APPLICATION

We have a diverse lineup of cameras that support a wide range of wavelengths from X-rays to the near-infrared and support a variety of applications.

Life science

Time-lapse imaging of live cells
Mitochondria in living cells are observed by long-time time-lapse imaging.

Observation of mouse kidney cells
Micron-sized mouse kidney cells are observed by high-resolution imaging under an electron microscope.

Cardiomyocyte pulsation observation
The pulsation of cardiomyocytes associated with changes in calcium ion concentration is observed by high-speed imaging using fluorescence images.

Observation of cultured cells
Cells cultured in one well of a microplate are observed by high-resolution imaging with fluorescent images.

Medical diagnosis
The condition of the affected area is observed for diagnosis by infrared imaging.

Synchrotron imaging
The cross-sectional structure of the toothpick is clearly shown by high-resolution X-ray imaging.

Foreign object detection
Small stones mixed in coffee beans that are difficult to see with visible light are detected by the infrared imaging.

Material identification
Infrared imaging identifies materials that are difficult to distinguish in visible light, such as PVC, acrylic, PET, and PS.

Medical

Astronomy

Lucky imaging
Wide field of view and low-noise imaging is used to obtain a clear image of the stars by integrating, from among many acquired images, that are less affected by atmospheric turbulence.

Synchrotron imaging

Electronic microscope
Structure observation of semiconductor devices
The interior structure of a semiconductor device is analyzed at the nano-level by high-resolution imaging using an electron microscope.

Food inspection

Analysis/spectroscopy

Visible image

Near-infrared image

Near-infrared image (illumination method: reflection)

Visible light image

Near-infrared image (illumination method: transmission)

Material identification

Visible image

Near-infrared image

Near-infrared image (illumination method: reflection)

Visible light image

Near-infrared image (illumination method: transmission)

* Displayed with pseudo color by image processing.

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## Camera Line Up

### Wavelength Range

<table>
<thead>
<tr>
<th>UV to Near-infrared</th>
<th>Visible to Near-infrared</th>
<th>Visible to Near-infrared (for weak light)</th>
<th>Near-infrared</th>
<th>InGaAs Line Scan Camera</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Notes</strong></td>
<td><strong>ORCA-II/II-CL</strong> cam.</td>
<td><strong>ORCA-U2</strong> cam.</td>
<td><strong>ORCA-EuroScience</strong> cam.</td>
<td><strong>ORCA-Flash4.0V3</strong> cam.</td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>C13369-03U</td>
<td>C13369-04U</td>
<td>C13440-08U</td>
<td>C14060-03U</td>
</tr>
<tr>
<td><strong>Image sensor type</strong></td>
<td>Area sensor</td>
<td>Area sensor</td>
<td>Area sensor</td>
<td>Area sensor</td>
</tr>
<tr>
<td><strong>Image size</strong></td>
<td>18.84 × 12.84</td>
<td>13.12 × 10.24</td>
<td>11.25 × 7.03</td>
<td>9.19 × 6.12</td>
</tr>
</tbody>
</table>

### Analysis/spectroscopy

- **Analysis/spectroscopy**
  - Life science imaging
  - Medical imaging
  - Synchrotron imaging
  - Semiconductor inspection
  - Microscopy

### Spectral Response

![Spectral response graph](spectral_response_graph.png)

### Contact Us

For more information or to order products, please contact us.

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1. *Depends on the model and conditions. For details, refer to each product catalog.
2. *Equivalent to USB 3.1 Gen 1.
**OEM CAMERA**

We design and manufacture OEM cameras specific to each customer. We provide various types of cameras with options such as shape, sensor, interface, cooling method, software, etc. to meet customers' requests. The measurement wavelength range covers not only the visible range but spans widely from X-ray to infrared.

**Cost reduction with minimum required functions**

- **Camera type**
  - Board type
  - Cased type
  - Camera head separated type
  - Integrated optical system

- **Cooling method**
  - Air cooled
  - Water cooled
  - Peltier cooling, etc.

- **Interface**
  - USB
  - Camera Link
  - Gigabit Ethernet
  - CoaXPress and others

- **Sensor type**
  - sCMOS
  - TDI
  - Other company’s sensor, etc.

- **Software/firmware**
  - FPGA
  - Library
  - Correction data
  - Simulation

**Shorten delivery time with simulation technology**

We can perform imaging simulations that match the characteristics of various cameras (wavelength, sensitivity, speed, etc.). By using this technology, we can shorten the process of repeating design and trial production, and provide cameras that meet your purpose efficiently and in a short time.

**Flow from inquiry to delivery**

**Without simulation**
- Inquiry
- Consultation
- Planning
- Repeating designs and trial productions
- Delivery

**With simulation (in our company)**
- Inquiry
- Consultation
- Planning
- Simulation
- Design and trial production
- Delivery

This is a simulation example using a cytoskeleton sample. The amount of light per pixel is set to the same value for simulation. Simulations can be performed by flexibly changing the acquisition conditions such as exposure time, and the results can be viewed not only as still images but also as movies.

**Compatible software/development environment**

The followings are examples of the development environments and software that can be used with our cameras.

<table>
<thead>
<tr>
<th>Development environment</th>
<th>Manufacturer</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>LabVIEW (Windows)</td>
<td>National Instruments</td>
<td>Simple programming language, easy control of peripheral devices</td>
</tr>
<tr>
<td>MATLAB (Image acquisition toolbox)</td>
<td>The MathWorks</td>
<td>Simple programming language and a rich data analysis library</td>
</tr>
<tr>
<td>Micro-manager*</td>
<td>Open Imaging</td>
<td>A library that enables control of microscopes and peripheral devices of other companies</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Software</th>
<th>Manufacturer</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>MetaMorph® software suite of products</td>
<td>Molecular Devices</td>
<td>Image processing software for life science field</td>
</tr>
</tbody>
</table>

* For details on external software, contact the manufacturer.

You can try the simulation on our website. Access it from the URL below to try it out.

RELATED PRODUCTS

Image splitting optics
W-VIEW GEMINI/W-VIEW GEMINI-2C

W-VIEW GEMINI A12801-01 is an image splitting optical system for a fluorescence microscope that splits incident light into two wavelengths and forms an image on a single camera. You can easily adjust the optical axis and observe images of two wavelengths at the same time. We also have a line-up of W-VIEW GEMINI-2C A12801-10, which forms images on two cameras.

A two wave lengths image by W-VIEW GEMINI

W-VIEW GEMINI
A12801-01

X-ray line scan camera/X-ray TDI camera

We have a lineup of X-ray non-destructive inspection cameras that can be used in-line. Since it is possible to inspect the inside of substances that cannot be seen with visible light or infrared light, these cameras are suitable for foreign matter inspection of foods and pharmaceuticals, defect inspection of printed circuit board, etc.

X-ray line scan camera X-ray TDI camera

C14300 series C12300 series

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