

# HAMAMATSU

## DATA SHEET

# High Resolution Digital B/W CCD Camera ORCA-ER



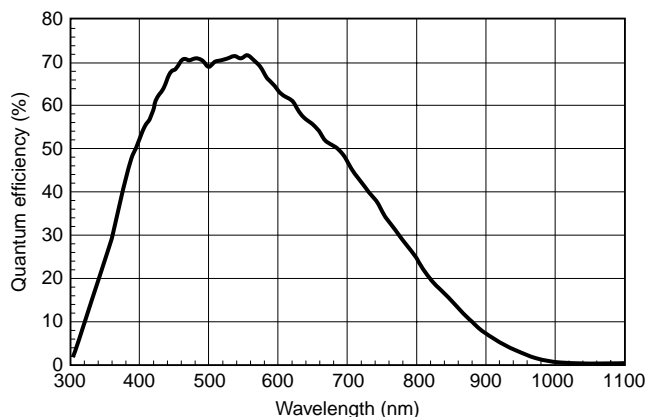
The ORCA-ER is a B/W CCD digital camera using an advanced progressive scan interline CCD chip with high sensitivity in VIS-NIR region offering substantially better noise characteristics at high frame rates. The Peltier cooled hermetic vacuum-sealed head can be cooled to  $-20^{\circ}\text{C}$ , reducing dark noise and minimizing thermal drift which makes this camera an ideal choice for demanding scientific and industrial applications.

RS422A digital output ensures compatibility with a large number of commercially available frame grabber boards. In addition, a standard C-mount lens coupling makes it easy to connect to optical microscopes and lenses. Fast electronic shuttering, fast readout and low noise integration all combine to make this camera a great choice for both high and low level imaging applications.

## APPLICATIONS

- Routine Fluorescence Microscopy
- Green Fluorescent Protein applications
- DNA and Ploidy analysis
- Red and Near infrared fluorescent applications
- Fluorescence In Situ Hybridization studies
- Motility and Motion analysis
- Combined DIC/Phase and Fluorescence
- Histology, Pathology and Cytology
- Metallurgical microscopy
- Failure analysis
- Semiconductor inspection
- X-ray scintillator readout

## SPECTRAL RESPONSE CHARACTERISTIC

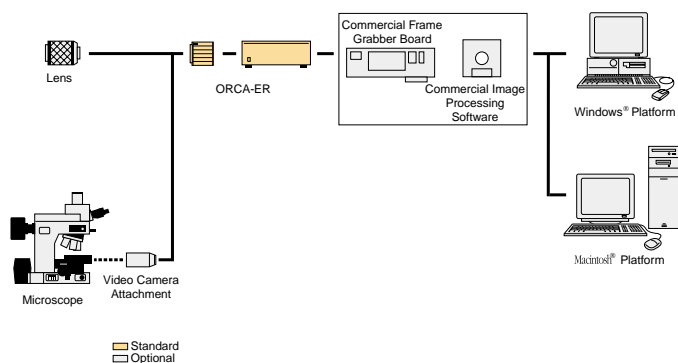


★ This is typical, not guaranteed

## FEATURES

- High sensitivity in VIS-NIR region
- Hermetic vacuum sealed head
- High resolution of 1.37 million pixels
- Exposure time up to 10 sec
- Low dark noise with peltier cooling for a dynamic range of 3000 : 1
- Progressive scan interline CCD chip with no mechanical shutter
- Binning function for improved sensitivity
- Full remote control from PC

## SYSTEM CONFIGURATION



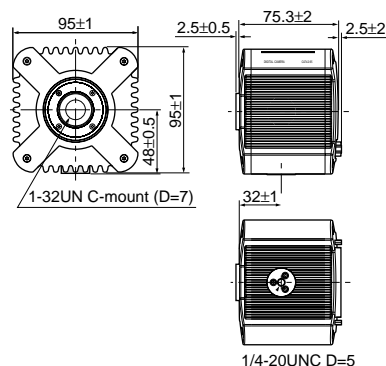
## SPECIFICATIONS

Type number	C4742-95-12ER		
Camera head type	Hermetic vacuum-sealed air-cooled head		
Imaging device	ER-150 progressive scan interline CCD		
Effective number of pixels	1344 (H) X 1024 (V)		
Cell size	6.45 $\mu\text{m}$ (H) X 6.45 $\mu\text{m}$ (V)		
Effective area	8.67 mm (H) X 6.60 mm (V)		
Pixel clock rate	14.75 MHz/pixel		
Frame rate	1 X 1		8.3 frame/s
	binning	2 X 2	16 frame/s
		4 X 4	28 frame/s
		8 X 8	45 frame/s
Readout noise (r.m.s.) typ.	6 electrons		
Full well capacity typ.	18000 electrons		
Dynamic range* typ.	3000 : 1		
Cooling method	Forced air peltier cooling, with hermetic sealing		
Cooling temperature	- 20 °C		
Dark current	0.1 electrons/pixel/s		
A/D converter	12 bit		
Exposure time	134 $\mu\text{s}$ to 10 s		
Sub-array	yes		
Contrast enhancement	Analog gain (10times max.) and offset function		
External trigger	yes		
Lens mount	C-mount		
Interface / Output signal (digital output)	RS-422A / 12 bit parallel output		
External control	RS-232C (full remote for all camera functions)		
Line voltage	AC 100 V / AC 117 V / AC 220 V / AC 240 V, 50/60 Hz		
Power consumption	approx. 70VA		
Ambient storage temperature	- 10 °C to + 50 °C		
Ambient operating temperature	0 °C to + 40 °C		
Ambient storage/operating humidity	70 % max. ( no condensation)		

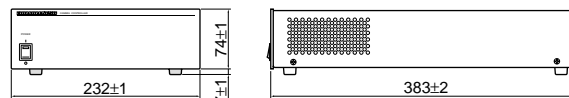
\*Calculated from the ratio of the full well capacity and the readout noise

## DIMENSIONAL OUTLINES (Unit: mm)

### • Camera head (approx. 1.3 kg)



### • Camera controller (approx. 6.2 kg)



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