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HAMAMATSU

DATA SHEET

High Resolution Digital Camera ORCA-HR

C4742-95-12HR



The ORCA-HR is a high resolution digital camera using a large format interline CCD chip with no mechanical shutter. In addition to a high resolution of 10 million pixels, a wide dynamic range of 12 bit digital output and high sensitivity offers a wide application range down to low light level imaging.

Peltier cooling drastically reduces dark noise and minimizes thermal drift, which makes the camera an ideal choice for demanding scientific and industrial applications.

FEATURES

- **High resolution of 10 million pixels**
- **Large format interline CCD chip with no mechanical shutter**
- **Vertical overflow drain structure**
- **Anti-blooming function**
- **Low dark noise with peltier cooling**
- **Binning (2 × 2, 4 × 4) function to improve sensitivity**
- **Shortest exposure time : 330 μs capture fast events**
- **Lens coupling : F-mount, ENG (optional)**
- **Full remote control from PC via RS-232C**

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SPECIFICATIONS

Imaging device			Large format Interline CCD (HR-1000)
Effective no.of pixels			4000 (H) × 2624 (V)
Cell size			5.9 μm × 5.9 μm (square format)
Effective area			23.6 mm × 15.5 mm
Pixel clock rate			20.0 MHz/pixel
Frame rate (No.of pixels)	Interlace scan		1.7 frame/sec (4000 (H) × 2624 (V))
	Binning scan	2 × 2	3.4 frame/sec (2000 (H) × 1312 (V))
		4 × 4	6.4 frame/sec (1000 (H) × 656 (V))
	Outline scan		8.9 frame/sec (664 (H) × 422 (V))
Readout noise			13 electrons r.m.s. typ.
Full well capacity			13,300 electrons
Dynamic range①			1000 : 1
Cooling method			Peltier cooling, Air radiation system
Cooling temperature			+5 ˚C to +7 ˚C
Dark current			0.5 electron/pixel/sec typ.
A/D converter			12 bit
Output signal (digital output)			TIA/EIA-644(LVDS) parallel output 12 bit
Exposure time			330 μs to 10s
External control			RS-232C (full remote for all camera functions)
Sub array②			yes
External trigger			Level or Edge trigger (available only at binning mode)
Contrast enhancement			Analog gain (10 times max.) and Offset functions
Lens mount			F-mount
Line voltage			100 V/117 V/220 V/240 V AC, 50 Hz/60 Hz
Power consumption			Approx. 90 V·A
Ambient storage temperature			-10 ˚C to +50 ˚C
Ambient operating temperature			0 ˚C to +40 ˚C
Ambient storage/operating humidity			70 % max. (no condensation)

①Calculated from the ratio of the full well capacity and average readout noise

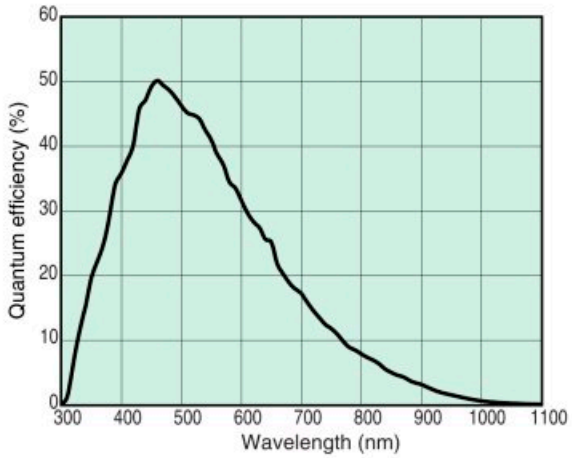
②The sub-array setting is available only with binning mode.

	Horizontal width	Horizontal offset	Vertical width	Vertical offset
2 × 2 binning	8 × n	8 × n	8 × n	8 × n
4 × 4 binning	8 × n	8 × n	8 × n	8 × n
n	0 ≦ n ≦ 500	0 ≦ n ≦ 499	0 ≦ n ≦ 328	0 ≦ n ≦ 327

• Software development kit

- Platform ---------- Windows95 / 98 / NT
- Language ---------- Visual C++
- Frame grabber board ----- Coreco PC-DIG
- Functions ---------- Image data capture
  ORCA-HR camera control

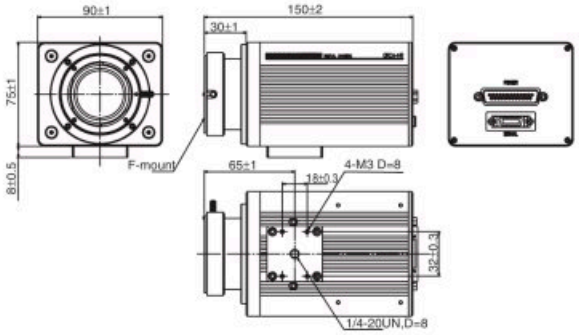
• Spectral response characteristics



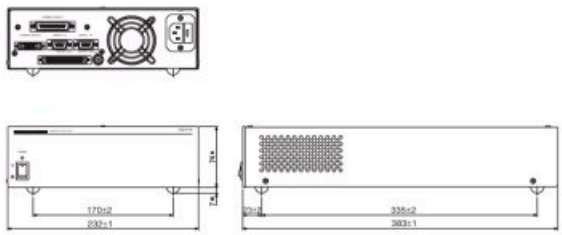
★ This is typical, not guaranteed

DIMENSIONAL OUTLINE (Unit : mm)

• Camera head (approx. 1.2 kg)



• Control unit (approx. 5.9 kg)



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