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HAMAMATSU

DATA SHEET

# High Resolution Digital B/W CCD Camera

# ORCA-ER



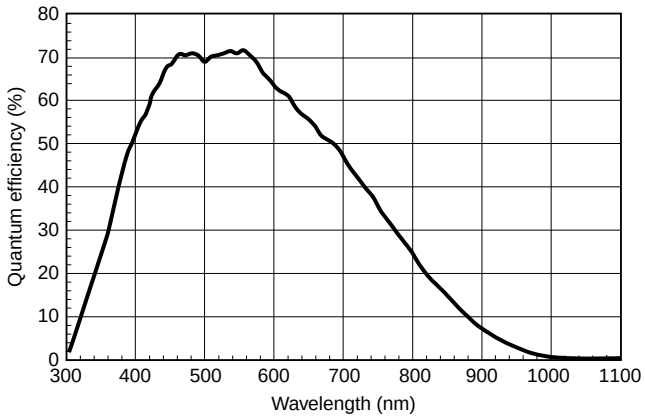
The ORCA-ER is a B/W CCD digital camera using an advanced progressive scan interline CCD chip with high sensitivity in VIS-NIR region offering substantially better noise characteristics at high frame rates. The Peltier cooled hermetic vacuum-sealed head can be cooled to -20˚C, reducing dark noise and 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 Hybirdization 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

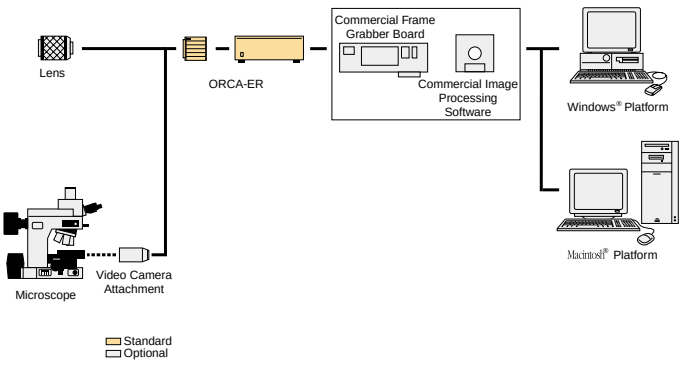



★ This is typical, not guaranteed

## 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 3 000 : 1**
- **Progressive scan interline CCD chip with no mechanical shutter**
- **Binning function for improved sensitivity**
- **Full remote control from PC**

## SYSTEM CONFIGURATION



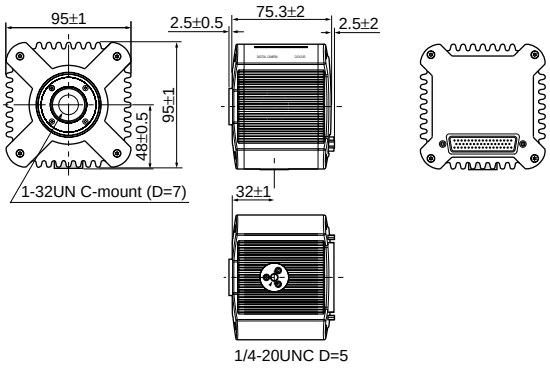
# SPECIFICATIONS

| | | | |
|---|---|---|---|
| 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) × 1024 (V) |
| Cell size | | | 6.45 µm (H) × 6.45 µm (V) |
| Effective area | | | 8.67 mm (H) × 6.60 mm (V) |
| Pixel clock rate | | | 14.75 MHz/pixel |
| Frame rate | 1 × 1 | | 8.3 frame/s |
| | binning | 2 × 2 | 16 frame/s |
| | | 4 × 4 | 28 frame/s |
| | | 8 × 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 | | | 10 µs 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 comsumption | | | 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) |

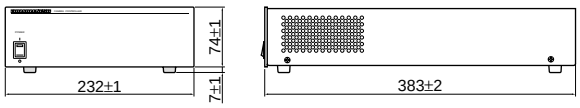
*Calculated from the ratio of the full well capacity and the readout noise

# DIMENSIONAL OUTLINES (Unit: mm)

- **Camera head (approx. 1.3 kg)**




- **Camera controller (approx. 6.2 kg)**




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