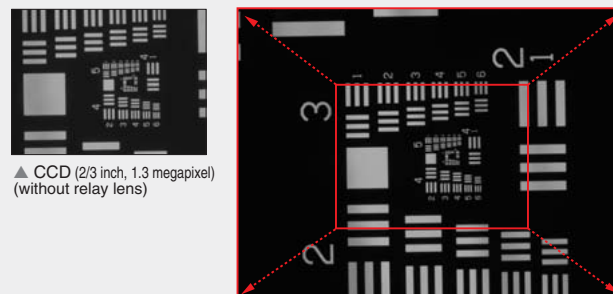
▲ Entire image

▲ 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 8x)	
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 storage /operating humidity	70 % max. (no condensation)	

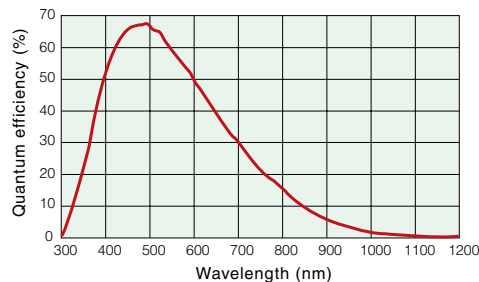
\*Digital binning processing in the camera

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

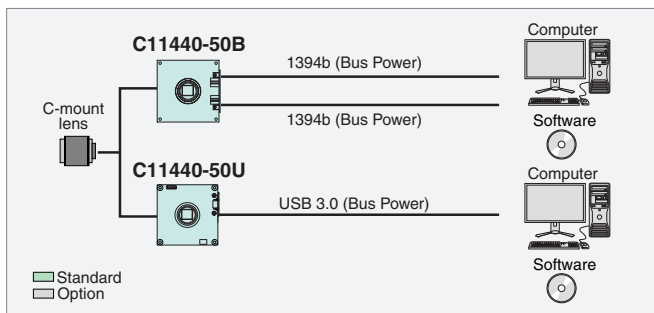
### ● Readout mode / speed (Unit: frame/s)

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



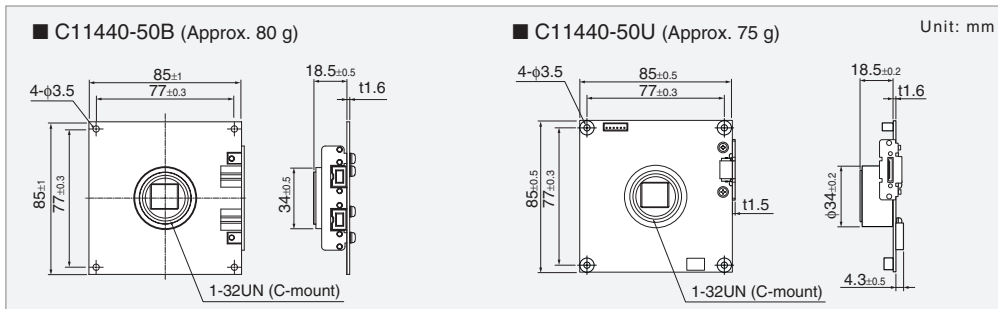
## System configuration



## Options

- SMA-BNC external trigger cable: A12106-05
- SMA-SMA external trigger cable: A12107-05
- Trigger cable: A11892-05
- Chassis with SMA connector: A11893-02 (C11440-50B)  
A12599-01 (C11440-50U)

## Dimensional outlines



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