

# HAMAMATSU

DATA SHEET

# 1k × 1k, 30Hz Digital CCD Camera C8800 Series

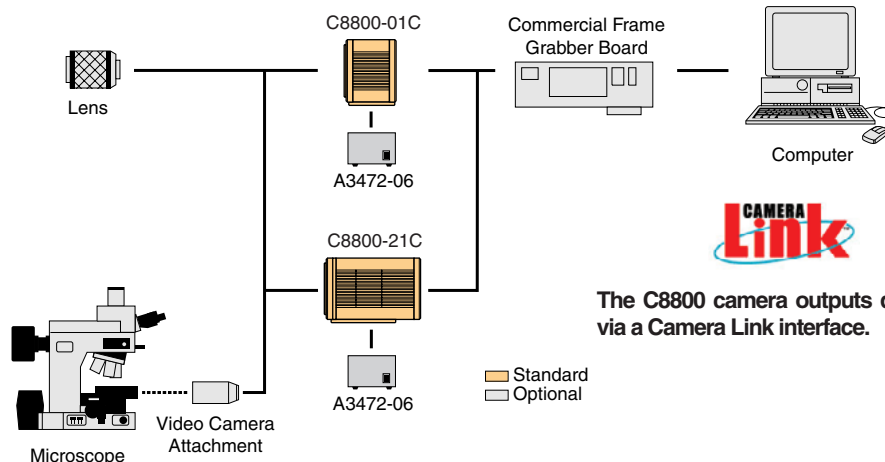


The C8800 series is a 1k × 1k high-resolution digital camera using a high-speed frame transfer CCD chip with no mechanical shutter. In addition to a high resolution of 1 million pixels, 12 bit digital output with 30 frames per second and high signal to readout noise would be suitable for wide application range down to low light level imaging. The C8800 also supports sub-array and binning modes, which enable high frame rate, 100 frames per second or higher. For application long integration required, a cooling function with a proprietary permanently sealed vacuum chamber evacuated to 10<sup>-8</sup> Torr can be option.

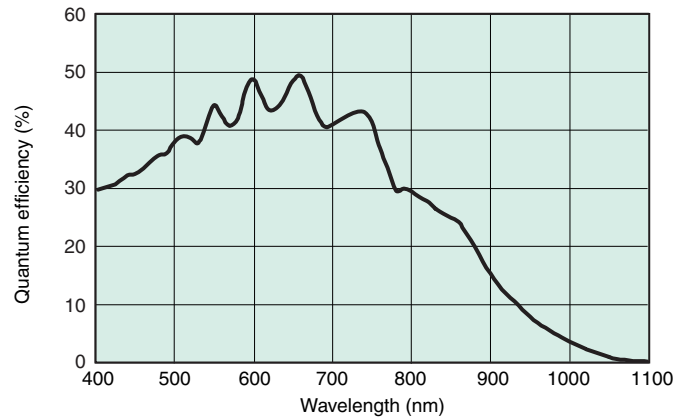
## APPLICATIONS

- NIR Wafer/IC inspection
- Continuous imaging of high-speed moving objects
- Kinetic changes in light intensity
- Faint light observation under a microscope

## SYSTEM CONFIGURATION



## SPECTRAL RESPONSE CHARACTERISTIC



★ This is typical, not guaranteed

## FEATURES

- 30Hz frame rate with 1k × 1k full resolution
- Low readout noise (25 electrons r.m.s. typ.)
- Large full well capacity
- Wide range sensitivity from Blue to NIR
- Binning and sub-array function

## TYPE NUMBER

- C8800-01C Non-cooled type
- C8800-21C Cooled type

## OPTIONS

- AC adaptor : A3472-06  
Line voltage: 100 to 240V AC input  
Output voltage: DC +12V
- Power cable for C8800-01C : A3194-01 (5 m)
- Power cable for C8800-21C : A9071-05 (5 m)
- Digital I/F cable : A9262-05



The C8800 camera outputs data is transmitted via a Camera Link interface.

# SPECIFICATIONS

Type number	C8800-01C		C8800-21C	
Camera head type	-		Hermetic vacuum-sealed air-cooled head	
Circulating water cooler	-		-	
Mechanical shutter	-		-	
Imaging device	-		Frame transfer CCD	
Effective no. of pixels	-		1000 (H) × 1000 (V)	
Cell size	-		8 μm (H) × 8 μm (V)	
Effective area	-		8 mm (H) × 8 mm (V)	
Pixel clock rate	-		40 MHz/pixel	
Frame rate**	binning	1 × 1	33 frame/s	
		2 × 2	60 frame/s	
		4 × 4	102 frame/s	
		8 × 8	159 frame/s	
Readout noise(r.m.s.) typ.	-		25 electrons	
Full well capacity typ.	-		23000 electrons	
Dynamic range	-		920 : 1	
Cooling method	-		Forced-air peltier cooling with hermetic sealing*	
Cooling temperature	-		- 20 °C	
Dark current typ.	-		25 electrons/pixel/s	
A/D converter	-		12 bit	
Output signal / External control	-		Camera Link	
Exposure time	500 μs to 1 s		500 μs to 10 s	
Sub-array**	-		Yes	
External trigger	-		Yes	
Contrast enhancement	-		1 to 5 times(16 step)	
Lens mount	-		C-mount	
Power requirements	-		DC +12 V	
Power consumption	approx. 10 W		approx. 20 W	
Ambient storage temperature	-		- 10 °C to + 50 °C	
Ambient operating temperature	-		0 °C to + 40 °C	
Ambient operating/storage humidity	-		70 % max. (with no condensation)	

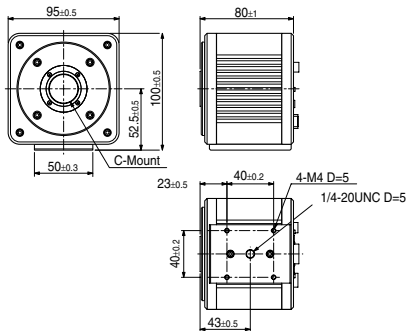
\* The hermetic sealed head maintains a high degree of vacuum 10<sup>-8</sup> Torr, without re-evacuation.

** Frame rate of each binning and sub-array condition	Effective vertical width (Sub-array)						
		1000	512	256	128	64	
Frame rate (frame/s)	binning	1 × 1	33	59	100	157	217
		2 × 2	60	100	157	217	270
		4 × 4	102	157	217	270	306
		8 × 8	159	217	270	306	329

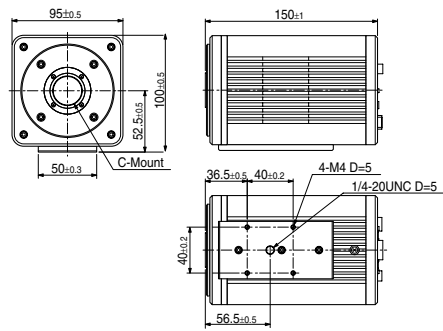
Note: CCD chip does not provide Gamma=1 at the bright region. Linearity corrected modes is available.

# DIMENSIONAL OUTLINES (Unit: mm)

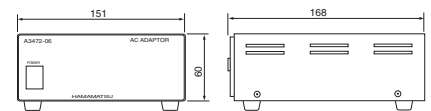
## ● C8800-01C (approx. 0.9kg)



## ● C8800-21C (approx. 2.0kg)



## ● A3472-06 (approx. 0.8kg) - Optional -



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