# INFINITY*3-3*UR

## Research-Grade 2.8 Megapixel CCD USB 3.0 Camera

Cooled Performance from an Uncooled Camera.
Ideal for Scientific Image Analysis in Low Light Life Science, Clinical and Material Science Applications


### INFINITY*3-3*UR

Lumenera's INFINITY*3-3*UR is a high-speed, high sensitivity research-grade camera with a 2.8 megapixel resolution. The INFINITY*3-3*UR incorporates Sony's remarkable ICX674 CCD sensor, unleashing the high frame rate capability via a high-speed USB 3.0 data interface. Full resolution images are sent to a host computer at up to 53 frames per second (fps). The research-grade designation of the INFINITY*3-3*UR is a testament to the low noise electronics, high-grade components and unique thermal management techniques. The result is an industry-leading, high-performance, low noise digital camera, alone in its class. This microscopy camera is designed for use in a wide variety of scientific, life science, clinical and industrial applications requiring optimal color reproduction, extreme sensitivity, increased resolution and high speed.

### Superior Sensitivity and Color Reproduction

The INFINITY*3-3*UR has the unmatched light sensitivity needed for low light applications. Relying on Sony's EXview HAD II technology, this camera offers extremely high dynamic range, 4.54 x 4.54 µm pixels and very low noise. The INFINITY*3-3*UR delivers outstanding image quality and value for challenging low light applications such as fluorescence and NIR imaging.

### USB 3.0 High-Speed Plug-and-Play Interface

The INFINITY*3-3*UR uses the latest USB 3.0 technology at 5 Gbits/sec to deliver the fastest image transfer - even at its highest resolution. Image captures can be synchronized using either a hardware or software trigger. 128 MB of onboard memory for frame buffering ensures dependable and reliable image delivery at full frame rate and highest resolution even in the most demanding systems. USB 3.0 is the ideal choice for microscopy as it is readily available on today's computers, while plug-and-play connectivity makes for installation easy. Simplified I/O cabling is provided through a locking Hirose connector supporting 1 optically isolated output, 1 optically isolated input and 2 configurable I/O ports. USB 2.0 is fully supported (with reduced performance).

### Full Image Analysis Software Included

INFINITY CAPTURE, an intuitive image capture program, and INFINITY ANALYZE, a full image analysis package offering camera control, measurement, annotation, tiling and post capture enhancement, are included with the camera. Camera and software combine to create a complete microscopy imaging solution for your application.

### Superior Technical Assistance Center (TAC)

All Lumenera cameras are supported by an experienced team of technical support and imaging experts widely acclaimed in the industry. As a Lumenera customer you gain access to the TAC group and knowledge base, providing full support for cameras, software and microscopy applications.

### Features

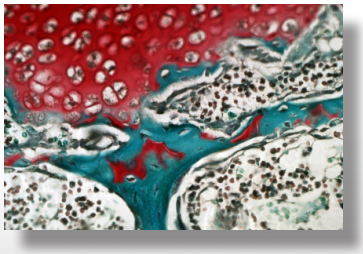
- Industry leading Sony EXview HAD II sensor technology
- Color or monochrome ICX674 CCD sensor with 2/3" optical format providing a resolution of 1936 x 1456 using 4.54 x 4.54 µm pixels
- Fastest frame rates possible for the ICX674 sensor. Up to 53 fps at full resolution, 66 fps (1920 x 1088), 109 fps at VGA (640 x 480)
- High-speed USB 3.0 interface for fastest image delivery and simplified connectivity. USB 2.0 supported.
- GPI/O for control of peripherals and synchronization
- Region of Interest (ROI) option to provide higher frame rates
- Selectable 8 or 14-bit pixel data
- Selectable tap readout, matching sensor performance to your application
- Multiple frame rates supported, each optimized for lowest noise performance
- Software compatible with Windows 10, 8, 7, Vista, Mac OS X 10.7, 32 and 64-bit operating systems
- Includes TWAIN and DirectX/ Direct Show support

### Warranty

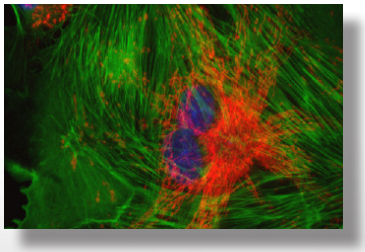
- Four (4) year warranty

### Sample Images

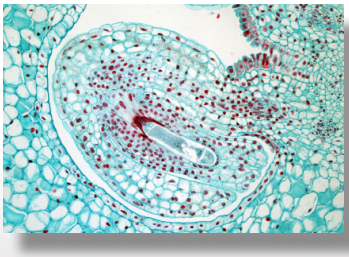
For more details on these INFINITY*3-3*UR images please visit: www.lumenera.com/microscopyimages/



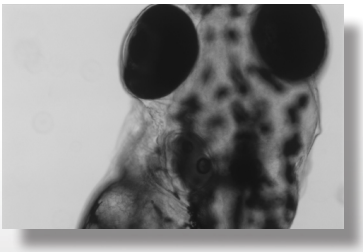
INFINITY*3-3*URC
*Tissue - Custom Stain*



INFINITY*3-3*URM
*BPAE Fixed Cell (Composite Image)*



INFINITY*3-3*URC
*Lilium Brownii Ovary*



INFINITY*3-3*URM
*Zebra Fish*

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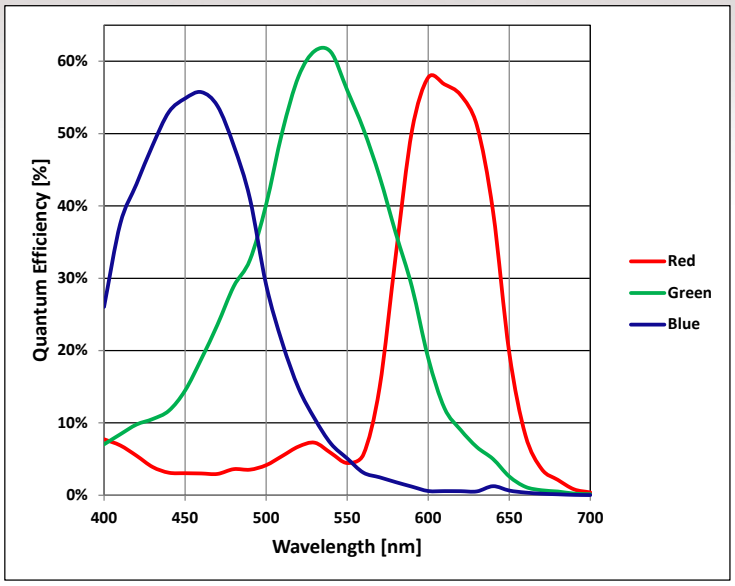
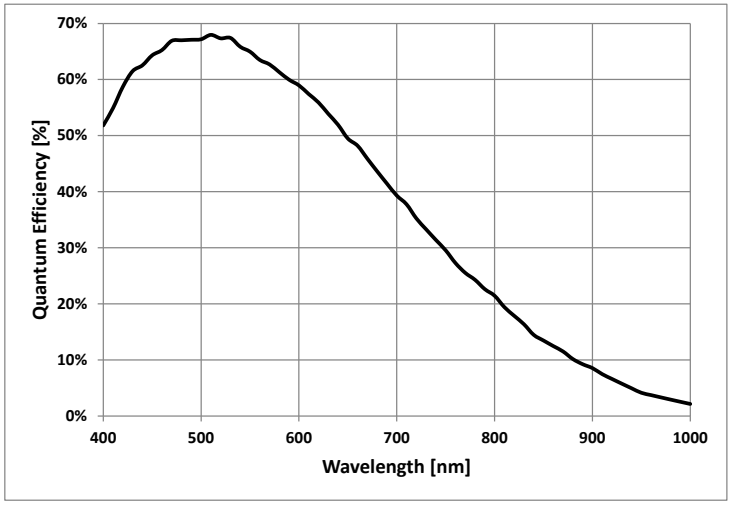
## Color Quantum Efficiency Curves




## Monochrome Quantum Efficiency Curve




### Recommended Applications

- Brightfield
- Darkfield
- Live Cell Imaging
- Histology, Pathology, Cytology
- Semiconductor Inspection, Metrology
- Gel Documentation
- Whole Slide Imaging
- Low Light Fluorescence
- Quantitative Analysis

| Sensor Specifications | |
|---|---|
| Image Sensor | SONY ICX674, CCD, color or monochrome |
| Optical Format | 2/3" |
| Imager Size | Diagonal 10.972 mm |
| Pixel Size | 4.54 x 4.54 µm |
| Resolution | 1936 x 1456 pixels |
| Region of Interest Control | Any multiple of 16 x 16 pixels (quad tap mode) |
| **Camera Specifications** | |
| Frame Rate | 53 fps (1936 x 1456), 66 fps (1920 x 1088), 109 fps (640 x 480) |
| Bit Depth | 8 or 14-bit |
| Binning Modes | 2 x 2, 4 x 4, 8 x 8 (3 x 3 mono only) |
| Exposure Control | Manual and automatic control |
| Exposure Range | 3 µs to 71 min (snapshot)<br>23 µs to 1.3 s (video) |
| Gain Control | Manual and automatic control |
| Gain Range | 0.8 to 58x (color), 0.8 to 33x (mono) |
| White Balance | Manual and automatic control |
| Trigger Modes | Hardware and software triggerable |
| **Camera Characteristics (at slowest clock rate)** | |
| Peak Sensitivity | Mono: 7.3 DN/(nJ/cm²), Color: 4.2 DN/(nJ/cm²) (Global and channel gains at unity) |
| Dynamic Range | 68.8 dB (Color), 65.3 dB (Mono) |
| Full Well Depth | ~17,000 e- (Color), ~11,400 e- (Mono) |
| Quantum Efficiency | 61% (Color), 68 % (Mono) |
| Read Noise | 6.2 e- (4 taps, 16 fps, 25 °C ambient, 41 °C internal) |
| Dark Current Noise | <1 e-/s (at 22 °C ambient, 41 °C internal) |
| **Mechanical Specifications** | |
| Data Interface | USB 3.0 (USB 2.0 support for lower frame rates) |
| General Purpose I/O | Locking Hirose MXR-8R-8SA(71) |
| Lens Mount | Adjustable C-mount standard |
| Dimensions | 97.8 x 69.8 x 50.8 mm<br>3.85 x 2.75 x 2.00 inch |
| Mass | 340 g |
| Operating Temperature | 0 to 50 °C |
| Storage Temperature | -30 to 70 °C |
| Operating Humidity | 5 to 95 %, non-condensing |
| Shock / Vibration | 50 G shock, 5 G (2-200 Hz) vibration |
| Onboard Memory | Camera has onboard non-volatile memory storage |
| **Camera Software** | |
| Operating Systems | Windows 10, 8, 7, Vista, Mac OS X 10.7, 32 and 64-bit |
| **Power and Emissions** | |
| Power Consumption | 6 W max in full frame rate mode |
| Power Requirement | External 5 V DC, 1.2 A, power supply (included) |
| Emissions Compliances | FCC Class B, CE Certified |
| Hazardous Materials | RoHS, WEEE Compliant |
| Warranty | Four (4) year |
| **Included In The Box** | |
| INFINITY*3-3UR* | 2.8 MP digital camera + 3m USB 3.0 cable |
| LuINFSW-DVD | DVD with INFINITY ANALYZE and CAPTURE software, TWAIN driver and documentation |
| La050315 | 5 V DC, 3.0 A,15 W Power Supply |

| Ordering Information | |
|---|---|
| INFINITY*3-3*URC | 2.8 MP Uncooled CCD Color USB 3.0 Camera |
| INFINITY*3-3*URM | 2.8 MP Uncooled CCD Monochrome USB 3.0 Camera |
| La050315 | 5 V DC, 3.0 A,15 W Power Supply (included with camera) |
| LuSDKSW | Software Developer's Kit (Web Download) |
| La2000PAFL | GPI/O Breakout Cable |

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