

# INFINITY3-3UR

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



## INFINITY3-3UR

Teledyne Lumenera's INFINITY3-3UR is a high-speed, high sensitivity research-grade camera with a 2.8 megapixel resolution. The INFINITY3-3UR 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 INFINITY3-3UR 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 INFINITY3-3UR 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,  $4.54 \times 4.54 \mu\text{m}$  pixels and very low noise. The INFINITY3-3UR 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 INFINITY3-3UR 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

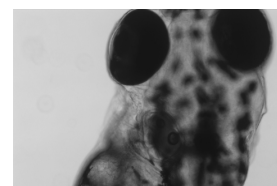
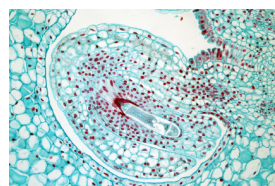
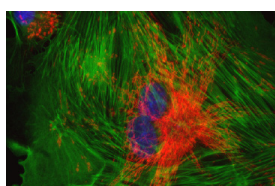
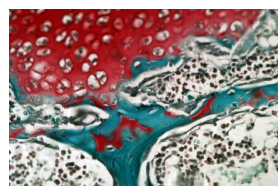
INFINITY CAPTURE, an intuitive image capture program, and INFINITY ANALYZE, a full image analysis package offering camera control, measurement, annotation, tiling and post capture enhancement, are included with the camera. Camera and software combine to create a complete microscopy imaging solution for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

### Superior Technical Assistance Center (TAC)

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

### Sample Images

For more details on these INFINITY3-3UR images please visit: [www.lumenera.com](http://www.lumenera.com)



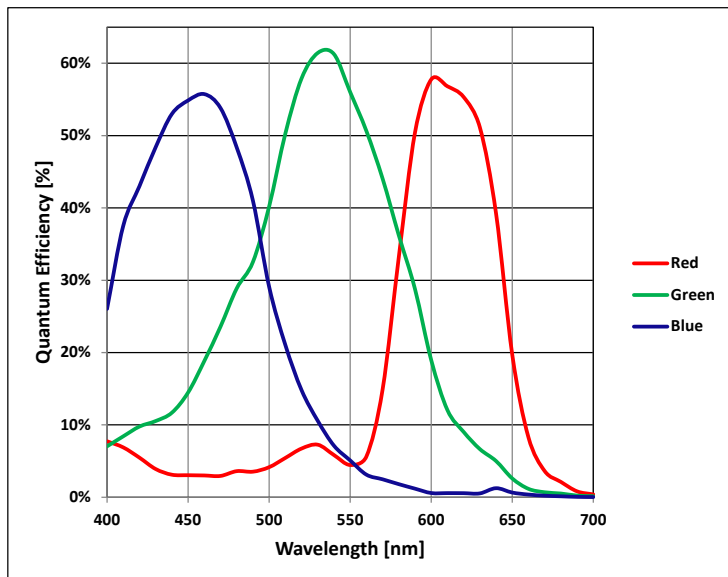
## Features

- Industry leading Sony EXview HAD II sensor technology
- Color or monochrome ICX674 CCD sensor with 2/3" optical format providing a resolution of  $1936 \times 1456$  using  $4.54 \times 4.54 \mu\text{m}$  pixels
- Fastest frame rates possible for the ICX674 sensor. Up to 53 fps at full resolution, 66 fps ( $1920 \times 1088$ ), 109 fps at VGA ( $640 \times 480$ )
- 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

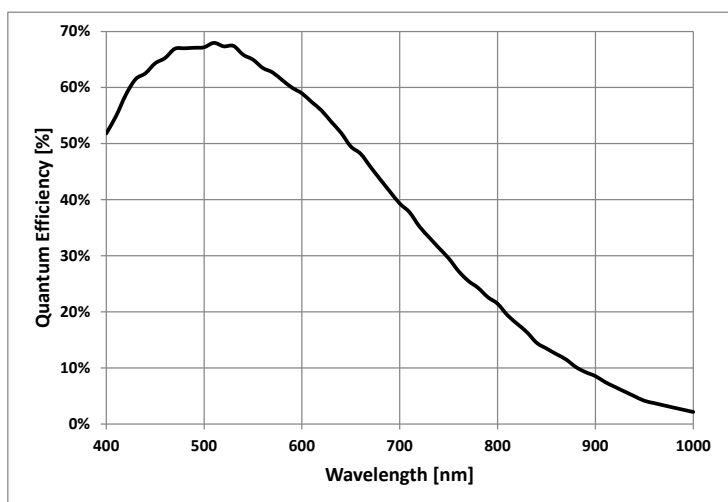
## Warranty

- Three (3) year warranty

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 $\mu$ m
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 $\mu$ s to 71 min (snapshot) 23 $\mu$ s 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/cm <sup>2</sup> ), Color: 4.2 DN/(nJ/cm <sup>2</sup> ) (Global and channel gains at unity)
Dynamic Range	68.8 dB (Color), 65.3 dB (Mono)
Full Well Depth	~17,000 e <sup>-</sup> (Color), ~11,400 e <sup>-</sup> (Mono)
Quantum Efficiency	61% (Color), 68 % (Mono)
Read Noise	6.2 e <sup>-</sup> (4 taps, 16 fps, 25 °C ambient, 41 °C internal)
Dark Current Noise	<1 e <sup>-</sup> /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 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
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### 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	Three (3) year

### Included In The Box

INFINITY3-3UR	2.8 MP digital camera + 3m USB 3.0 cable
La050315	5 V DC, 3.0 A, 15 W Power Supply

### Ordering Information

INFINITY3-3URC	2.8 MP Uncooled CCD Color USB 3.0 Camera
INFINITY3-3URM	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