

HAMAMATSU

DATA SHEET

High resolution BT(Back-thinned)-CCD Cooled Digital Camera ORCA II-BT-1024G



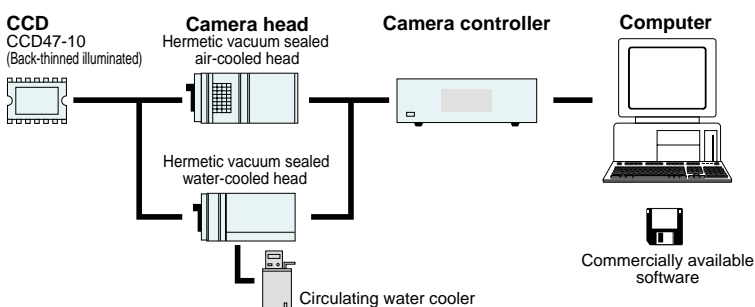
▲ Hermetic vacuum sealed air-cooled head type

The ORCA II-BT-1024G features the well known Marconi CCD47-10 chip packaged in a proprietary permanently sealed vacuum chamber evacuated to 10^{-7} Torr. This very high resolution, back thinned, back illuminated, million pixel CCD offers very high quantum efficiency over the spectrum from 350 nm to 900 nm. With a large full well capacity, low read noise and MPP (Multi-Pinned Phase) technology in the drive circuits to reduce dark current, this camera will produce rapid exposures and high dynamic range images. Dual mode digitization offers a software selectable choice of speed or very low noise readout methods with 12 to 16 bit precision. Special analog contrast enhancement circuits increase versatility for even the most difficult imaging conditions. A high performance serial bus IEEE 1394 is used as a computer interface.

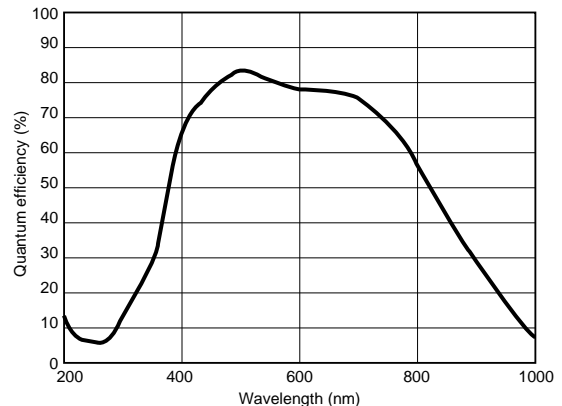
APPLICATIONS

- Luminescence and Fluorescence
- High resolution video microscopy
- Semiconductor imaging
- X-ray applications
- Neutron radiography
- Scintillator readout

SYSTEM CONFIGURATION



SPECTRAL RESPONSE CHARACTERISTIC



* This is typical, not guaranteed.

FEATURES

- Very high resolution format (1024 × 1024 pixels)
- High quantum efficiency from UV to NIR
- Very large full well capacity (80,000 electrons typ.)
- Low readout noise design (4 electrons r.m.s. typ.)
- Software selectable dual digitizers
- Analog contrast enhancement
- Compatible with IIDC 1394-based digital camera specifications
- Full remote control from PC via IEEE 1394 Bus

TYPE NUMBER

C4742-98-□□K□G

Bit number in A/D converter
24: High speed readout 12 bit
High-precision readout 14 bit
26: High speed readout 12 bit
High-precision readout 16 bit

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



Hamamatsu is a member of 1394 Trade Association

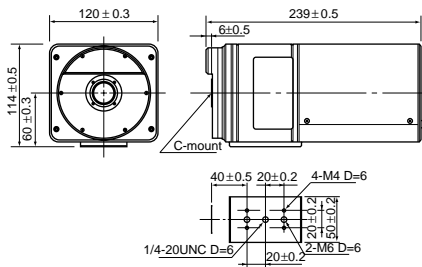
SPECIFICATIONS

Type number	C4742-98-24KAG	C4742-98-26KAG	C4742-98-24KWG	C4742-98-26KWG
Camera head type	Hermetic vacuum sealed air-cooled head		Hermetic vacuum sealed water-cooled head	
Circulating water cooler (sold separately)	-		Required	
Mechanical shutter	Built-in (Control: OPEN / CLOSE / AUTO)			
Imaging device	CCD47-10 full-frame transfer CCD			
Effective no. of pixels	1024 (H) × 1024 (V)			
Cell size	13 μm (H) × 13 μm (V)			
Effective area	13.3 mm (H) × 13.3 mm (V)			
Pixel clock rate	312.5 kHz/pixel (High-precision readout) / 5 MHz/pixel (High speed readout)			
Frame rate	0.28 frame/ s (High-precision readout) / 3.0 frame/s (High speed readout)			
Readout noise (r.m.s.) (High-precision readout) typ.	4 electrons			
Full well capacity typ.	80 000 electrons			
Dynamic range* (High-precision readout) typ.	20 000 : 1			
Cooling method	Forced air peltier cooling, with hermetic sealing		Water-cooling and peltier cooling, with hermetic sealing	
Cooling temperature	- 55 °C		- 60 °C	
Dark current	0.03 electrons/pixel/sec		0.01 electrons/pixel/sec	
A/D converter (High-precision readout)	14 bit	16 bit	14 bit	16 bit
Interface / Output signal (digital output)	IEEE 1394-1995/ Non-compressed data (Mono 16)			
Exposure time	20 ms to 7 200 s			
External control	IIDC 1394-Based Digital Camera Specification Ver. 1.30			
Sub-array	Yes			
External trigger	Yes			
Contrast enhancement	1, 2, 9 times (High-precision readout) / 1 to 6 times (High speed readout)			
Lens mount	C-mount			
Line voltage	AC 100 V / AC 117 V / AC 220 V / AC 240 V, 50/60 Hz			
Power consumption	approx. 220 VA			
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)			

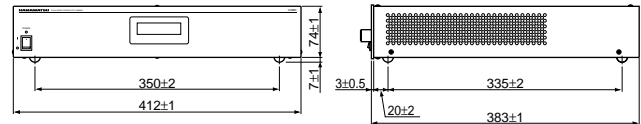
* Calculated from the ratio of the full well capacity and the readout noise.

DIMENSIONAL OUTLINES (Unit: mm)

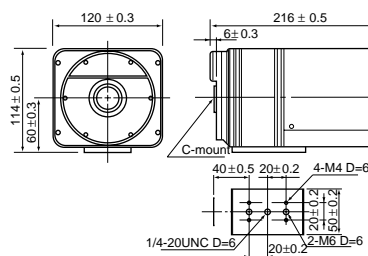
- Hermetic vacuum sealed air-cooled head (approx. 2.5 kg)



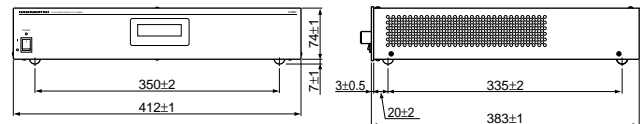
- Camera controller (approx. 8.5 kg)



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



- Camera controller (approx. 8.5 kg)



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