



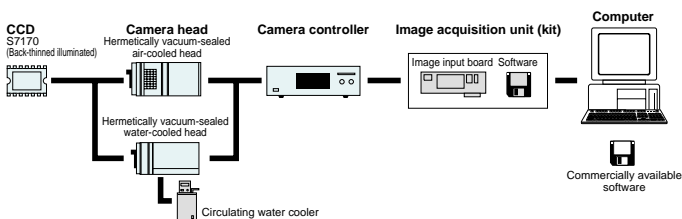
▲ Hermetic vacuum sealed air-cooled head type

This camera system is equipped with a CCD S7170 manufactured by Hamamatsu. In addition to outstanding quantum efficiency in the ultra violet to near infrared region, which is a feature of the back-thinned illumination type, this system offers high quantum efficiency in the ultraviolet region as well, drawing on original technology developed independently by HAMAMATSU. It offers a wide dynamic range, due to the large cell size ( $24 \mu\text{m} \times 24 \mu\text{m}$ ) and the extremely large full well capacity. Furthermore, the use of the MPP (Multi-Pinned Phase) low dark current drive method has reduced the dark current.

## APPLICATIONS

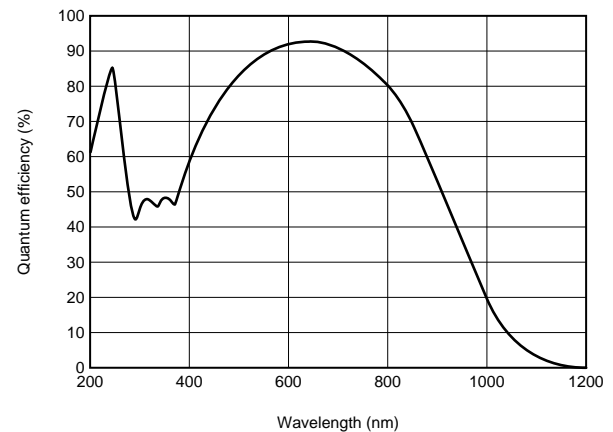
- X-ray scintillator readout
- Readout of various fluorescences
- X-ray diffraction readout
- Neutron radiography

## SYSTEM CONFIGURATION



▲ Hermetic vacuum sealed water-cooled head type

## SPECTRAL RESPONSE CHARACTERISTICS



## FEATURES

- High quantum efficiency in the ultra violet to near infrared region.
- Wide dynamic range of 28,750 : 1 (typ.)
- Extremely large full well capacity of 230,000 electrons (typ.)
- Low readout noise of 8 electrons r.m.s. (typ.)
- Low dark current
- Large effective area of 12.29 (H)  $\times$  12.29 (V) mm
- High resolution of 512 (H)  $\times$  512 (V) pixels

## TYPE NO.

C4880-21-

### Bit number on A/D converter

- 22: Fast scan mode 12-bit  
High precision scan mode 12-bit
- 24: Fast scan mode 12-bit  
High precision scan mode 14-bit
- 26: Fast scan mode 12-bit  
High precision scan mode 16-bit

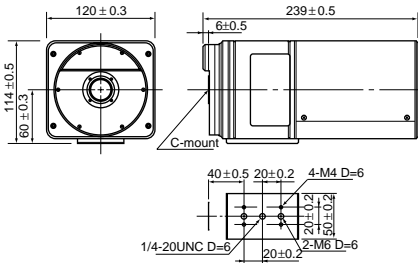
Cooling method  
A: Air-cooling  
W: Water-cooling

# SPECIFICATIONS

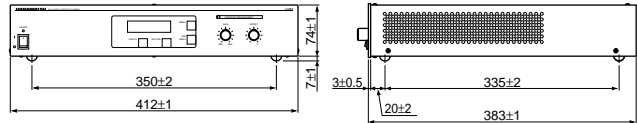
Model name	C4880-21-□□-A	C4880-21-□□-W
Camera head type	Hermetically vacuum-sealed air-cooled head	Hermetically vacuum-sealed water-cooled head
Circulating water cooler (sold separately)	-	Required
Vacuum pump (sold separately)	-	-
Imaging device	S7170 Model 1 full-frame transfer CCD	
Effective no. of pixels	512 (H) × 512 (V)	
Cell size	24 (H) × 24 (V) μm	
Effective area	12.29 (H) × 12.29 (V) mm	
Readout noise (High-precision scan mode)	Min.	6 electrons r.m.s.
	Typ.	8 electrons r.m.s.
Full well capacity	230,000 electrons	
Dynamic range (High-precision scan mode)	Typ.	28,750 : 1
	Max.	38,333 : 1
Frame rate	High-precision scan mode	0.5 frames/sec (156 kHz/pixel)
	Fast scan mode	7 frames/sec (2.5 MHz/pixel)
Cooling method	Peltier cooling / forced-air cooling + hermetic sealing	Peltier cooling / water cooling + hermetic sealing
Cooling temperature	-45 °C to -55 °C	-60 °C to -70 °C
CCD cooling control	Cooling ON/OFF control, cooling temperature setting function Front panel dial / software-controlled switching; Temperature displayed on front panel LCD	
Dark current	0.8 electrons/pixel/sec	0.3 electrons/pixel/sec
Exposure time	20 ms or more	
A/D converter	12 / 14 / 16 bits	
Lens mount	C-mount	
Mechanical shutter	Built-in (Control: OPEN / CLOSE / AUTO)	
Variable analog gain	Front panel dial / software-controlled switching, 1 - 6 times (high-speed scan)	
Variable offset	Front panel dial / software-controlled switching (fast scan)	
Amp gain	2 steps (fast scan), 3 steps (precision scan)	
Binning scan	Yes	
Sub-array scan	1/1, 1/2, 1/4, 1/8 (H) × any desired number (V)	
Super-pixel scan	2 × 2, 4 × 4, 8 × 8	
External trigger input	Yes	
Output signal (digital output)	Parallel digital output (conforms to RS-422)	
External control	RS-232C	
Ambient storage temperature	-10 to +50 °C	
Ambient operating temperature	0 °C to +40 °C	
Ambient operating/storage humidity	70% max. (with no condensation)	
Line voltage	100 / 117 / 220 / 240 VAC, 50/60 Hz	
Power consumption	Approx. 220 VA	

# DIMENSIONAL OUTLINES

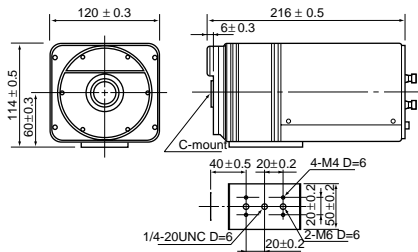
- Hermetic vacuum sealed air-cooled head (approx. 2.5 kg)



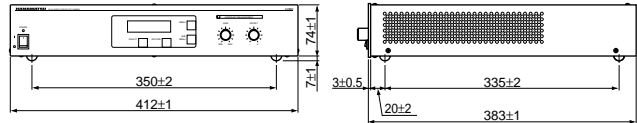
- Camera controller (approx. 8.5 kg)



- Hermetic vacuum sealed water-cooled head (approx. 2.5kg)



- Camera controller (approx. 8.5 kg)



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