TELEDYNE LUMENERA
Everywhereyoulook™

Part of the Teledyne Imaging Group

INFINITY Digital Microscopy Cameras

Produce crystal clear, vibrant images with Teledyne Lumenera's INFINITY microscopy cameras.

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Our user friendly USB 3, USB 2 and HDMI cameras range in resolution from 1.4 to 32 megapixel and feature CMOS, CCD, High Definition (HD), low light CCD, large format, research-grade and pixel shifting technologies. As one of the most respected digital camera manufacturers in the scientific market, we install thousands of INFINITY cameras each year into life science, clinical and industrial applications. Teledyne Lumenera provides high quality, scientific-grade cameras complete with feature rich software packages at the best price-to-performance ratio in the market and backed by an industry leading four-year warranty.

WHY TELEDYNE LUMENERA, **WHY INFINITY** ›

Extensive Product Line

Life science researchers, clinical pathologists and industrial technicians count on our exceptional color reproduction, high quality microscopy cameras, complete with user friendly software packages. Select from Teledyne Lumenera's cost-effective CMOS cameras, our HD camera with full 1080p60 preview, or our CCD solutions with high dynamic range and outstanding color fidelity.

Centralized Research Development & Manufacturing

Research, development and manufacturing are tightly controlled in one location ensuring the highest standard of quality from design to delivery. To ensure a timely product supply, Teledyne Lumenera has established close, collaborative relationships with vendors and provides its own in-house manufacturing inspection and quality controls. As a testament to our high quality standards we continue to invest in research and development in order to maintain our reputation as a leading provider of high-performance digital imaging solutions. As a Teledyne Lumenera

and solid growth for years to come.

Intuitive Microscopy Software Package

Included with your camera purchase is INFINITY ANALYZE 7 microscopy software. Together, the camera and software combine to make monitoring, documenting and archiving images an easy and

. Take advantage of this intuitive application for camera control, image acquisition, and post-processing. INFINITY ANALYZE 7 application is easy to use in either

consistent layout and functionality for both Windows and MacOS users.

Industry Leading Technical Assistance Center

Realize your vision needs through our Technical Assistance Center (TAC). Core competencies include microscopy, software development, color algorithms, opto-electronics, laser physics, remote sensing, sensor architecture and optics. Receive timely, accurate information from our skilled team.

Research-Grade Cameras

The research-grade designation is a result of the low noise electronics, high-grade components and Teledyne Lumenera`s unique thermal management techniques implemented inside the INFINITY camera. The end result is high quality images with extremely low noise and high dynamic range. Research-grade cameras are denoted with an R in the ordering part number.

3rd Party Software Integration

Teledyne Lumenera is integrated with leading software technology partners such as Media Cybernetics (Image Pro Premier), Molecular Devices (Metamorph), and National Instruments (MicroManager) to name a few.

For a full list of our microscopy software technology partners please visit our website: **lumenera.com/partners/technology-partners.html**

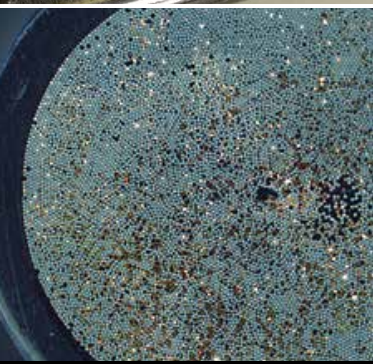
Contact us regarding additional software packages.

Helpful Tools

INFINITY cameras are well known for their ease of set up and use. For immediate instruction on software features available, visit our popular step-by-step tutorials, as well as our FAQs and Knowledge Base at **www.teledynelumenera.com**

Sample Applications

METALIC SAMPLE
TAKEN WITH
INFINITY*1*-3C



FIBRE-OPTIC
ILLUMINATION
CABLE TAKEN WITH
INFINITY*3*-3UR

Material Science – Quality Control
Metrology/Mineralogy/Metallurgy

Defect Analysis

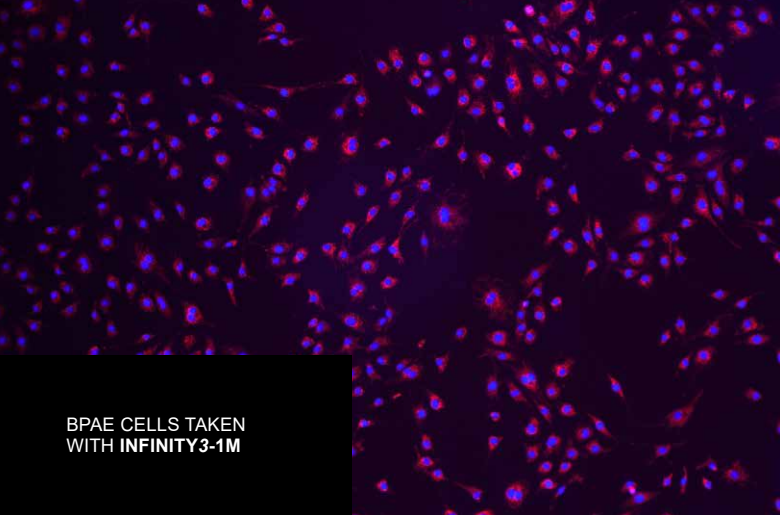
Measurement and annotation are an important part of any quality control process. Obtain precise reproducible results through a variety of features found in INFINITY software such as simple calibration as well as extensive measurement options.

Stereo and Macro Imaging

only found

fectively deal with

washed out or dark areas, bright spots or poorly lit samples with our high dynamic range INFINITY CCD cameras, whose high sensitivity allows for proper imaging. Perform depth of focus and spherical aberration correction with the Advanced Features Module (available as an accessory).



BPAE CELLS TAKEN
WITH **INFINITY3-1M**

PARAMECIUM TAKEN
WITH **INFINITY1-2C**

Life Science & Clinical Applications
Genetics/Biology/Pathology

Stained Samples

T precise color is required. Teledyne Lumenera's advanced Color Correction Matrices (CCMs) compensate for sensor response to the color output of various light sources. To provide true-to-life color in a consistent and repeatable manner, Teledyne Lumenera has designed proprietary CCMs. As a result, T at are d yellows. These advanced techniques ensure that the camera reproduces the colors as they appear in the oculars.

Live Imaging

Combine INFINITY software with our high-speed USB 2 and USB 3 cameras for smooth, responsive live video preview, or to record brief video clips. Integration with popular 3rd party software is available.

INFINITY

Camera Selection

High to Moderate Illumination
10-bit Quantitative Analysis

-
- DIC
- Live Cell Imaging
- Histology/Pathology/Cytology
- Semiconductor Inspection
- Metrology
- Documentation and Archiving
- Tumor Review Boards
- Education

PRODUCTS

INFINITY*1* Series
INFINITY*5* Series
INFINITY*HD*
INFINITY*lite*

Moderate to Low Illumination
12 and 14-bit Quantitative Analysis

-
- DIC
- Live Cell Imaging
- Histology/Pathology/Cytology
- Semiconductor Inspection
- Metrology
- Documentation and Archiving

- Moderate Light Fluorescence
- Gel Documentation

INFINITY*2* Series
INFINITY*5* Series
INFINITY*X*

High Sensitivity
12 and 14-bit Quantitative Analysis

-
- DIC
- Live Cell Imaging
- Histology/Pathology/Cytology
- Semiconductor Inspection
- Metrology
- Documentation and Archiving
- Gel Documentation

- Low Light Fluorescence
- Chemiluminescence
- Bioluminescence
- Flow Analysis
- GFP, FISH, NIR, FRET

INFINITY*3* Series
INFINITY*5* Series
INFINITY*EP*

PRODUCT FEATURE

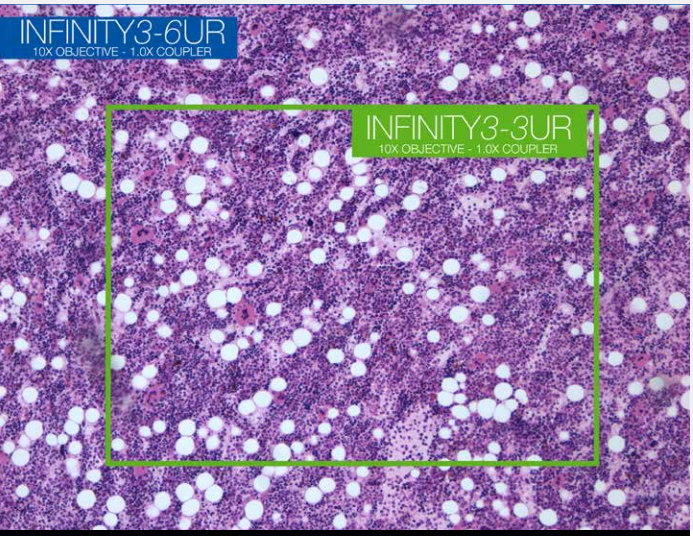
INFINITY*3*-6UR

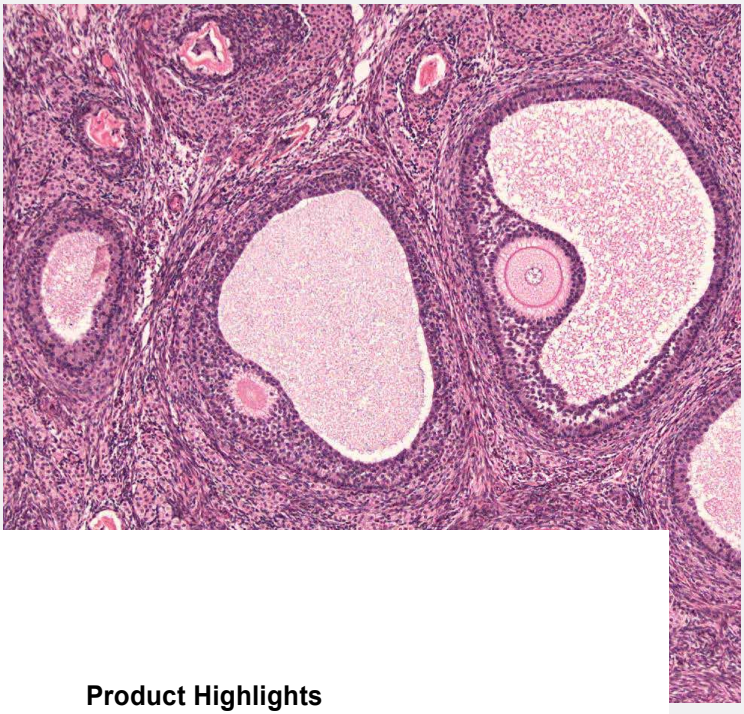
A
USB 3 CCD microscopy camera. ,

The INFINITY*3*-6UR is the ideal general purpose camera for most microscopy applications due to its 6MP resolution, excellent color reproduction, speed and light sensitivity needed for low-light applications. Built on Sony's EXview HAD II sensor technology, this camera offers extremely high dynamic range, 4.54 x 4.54 µm pixels and very low noise.

The INFINITY*3*-6UR is designed for use in a

industrial applications requiring optimal color reproduction, extreme sensitivity, increased resolution and high speed.





INFINITY3-6UR's Large Field of View

To maximize the sensitivity of the INFINITY3-6UR, Teledyne Lumenera uses a 1" format Sony ICX694 sensor.

Product Highlights

- 6.0 megapixel resolution (2752 x 2192) for outstanding image quality
- Industry leading Sony ICX694 CCD sensor with 1" optical format and high QE
- 27 fps, lagless at full resolution
- High-speed USB 3 interface for fast image delivery and connectivity
- Excellent color reproduction capabilities
- High dynamic range and sensitvity for low

  and NIR imaging

INFINITY*1* Series

CMOS Cameras for
Photo Documentation
and High-Speed Imaging

Highlights:

- 1, 2, 3 and 5 megapixel resolutions
- High quality, cost-effective solution
- 8 or 10-bit output

The INFINITY*1* series of CMOS USB 2 digital microscopy cameras, with resolutions as high

a cost-effective, versatile solution for a wide variety of microscopy photo documentation applications including life science, pathology, industrial inspection and geology.

, clarity
and image detail. Easy-to-use and fast frame rates are achieved through the plug-and-play, low noise USB 2 data interface to maximize

.

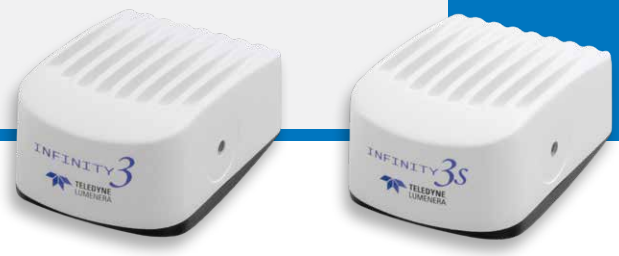
INFINITY*2* Series

CCD Cameras for Challenging
Lighting and Color Conditions,
and Quantitative Analysis

Highlights:

- 1, 2, 3 and 5 megapixel resolutions
- Excellent light sensitivity
- Superior color reproduction
- 8, 12 or 14-bit output

Effortlessly capture challenging images of samples in complex lighting situations with the INFINITY*2* CCD series. If precise color reproduction is critical, the exceptional quality of the INFINITY*2*'s Sony sensor meets the requirements of the most demanding applications. The INFINITY*2* series of cameras offer consistent results with resolutions as high as 5 megapixel.



INFINITY*3* Series

CCD Cameras for Low Light Conditions and Quantitative Analysis

Highlights:

- Ultra-sensitive Sony CCD 1.4, 2.8 and 6.0 megapixel sensor-based cameras
- Thermoelectric cooled and uncooled camera models
- GPI/O provided standard on the INFINITY*3*-1, INFINITY*3*-3UR and INFINITY*3*-6UR models
- Research-grade camera with high dynamic range

Camera models available in the INFINITY*3* series:

The ultra-sensitive INFINITY*3*S-1UR incorporates Sony's ICX825 CCD sensor, producing unmatched light sensitivity needed for

imaging. Highlights include high QE, 6.45 x 6.45 µm pixels, high dynamic range, and low noise.

Built on Sony's 6.0 megapixel EXview HAD II CCD sensor, the INFINITY*3*-6UR offers extremely high dynamic range as well as high frames rates of 27 fps via a high-speed USB 3 interface. With 2x2 binning, there is a fourfold increase in sensitivity while providing a 1.5 megapixel (1376x1096) resolution.

The INFINITY*3*-3UR camera features a Sony ICX674 CCD sensor, offers 53 fps at full 2.8 megapixel resolution via a high-speed USB

cations

requiring optimal color reproduction, extreme sensitivity, increased resolution and high speed.

The INFINITY*3*-1 is thermoelectrically cooled to 25ºC below ambient and features a high signal to noise ratio, positioning it as an ideal solution for applications with extremely long integration times where reducing dark noise is a requirement.

INFINITY*5* Series

High Performance Camera for a Wide Range of Applications – with Dual Output to HDMI and USB 3

Highlights:

- 3 and 5 megapixel resolutions
- High frame rates, sensitivity, and low noise
- Dual HDMI and USB 3 output
- Buttons for power, white balance, capture
- Compatible software: INFINITY CAPTURE, Micro-Manager, MetaMorph®

Teledyne Lumenera's INFINITY*5* series are high quality microscopy cameras with high speeds at high resolution. The INFINITY*5* series are based on the Sony® Pregius™ global shutter CMOS sensor that rivals CMOS technology. With fast focusing at high frame rates, the INFINITY*5* series perform in a wide range of applications. The dual output to HDMI

where knowledge sharing is critical.

INFINITY*EP*

High-Speed CMOS Camera for Electrophysiology

Highlights:

- 1.3 megapixel resolution
- Excellent near IR sensitivity and responsitivity
- Fast frame rates
- Ideal for electrophysiology

Teledyne Lumenera's INFINITY*EP* digital camera is a cost-effective solution with excellent near IR sensitivity and responsivity. This camera produces crisp, incredibly low noise images while videos are delivered with zero lag. Teledyne Lumenera's Advanced Thermal Management Technology (ATMT) eliminates dark current noise, providing high-contrast imaging to meet the challenging conditions of electrophysiology applications.

INFINITY*HD*

1080p60 High Definition (HD) Camera, Direct Connect to HDMI Monitor

Highlights:

- 1080p60 HD camera
- Direct output to HDMI monitor
- 1/3” (16:9) CMOS 2 megapixel sensor
- 3 on-camera buttons for power, white balance and capture

The INFINITY*HD* is a stand-alone, high definition camera offering full 1080p60 preview running at the required 60 fps needed for true high definition allowing for superb color reproduction and smooth sample manipulation without any lag. Images can be captured via USB 2 or video can be streamed live directly to an HDMI monitor (no need for a PC). Extremely fast response times quickly react to lighting changes in any life science, clinical or material application.

INFINITY*X*

Extremely High Resolution Pixel Shifting Camera

Highlights:

- 2 megapixel live preview
- 32 megapixel resolution for capturing fine detail
- 12-bit output for quantitative applications

The INFINITY*X*-32 digital camera’s sub-pixel shifting technology provides variable resolution capture at 2, 8, 18 and 32 megapixel. High resolution, combined with the excellent sensitivity of a CCD, make this an excellent general camera for virtually any application. In addition to high resolution, pixel-shifting cameras have the added advantage of acquiring all three color channels for each pixel, ensuring the highest possible quality of color reproduction.

INFINITY*lite*

Low Cost CMOS Camera
for Academic and Entry-Level
Documentation

Highlights:

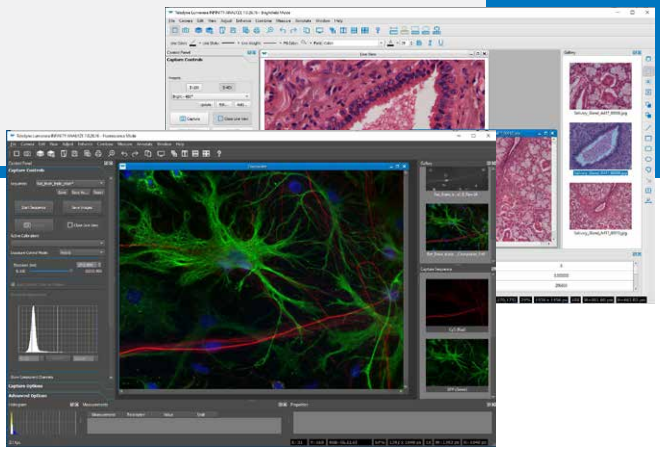
- 1.5 megapixel resolution
- Excellent color reproduction
- Live video preview and focus

The INFINITY*lite* is a low cost CMOS camera for archiving and documentation. With 1.5 megapixel resolution and excellent color reproduction, this entry-level camera is

as well as entry level microscopy applications. It is a compact, af
that delivers outstanding image quality and excellent value. Operates with INFINITY CAPTURE Software.

INFINITY ANALYZE 7
Microscopy Software

Teledyne Lumenera INFINITY cameras include INFINITY ANALYZE 7, an intuitive software package for camera control, image acquisition, and post-processing. The application is easy to use in either Brightfield or Fluorescence modes and is available for both Windows and MacOS users. And, there are no software license or update fees for as long as you own the camera. Install and be ready to image in minutes…



INFINITY ANALYZE 7 Features:

-
- Consistent layout and functionality for both Windows and MacOS users (64-bit architecture)
- Customizable layout with dockable windows and toolbars to optimize screen real-estate
- Manual, hybrid, and two auto-exposure mode options
-
-

  using Sequences
  - Single or multi-channel pseudo-color acquisitions
  -
  - Create custom sequences suitable for different
  -

    raw channels, with formats including OME TIF
  - Manual or automatic black-level offset adjustment
-

  annotation functions on live preview or captured images
-

  gallery, or window
- Interactive image thumbnail gallery
- Video clip and time lapse capture options
-
- Image post processing including channel split/merge, math operations, stitching, and focus stacking
- Context-sensitive pop-up menus for common operations
- Metadata captured and stored within image properties
- Copy/paste tabular measurement data to a report
- Comprehensive integrated video tutorials and help dialogs
- Preferences dialog for control over application settings
-

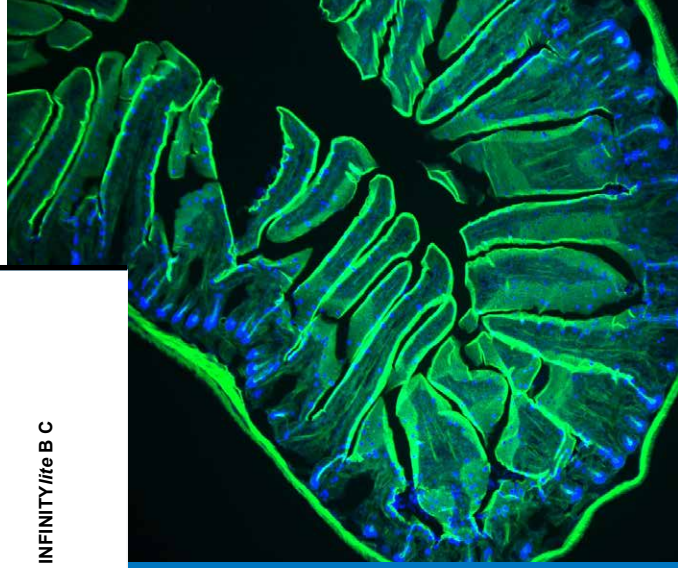
  quick back-ups or transfers of Calibrations, Presets, and Sequences

	INFINITY*1*				INFINITY2		
	INFINITY*1*–1 M	INFINITY*1*–2 CB	INFINITY*1*–3 C	INFINITY*1*–5 C or M	INFINITY2–1R C or M	INFINITY2–2 C or M	INFINITY2–3 C
MEGAPIXEL	1.3	2.0	3.1	5.0	1.4	2.0	3.2
RESOLUTION	1280x1024	1600x1200	2048x1536	2592x1944	1392x1040	1616x1216	2080x1536
SENSOR	1/2” CMOS	1/2” CMOS	1/2” CMOS	1/2.5” CMOS	1/2” CCD	1/1.8” CCD	1/1.8” CCD
C-MOUNT COUPLER	0.5X	0.5X	0.5X	0.5X	0.5X	0.5X	0.5X
PIXEL PITCH	5.20	4.20	3.20	2.20	4.65	4.40	3.45
FRAME RATE	30	15	12	7	30	12	5
BIT DEPTH	8 or 10	8 or 10	8 or 10	8 or 10	8 or 14	8 or 12	8 or 12
READ NOISE	29 e-	20 e-	20 e-	20 e-	8.5 e-	12 e-	12 e-
BINNING/ SUB SAMPLING	N/A	N/Y	N/Y	N/Y	Y/Y	Y/Y	Y/Y
INTERFACE	USB 2.0	USB 2.0	USB 2.0	USB 2.0	USB 2.0	USB 2.0	USB 2.0

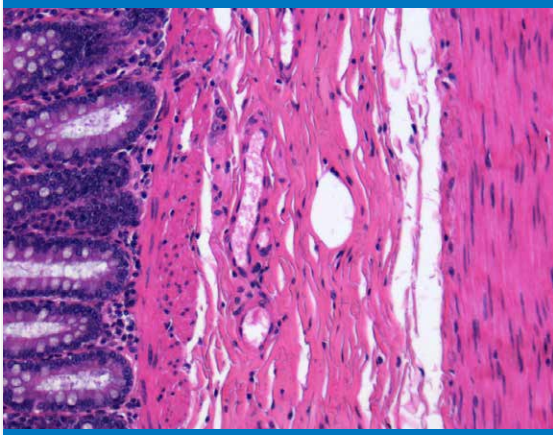
	INFINITY*3*					INFINITY*5*	
INFINITY2–5 C or M	INFINITY3–1 C or M	INFINITY3–1UR C or M	INFINITY3S-1UR C or M	INFINITY3–3UR C or M	INFINITY3–6UR C or M	INFINITY5-3 C or M	INFINITY5-5 C or M
5.0	1.4	1.4	1.4	2.8	6.0	3.2	5.1
2448x2048	1392x1040	1392x1040	1392x1040	1936x1456	2752x2192	2064x1544	2464×2056
2/3” CCD	2/3” Cooled CCD	2/3” CCD	2/3” CCD	2/3” CCD	1” CCD	1/1.8” GS CMOS	2/3” GS CMOS
0.67X	0.67X	0.67X	0.67X	0.67X	1X	0.5X	0.6X
3.45	6.45	6.45	6.45	4.54	4.54	3.45	3.45
9	15	30	60	53	27	~120	~75
8 or 12	8 or 12	8 or 14	8 or 14	8 or 14	8 or 14	8 or 12	8 or 12
12 e-	8 e-	6 e-	6 e-	6.2 e-	6.5 e-	~2.35 e-	~2.30 e-
Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	Y/Y	Mono(Y/Y), Color(N/Y)	Mono(Y/Y), Color(N/Y)
USB 2.0	USB 2.0	USB 2.0	USB 3.1 Gen 1	USB 3.1 Gen 1	USB 3.1 Gen 1	USB 3.1 Gen 1 and HDMI	USB 3.1 Gen 1 and HDMI

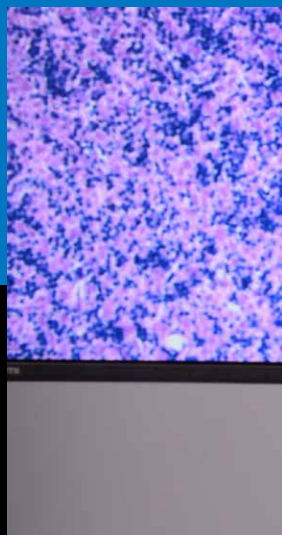
CONTINUED ›

Additional INFINITY



	INFINITY*EP*	INFINITY X-32 C or M	INFINITY*HD*	INFINITY*lite* B C
MEGAPIXEL	1.3	32*	2.0	1.5
RESOLUTION	1280x1024	6464x4864	1920x1080	1440x1080
SENSOR	1/3” CMOS	1/1.8” CCD	1/3” CMOS	1/2.5” CMOS
C-MOUNT COUPLER	0.35X	0.5X	0.33, 0.4 or 0.5X	0.5X
PIXEL PITCH	3.63	4.40	2.70	4.20
FRAME RATE	30	12	60	10
BIT DEPTH	8 or 12	8 or 12	8	8 or 10
READ NOISE	N/A	12 e-	8.7 e-	53 e-
BINNING/ SUB SAMPLING	Y/Y	Y/Y	N/A	N/A
INTERFACE	USB 2.0	USB 2.0	HDMI	USB 2.0





INFINITY 5 Year Protection Plan

The Teledyne Lumenera INFINITY 5-Year Protection Plan is our commitment to providing complete peace of mind with an advanced hardware replacement assurance and a 5-year extended warranty for INFINITY microscope cameras.

USB 3.1 Gen 1 and USB 2.0 Interface

Teledyne Lumenera's INFINITY microscope cameras feature either a USB 2.0 or USB 3.1 Gen 1 interface, offering an easy plug-and-play installation, while providing more than enough throughput for its selected image sensors.

OEM Custom Camera Design

Teledyne Lumenera's INFINITY camera hardware design and software features can be customized

variations, to offer the following advantages:

- Improved Time-to-Market
- Reduce Internal Development Costs
- Differentiate from the Competition

INFINITY ANALYZE Software for Windows or MacOS

Teledyne Lumenera offers support for INFINITY camera users operating on either Windows or MacOS. Teledyne Lumenera INIFNITY ANALYZE 7 microscopy software a consistent layout and functionality for both Windows and MacOS users (64-bit architecture).*

Warranty effective for all INFINITY standard models sold after April 1, 2015.

* See the camera data sheet for specific software compatibility details.

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Microscope Experts since 1979

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