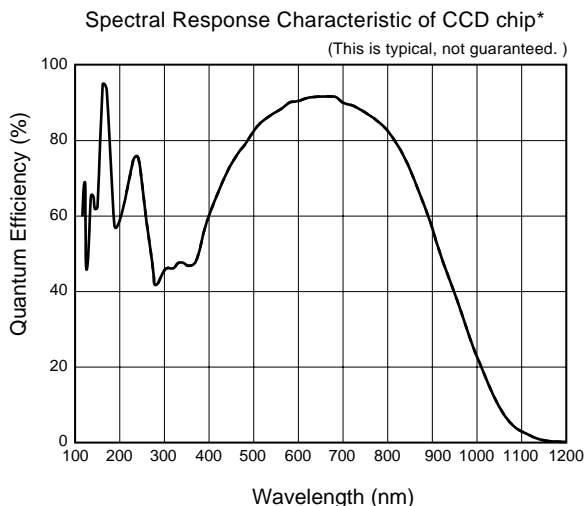


## BT(Back-thinned)-CCD Digital Camera C8000-10



The C8000 camera series employs an ultra high sensitive back-thinned CCD sensor made by Hamamatsu. Especially in the UV, DUV and VUV wavelength ranges, the C8000 series offers extremely high sensitivity never before realized by other scientific CCDs.



\* Without sapphire window. The spectral response with sapphire window is decrease by the transmittance.

## FEATURES

- Extremely high UV, DUV and VUV sensitivity

- Quantum Efficiency of CCD chip

(This is typical, not guaranteed.) \*\*Calculated value

Excimer Laser	F <sub>2</sub>	ArF	KrF	
Wavelength (nm)	157	193	248	
Quantum Efficiency(%)	Without sapphire window	84	57	69
	With sapphire window	34 **	42 **	55 **

- Low dark noise with peltier cooling

- Binning function / Sub-array function

## APPLICATIONS

- Beam Diagnostics of Stepper Excimer Lasers: F<sub>2</sub>(157 nm), ArF(193 nm), KrF(248 nm)

- Development of UV optics

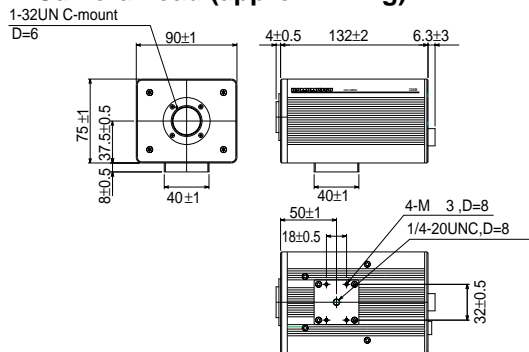
# SPECIFICATIONS

Model	C8000-10	
Imaging device	Back-thinned frame transfer CCD	
Effective number of pixels	640 (H) × 480 (V)	
Cell size	14 μm (H) × 14 μm (V)	
Effective area	8.96 mm(H) × 6.72mm (V) / 2/3 inch format	
Readout noise (r.m.s.)	approx. 100 electrons r.m.s.	
Full well capacity	50,000 electrons (typical value)	
Dynamic range*	500 : 1	
Frame rate	Slow scan mode	7.7Hz, 14.7Hz(2 × 2 binning), 25.8Hz(4 × 4 binning), 40.0Hz(8 × 8binning)
	Middle scan mode	15.4Hz, 29.5Hz(2 × 2 binning), 51.5Hz(4 × 4 binning), 80.6Hz(8 × 8binning)
	High scan mode	30.9Hz, 55.0Hz(2 × 2 binning), 91.7Hz(4 × 4 binning), 131.6Hz(8 × 8binning)
Cooling method	Peltier cooling /natural air cooling	
Cooling temperature	+5 °C (Cools the CCD element to 20°C less than the ambient temperature)	
Dark current	approx. 135 electrons/pixels/ sec	
Exposure time	1 sec max. (On chip integration)	
A/D converter	12 bit	
Lens mount	C-mount	
Contrast enhancement gain	Approx. 1 to 5 times	
Sub-array readout	1/1, 1/2, 1/4, 1/8 (H) × 8 pixel unit (V)	
Super-pixel readout (Binning)	2 × 2, 4 × 4, 8 × 8,	
External trigger input	Yes	
Output signal (digital output)	16 bit RS-644 LVDS	
External control	RS-232C	
Ambient storage temperature	-10 to +50°C	
Ambient operating temperature	0 to +40°C	
Ambient storage/operating humidity	70% max. (with no condensation)	
Line voltage	100 / 117 / 220 / 240 VAC 50/60Hz	
Power consumption	70VA	

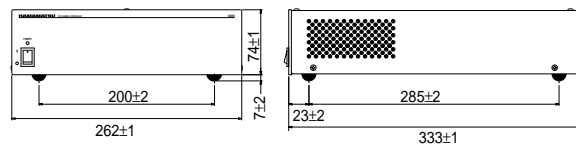
\*Calculated from the ratio of the full well capacity and the readout noise.

# DIMENSIONAL OUTLINES (UNIT: mm)

## • Camera head (approx. 1.1 kg)



## • Camera controller (approx. 5.0 kg)



★ 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 with our sales office
  - 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.

© 2000 Hamamatsu Photonics K.K.

# HAMAMATSU

Homepage Address <http://www.hamamatsu.com>

HAMAMATSU PHOTONICS K.K., Systems Division  
812 Joko-cho, 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. and Canada: Hamamatsu Photonic Systems: 360 Foothill Road, Bridgewater, N.J. 08807-0910, U.S.A., Telephone: (1)908-231-1116, Fax: (1)908-231-0852, 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)8152-2658, E-mail: info@hamamatsu.de

France: Hamamatsu Photonics France S.A.R.L.: 8, 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, U.K., Telephone: (44) 1707-294888, Fax: (44) 1707-325777, E-mail: info@hamamatsu.co.uk

North Europe: Hamamatsu Photonics Norden AB: Smidesvägen 12, SE-171-41 Solna, 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

Cat. No. SICS1084E01  
JUL/2001 HPK  
Created in Japan (PDF)