Camera Specifications

- Auto/Manual Exposure
- Auto/Manual White Balance
- Programmable Gain, 1 to 10X Optimizable
- C-Mount Lens Adapter
- USB 2.0 High-Speed Interface (USB 480 MB/s vs. Firewire 400 MB/s)
- Power: USB Bus Power (INFINITY 1) or External 5VDC — 500mA (INFINITY 2/3/X)
- Operating Temperature 0º C to +50º C
- Operating Humidity 5% to 95%, Non-condensing

INFINITY CAPTURE Software
Lumenera INFINITY cameras include INFINITY CAPTURE Software. This intuitive user interface includes all of the basic features needed to control the camera and capture images. Features include:

- Real Time Video Preview
- Separate Preview and Capture Controls
- Automatic/Manual Exposure
- Automatic/Manual White Balance
- Manual Hue and Saturation
- Manual Contrast/Brightness/Gamma
- Manual Preview Quality
- Manual Preview Zoom Level
- Multiple Image Averaging
- Preview Histogram
- Global Electronic Gain
- User Defined Light Source
- Flat Field Correction
- Highlight Saturated Pixels
- Overlay Bitmaps
- Alpha Blended Bitmaps

Also included is a TWAIN interface, which allows the camera to be used with 3rd party software applications.

INFINITY Camera Specifications

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Sensor</th>
<th>FPS</th>
<th>Bit Depth</th>
<th>Read Noise</th>
<th>Binning</th>
<th>Region of Interest</th>
<th>Cap # (Colour/Mono)</th>
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<td>8 or 10</td>
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<td>Y</td>
<td>INFINITYX–2/C or M</td>
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</table>

OEM Custom Camera Design
As a Lumenera OEM customer you can now leverage the success of the INFINITY Camera line through our custom camera development.

Our unique options for OEM custom software features and hardware camera design offer the following advantages:

- Improve Time to Market
- Reduce Development Costs
- Differentiate from the Competition

For more information e-mail scientificsales@lumenera.com.
**INFINITY1 CMOS Cameras**

**Highlights**
- 1, 3 and 6 megapixel resolution
- Perfect for documentation and archiving applications
- Fast frame rates

The INFINITY CMOS USB 2.0 cameras are designed to be a cost-effective, versatile solution for a variety of microscopy imaging applications. Features include auto white balance, full exposure control, programmable gain, sub-windowing and region of interest. It is an excellent fit for documentation and archiving applications.

**Models**
- INFINITY1-1C: 1.3 Megapixel CMOS Color Camera
- INFINITY1-1M: 1.3 Megapixel CMOS Monochrome Camera
- INFINITY1-3C: 3.1 Megapixel CMOS Color Camera
- INFINITY1-3M: 6.6 Megapixel CMOS Color Camera
- INFINITY1-6M: 6.6 Megapixel CMOS Monochrome Camera

**Applications**
- Brightfield, Darkfield, DIC, Live Cell Imaging, Histology, Pathology, Cytology, Defect Analysis, Semiconductor Inspection, Metrology

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**INFINITY2 CCD Cameras**

**Highlights**
- 1, 2 and 3 megapixel resolution
- Higher dynamic range for quantitative analysis
- Fast frame rates
- Low noise electronics

Equipped with a high-quality, Sony CCD sensor, INFINITY CCD USB 2.0 cameras offer excellent sensitivity, high dynamic range and a 12-bit digital output. Features include binning, auto white balance, full exposure control, programmable gain, sub-windowing and region of interest. It is ideal for high-end scientific, medical, ophthalmic and life science applications.

**Models**
- INFINITY2-1C: 1.4 Megapixel CCD Color Camera
- INFINITY2-1M: 1.4 Megapixel CCD Monochrome Camera
- INFINITY2-2C: 2.0 Megapixel CCD Color Camera
- INFINITY2-2M: 2.0 Megapixel CCD Monochrome Camera
- INFINITY2-3C: 3.3 Megapixel CCD Color Camera

**Applications**
- Brightfield, Darkfield, DIC, Live Cell Imaging, Histology, Pathology, Cytology, Defect Analysis, Semiconductor Inspection, Metrology, Gel Documentation, Moderate Light Fluorescence

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**INFINITY3 Cooled CCD Cameras**

**Highlights**
- 1 megapixel resolution
- Cooling to 25°C below ambient
- High signal to noise ratio for low light, long exposure applications
- Fast frame rates
- Low noise electronics

For low light fluorescence applications the INFINITY cooled CCD USB 2.0 cameras offer cooling to 25°C below ambient. The Sony ICX285 ExView HAD sensor has very high dynamic range, excellent sensitivity and a 12-bit digital output. Features include binning, auto white balance, full exposure control, programmable gain, sub-windowing and region of interest.

**Models**
- INFINITY3-1C: 1.4 Megapixel Cooled CCD Color Camera
- INFINITY3-1M: 1.4 Megapixel Cooled CCD Monochrome Camera

**Applications**
- Brightfield, Darkfield, DIC, Live Cell Imaging, Histology, Pathology, Cytology, Defect Analysis, Semiconductor Inspection, Metrology, Low Light Fluorescence, Chemiluminescence, Bioluminescence, Flow Analysis, GFP, FISH, NIR, FRET

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**INFINITYX High Resolution CMOS Cameras**

**Highlights**
- 1, 5, 10 and 21 megapixel resolution
- Ideal for archiving and documentation
- Fast frame rates

Sub pixel shifting technology provides variable resolution capture at 1.3, 5, 10 and 21 megapixel resolution with precise color and good sensitivity. The INFINITYX USB 2.0 camera is an essential tool for clinical, life science and educational professionals where high resolution image archiving and publication quality images are critical. Features include auto white balance, full exposure control, programmable gain, sub-windowing and region of interest.

**Models**
- INFINITYX-21C: 21 Megapixel CMOS Color Camera
- INFINITYX-21M: 21 Megapixel CMOS Monochrome Camera

**Applications**
- High Resolution, Brightfield, Darkfield, DIC, Live Cell Imaging, Histology, Pathology, Cytology, Defect Analysis, Semiconductor Inspection, Metrology

---

**INFINITY Camera Selection**

**High to Moderate Illumination**

**Moderate to Low Illumination**

**Extremely Low Illumination**

**Applications**
- Brightfield/Darkfield
- DIC
- Live Cell Imaging
- Histology/Pathology/Cytology
- Defect Analysis
- Semiconductor Inspection
- Metrology
- Documentation and Archiving

**High to Moderate Illumination**

12-bit grayscale output

- INFINITY1

**Moderate to Low Illumination**

12-bit grayscale output

- INFINITY2

**Extremely Low Illumination**

12-bit grayscale output

- INFINITY3

---

**Quantitative Analysis, Cooled CCD**

Quantitative Analysis (CCD) Demands a High Grayscale Level:

- CMOS (10-bit): 1024 Grayscale Levels
- Cooled CCD (12-bit): 4096 Grayscale Levels

**Bit Depth, Gray Levels and Sensor Dynamic Range**

**Low Light and Long Exposure Times (Cooled CCD)**

INFINITY3 cameras are cooled to 25°C below ambient to reduce dark current noise to a negligible level. This results in a 50% decrease in dark current noise for every 8 to 6°F in temperature below ambient.

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**Dark Current Noise vs. Temperature**

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**INFINITYX Camera Selection**

**Applications**
- Brightfield/Darkfield, DIC, Live Cell Imaging, Histology, Pathology, Cytology, Defect Analysis, Semiconductor Inspection, Metrology, Gel Documentation, Moderate Light Fluorescence
### INFINITY1 CMOS Cameras

**Highlights**
- 1, 3, and 6 megapixel resolution
- Perfect for documentation and archiving applications
- Fast frame rates

The INFINITY CMOS USB 2.0 cameras are designed to be a cost-effective, versatile solution for a variety of microscopy imaging applications. Features include auto white balance, full exposure control, programmable gain, sub-windowing and region of interest. It is an excellent fit for documentation and archiving applications.

**Models**
- INFINITY1-1C 1.3 Megapixel CMOS Color Camera
- INFINITY1-1M 1.3 Megapixel CMOS Monochrome Camera
- INFINITY1-3C 3.1 Megapixel CMOS Color Camera
- INFINITY1-3M 3.1 Megapixel CMOS Monochrome Camera
- INFINITY1-6C 6.6 Megapixel CMOS Color Camera
- INFINITY1-6M 6.6 Megapixel CMOS Monochrome Camera

**Applications**
- Brightfield, Darkfield, DIC, Live Cell Imaging, Histology, Pathology, Cytology, Defect Analysis, Semiconductor Inspection, Metrology

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### INFINITY2 CCD Cameras

**Highlights**
- 1, 2, and 3 megapixel resolution
- Higher dynamic range for quantitative analysis
- Fast frame rates
- Low noise electronics

Equipped with a high-quality, Sony CCD sensor, INFINITY CCD USB 2.0 cameras offer excellent sensitivity, high dynamic range and a 12-bit digital output. Features include binning, auto white balance, full exposure control, programmable gain, sub-windowing and region of interest. It is ideal for high-end scientific, medical, ophthalmic and life science applications.

**Models**
- INFINITY2-1C 1.4 Megapixel CCD Color Camera
- INFINITY2-1M 1.4 Megapixel CCD Monochrome Camera
- INFINITY2-2C 2.0 Megapixel CCD Color Camera
- INFINITY2-2M 2.0 Megapixel CCD Monochrome Camera
- INFINITY2-3C 3.3 Megapixel CCD Color Camera
- INFINITY2-3M 3.3 Megapixel CCD Monochrome Camera

**Applications**
- Brightfield, Darkfield, DIC, Live Cell Imaging, Histology, Pathology, Cytology, Defect Analysis, Semiconductor Inspection, Metrology, Gel Documentation, Moderate Light Fluorescence

---

### INFINITY3 Cooled CCD Cameras

**Highlights**
- 1 megapixel resolution
- Cooling to 25°C below ambient
- High signal to noise ratio for low light, long exposure applications
- Fast frame rates
- Low noise electronics

For low light fluorescence applications the INFINITY cooled CCD USB 2.0 cameras offer cooling to 25°C below ambient. The Sony ICX285 ExView HAD sensor has very high dynamic range, excellent sensitivity and a 12-bit digital output. Features include binning, auto white balance, full exposure control, programmable gain, sub-windowing and region of interest.

**Models**
- INFINITY3-1C 1.4 Megapixel Cooled CCD Color Camera
- INFINITY3-1M 1.4 Megapixel Cooled CCD Monochrome Camera

**Applications**
- Brightfield, Darkfield, DIC, Live Cell Imaging, Histology, Pathology, Cytology, Defect Analysis, Semiconductor Inspection, Metrology, Low Light Fluorescence, Chemiluminescence, Bioluminescence, Flow Analysis, GFP, FISH, NIR, FRET

---

### INFINITYX High Resolution CMOS Cameras

**Highlights**
- 1, 5, 10, and 21 megapixel resolution
- Ideal for archiving and documentation
- Fast frame rates

Sub pixel shifting technology provides variable resolution capture at 1.3, 5, 10 and 21 megapixel resolution with precise color and good sensitivity. The INFINITYX USB 2.0 camera is an essential tool for clinical, life science and educational professionals where high resolution image archiving and publication quality images are critical. Features include auto white balance, full exposure control, programmable gain, sub-windowing and region of interest.

**Models**
- INFINITYX-21C 21 Megapixel CMOS Color Camera
- INFINITYX-21M 21 Megapixel CMOS Monochrome Camera

**Applications**
- High Resolution, Brightfield, Darkfield, DIC, Live Cell Imaging, Histology, Pathology, Cytology, Defect Analysis, Semiconductor Inspection, Metrology

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### Dark Current Noise vs. Temperature

INFINITY3 cameras are cooled to 25°C below ambient to reduce dark current noise to a negligible level. This results in a 50% decrease in dark current noise for every 6 to 8°C in temperature below ambient.

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### Quantitative Analysis, Cooled CCD

**Quantitative Analysis (CCD) Demands a High Grayscale Level:**
- CMOS (10-bit) 1024 Grayscale Levels
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**Bit Depth, Gray Levels and Sensor Dynamic Range**

---

### INFINITY Camera Selection

**High to Moderate Illumination**
- 12-bit Grayscale Range

**Applications**
- Brightfield, Darkfield, DIC, Live Cell Imaging, Histology, Pathology, Cytology, Defect Analysis, Semiconductor Inspection, Metrology, Documentation and Archiving

**INFINITY1**
- INFINITY1-1C
- INFINITY1-1M
- INFINITY1-3C
- INFINITY1-3M
- INFINITY1-6C
- INFINITY1-6M

**INFINITY2**
- INFINITY2-1C
- INFINITY2-1M
- INFINITY2-2C
- INFINITY2-2M
- INFINITY2-3C
- INFINITY2-3M

**INFINITYX**
- INFINITYX-21C
- INFINITYX-21M

**Moderate to Low Illumination**
- 12-bit Grayscale Range

**Applications**
- Brightfield, Darkfield, DIC, Live Cell Imaging, Histology, Pathology, Cytology, Defect Analysis, Semiconductor Inspection, Metrology, Documentation and Archiving

**INFINITY2**
- INFINITY2-1C
- INFINITY2-1M
- INFINITY2-2C
- INFINITY2-2M
- INFINITY2-3C
- INFINITY2-3M

**INFINITYX**
- INFINITYX-21C
- INFINITYX-21M

**Extremely Low Illumination**
- 12-bit Grayscale Range

**Applications**
- Brightfield, Darkfield, DIC, Live Cell Imaging, Histology, Pathology, Cytology, Defect Analysis, Semiconductor Inspection, Metrology, Documentation and Archiving

**INFINITYX**
- INFINITYX-21C
- INFINITYX-21M

---

### Low Light and Long Exposure Times (Cooled CCD)

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INFINITY Camera Specifications

- Auto/Manual Exposure
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- Programmable Gain, 1 to 10X Optimizable
- C-Mount Lens Adapter
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- Power: USB Bus Power (INFINITY 1) or External 5VDC — 500mA (INFINITY 2/3/X)
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- Flat Field Correction
- Highlight Saturated Pixels
- Overlay Bitmaps
- Alpha Blended Bitmaps

Also included is a TWAIN interface, which allows the camera to be used with 3rd party software applications.

CAMERA SPECIFICATIONS

<table>
<thead>
<tr>
<th>Mega-pixels</th>
<th>Resolution</th>
<th>Sensor</th>
<th>FPS</th>
<th>Bit Depth</th>
<th>Read Noise</th>
<th>Binning</th>
<th>Region of Interest</th>
<th>Color (Colour/Mono)</th>
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<tr>
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</tbody>
</table>

INFINITY Camera Specifications

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