HAMAMATSU

DATA SHEET

Digital CCD Camera
C4880-20

▲ Hermetic vacuum sealed air-cooled head type

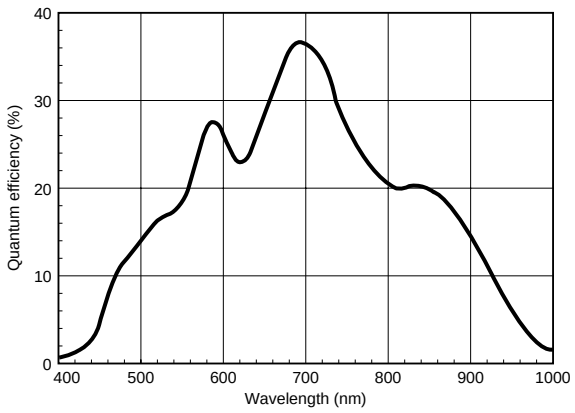
▲ Hermetic vacuum sealed water-cooled head type

This camera system is equipped with a CCD manufactured by Hamamatsu. It offers a wide dynamic range due to the large cell size (24 μm × 24 μm) and the extremely large quantity of full well capacity.
Furthermore, the use of the MPP (Multi-Pin Phasing) low dark current drive method has reduced the dark current.

APPLICATIONS

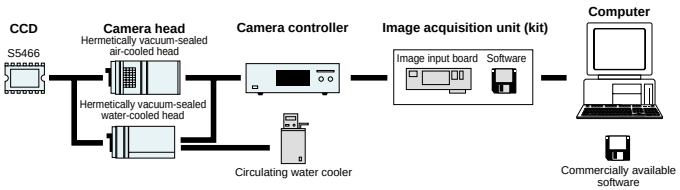
- **X-ray scintillator readout**
- **Readout of various fluorescences**
- **X-ray diffraction readout**
- **Neutron radiography**

SPECTRAL RESPONSE CHARACTERISTICS



* This is typical, not guaranteed.

SYSTEM CONFIGURATION



FEATURES

- **Wide dynamic range of 25,000 : 1 (typ.)**
- **Extremely large full well capacity of 300,000 electrons (typ.)**
- **Low readout noise of 12 electrons r.m.s. (typ.)**
- **Low dark current**
- **Large effective area of 12.29 (H) × 12.29 (V) mm**
- **High resolution of 512 (H) × 512 (V) pixels**

TYPE NO.

C4880-20-□□ □

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

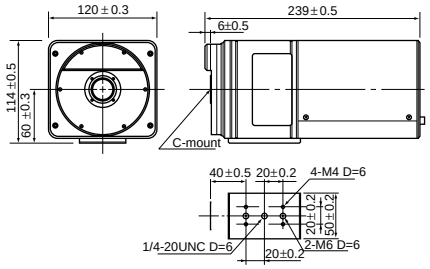
Bit number on A/D converter
22: Fast scan mode 12-bit
High precision scan mode 12-bit
24: Fast scan mode 12-bit
High precision scan mode 14-bit
26: Fast scan mode 12-bit
High precision scan mode 16-bit

SPECIFICATIONS

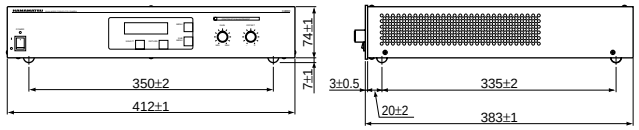
Model name		C4880-20-□□-A	C4880-20-□□-W
Camera head type		Hermetically vacuum-sealed air-cooled head	Hermetically vacuum-sealed water-cooled head
Circulating water cooler		–	Required
Vacuum pump		–	–
Imaging device		S5466 Model 1 full-frame transfer CCD	
Effective no. of pixels		512 (H) × 512 (V)	
Cell size		24 (H) × 24 (V) µm	
Effective area		12.29 (H) × 12.29 (V) mm	
Readout noise (High-precision scan mode)	Min.	8 electrons r.m.s.	
	Typ.	12 electrons r.m.s.	
Full well capacity		300,000 electrons	
Dynamic range (High-precision scan mode)	Typ.	25,000 : 1	
	Max.	30,000 : 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 to -55 ˚C	-60 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		3.0 electrons/pixel/sec	1.5 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

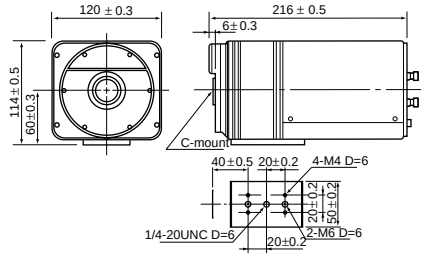
- **Hermetic vacuum sealed air-cooled head (approx. 2.5 kg)**



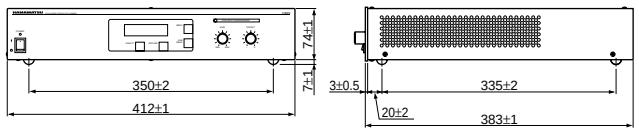
- **Camera controller (approx. 8.5 kg)**



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



- **Camera controller (approx. 8.5 kg)**



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