



Industrial and Scientific Cameras

Satisfy your most demanding imaging application requirements with our wide range of high performance industrial and scientific cameras.



**Satisfy your most demanding
imaging application requirements
with our wide range of high
performance industrial and
scientific cameras.**



Choose from our many off-the-shelf board-level and enclosed cameras, or contact us to discuss customizing our flexible products to meet your specific needs. Improve time-to-market, reduce development costs, and ease your workload with our industry leading pre- and post-sales support, customer-centric business philosophy, straightforward camera evaluation program, and our four-year warranty.



WHY LUMENERA >

WHY LUMENERA

Lumenera Benefits

Reduce costs and shorten work cycles with our innovative, high-quality imaging products and solutions. Together, our teams will collaborate to design the imaging solution tailor-made for your success.

“Selecting an imaging partner goes beyond the camera. It’s about establishing a partnership with a camera manufacturer.”

Huw Leahy, President of Lumenera



Reduced total cost of ownership

Lumenera's customer-centric philosophy ensures that you have the ideal product for your application while supporting the integration and maintenance phases with diligence from our creative, enthusiastic and quality focused employees who go beyond just selling a camera.

Choose your interface

Lumenera cameras leverage the most popular interfaces to ensure that your images get from the camera to your computer using the method that makes the most sense for your application, none of which require a costly and complex frame grabber.

- USB 3.1 Gen 1 for high bitrate allowing for faster frame rates at a high resolution
- USB 2.0 to rely on the stability, ubiquity and ease of a plug-and-play interface
- GigE for an extremely long reach using low cost standard cables
- Lumenera cameras feature a standard GPIO connector for external synchronization of lighting and peripheral device control



Flexible choices for your application

With more than 80 products and variants resulting in over 1,250 models available, the chances are that we have a product that meets your application needs. Variants include:

- Without IR Cut Filter Glass for active or passive Near IR light
- Without Sensor Cover Glass to remove reflection and interferences for applications such as laser interferometry and those involving UV light.
- Scientific-grade for tighter tolerance and superior image quality
- Packaging and board level options to fit within the space available



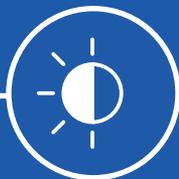
Choose your resolution

Lumenera offers a wide variety of cameras based on CCD and CMOS sensors from manufacturers like Sony®, ON Semi Conductor®, and CMOSIS®, providing a wide range of resolutions to satisfy your imaging applications. Resolutions span from VGA to 29 megapixels using sensors from the most recognized and reputable sensor manufacturers.



Accurate color reproduction

Capturing an image is one thing, but acquiring one that truly represents the physical subject is much more difficult. Lumenera cameras have customizable color correction matrices for high color accuracy and advanced demosaicing methods for truer reproduction. Excellent color/white balance functions ensure colors are represented correctly and repeatably in captured images.



High dynamic range

In many industrial and scientific applications there is a contrast in lighting composition, but images need to be able to detail both bright and dark objects in the same frame. Lumenera offers cameras with both high sensitivity and high dynamic range to ensure details in nearly any lighting situation are captured.



Manufactured in North America

Lumenera products are designed and manufactured at our headquarters in Ottawa, Canada. Our cameras are manufactured in the same location as our design engineers, allowing for improved development time and tight controls over our supply chain, quality and delivery.

Superior pre- and post-sales support

Our Team is committed to fully supporting your imaging needs through design, development, integration, deployment and post-sales support. Our highly experienced professionals work closely with your Project Managers and Engineering Teams to best meet your application requirements, and assist with integration of our standard and custom imaging solutions. And, our camera evaluation program accelerates the whole process by making it quick and easy to have Lumenera cameras on site for integration and testing.



Sample Applications

Lumenera's cameras are used in thousands of industrial and scientific applications worldwide, including:

- Intelligent traffic systems
 - Tolling
 - Red light and speed enforcement
- Factory automation and inspection
- Aerial Imaging
- Precision agriculture
- Optical Inspection
- Barcode
- Metrology
- Semiconductor
- Facial identification
- Photo ID
- Biomechanics
- Robotics, vision guided
- Pharmaceutical
- 3-D Imaging
- Automotive
- Material Handling
- Paint / color inspection
- Food and Beverage
- Military
- Aerospace
- Document Reading
- Biometrics
- Ophthalmology
- OEM Microscopy
- Life Sciences
- Cell Counting
- Microplate Readers
- Gel Documentation
- Solar Panel Inspection
- Laser profiling
- Digital pathology

Vision Industry Certification GigE Vision® & USB3 Vision™

Select Lumenera products have received GigE Vision® and USB3 Vision™ certification from the AIA. Lumenera products that are compliant ensure true plug-and-play compatibility with vision software applications. Lumenera cameras provide customers with flexibility via the use of our proven and robust API and the option to use the GigE and USB3 Vision API.



USB 3.1 Gen 1 Cameras



USB 3.1 GEN 1 performance Imaging Without Boundaries

Lumenera USB 3.1 Gen 1 cameras use the latest USB technology at 5 Gb/s to deliver the fastest image transfer — even at their highest resolution.

- Leveraging our years of experience with USB 2.0, Lumenera's USB 3.1 Gen 1 drivers are hardened and reliable
- Does not require an expensive and complicated frame grabber
- Results in a simplified system and reduced total system cost
- USB 3.1 Gen 1 can reach lengths of up to 100m by using a fiber optic cable extender

All Lumenera USB 3.1 Gen 1 cameras include a 128 MB frame buffer for reliable image delivery in demanding situations. Lumenera's buffer technology delivers all frames at full speed and maximum resolution without introducing latency.



Lt545R

Sony Pregius Global Shutter CMOS

Building on the Sony® Pregius™ GS CMOS sensor line, Lumenera provides high speed USB 3.1 Gen1 camera models ranging in resolution from 3MP to 12MP, with P-Iris lens connector.

Lt345R

3.2 MP 1/1.8" GS CMOS

- 2064 × 1544 resolution
- Sony IMX252
- 120 fps max

Lt545R

5.1 MP 2/3" GS CMOS

- 2464 × 2056 resolution
- Sony IMX250
- 75 fps max

Lt945R

8.9 MP 1" GS CMOS

- 4112 × 2176 resolution
- Sony IMX255
- 42 fps max

Lt1245R

12.3 MP 1.1" GS CMOS

- 4112 × 3008 resolution
- Sony IMX253
- 30 fps max



Lt365R

SONY EXview HAD II Global Shutter CCD

These high bitrate cameras are ideal for applications where high resolution, sensitivity and low noise are critical, such as NIR applications.

Lt365R

2.8 MP 2/3" CCD

- 1936 x 1456 resolution
- Sony EXview HAD II ICX674 sensor
- 53 fps at full resolution

Lt665R

6.0 MP 1" CCD

- 2752 x 2192 resolution
- Sony EXview HAD II ICX694 sensor
- 27 fps at full resolution

Lt965R

9.1 MP 1" CCD

- 3376 x 2704 resolution
- Sony EXview HAD II ICX814 sensor
- 19 fps at full resolution

Lt1265R

12 MP 1" CCD

- 4250 x 2838 resolution
- Sony Exview HAD II ICX834 sensor
- 15 fps at full resolution



Lt225

CMOSIS Global Shutter CMOS

The Lt425 and Lt225 are cameras with high sensitivity and a large pixel size, and are ideally suited for applications such as high speed inspection.

Lt225

2.2 MP 2/3" CMOS

- 2048 x 1088 resolution
- CMOSIS CMV2000 Rev3 sensor
- 170 fps at full resolution

Lt425

4.0 MP 1" CMOS

- 2048 x 2048 resolution
- CMOSIS CMV4000 Rev3 sensor
- 90 fps at full resolution

Near Infra-Red (NIR) Sensitivity:

Lumenera offers NIR sensitivity enhanced versions of the Lt225 and Lt425 cameras, that have higher quantum efficiency (QE) for wavelengths above 600 nm. Around 900 nm the QE is about doubled and increases from 8% to 16%.

Large Format Cameras

These cameras are ideal for applications where high resolution is critical, such as: automated license plate recognition (ALPR), flat panel/solar panel inspection and aerial imaging. These cameras have a **fully-integrated Canon EF lens controller**.

Did You Know

The 'H' in our Lt16059H and Lt29059H cameras signifies higher performance with higher dynamic range and sensitivity, and lower read noise.



Lt29059H

Lm11059 (USB 2.0)

11 MP 35mm CCD

- 4008 x 2672 resolution
- ON Semiconductor KAI-11002 sensor
- 4.3 fps at full resolution
- Integrated Canon EF lens controller

Lt16059H (USB 3.1 Gen 1)

16 MP 35 mm CCD

- 4896 x 3264 resolution
- ON Semiconductor KAI-16070
- 12 fps at full resolution
- Integrated Canon EF lens controller

Lt29059 (USB 3.1 Gen 1)

29 MP 35 mm CCD

- 6576 x 4384 resolution
- ON Semiconductor KAI-29050 sensor
- 6 fps at full resolution
- Integrated Canon EF lens controller

Lt29059H (USB 3.1 Gen 1)

29 MP 35 mm CCD

with enhanced Quantum Efficiency

- 6576 x 4384 resolution
- ON Semiconductor KAI-29052 sensor
- 6 fps at full resolution
- Enhanced sensitivity / lower read noise
- Integrated Canon EF lens controller

Lg11059 (GigE)**11 MP 35mm CCD**

- 4008 x 2672 resolution
- ON Semiconductor KAI-11002
- 5 fps at full resolution
- GigE Vision compliant with Lumenera API for full camera control over a GigE network
- Integrated Canon EF lens controller

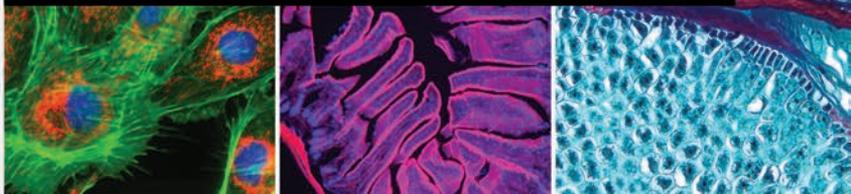
Scientific Cameras

Lumenera has extensive knowledge in manufacturing sophisticated scientific cameras that are used in microscopy and life sciences applications. Our unique knowledge and skills include; assembly procedures, calibration techniques, testing and quality control, all geared towards achieving exceptional performance and consistency.

Lumenera's scientific cameras are manufactured with a stringent quality control process that ensures camera-to-camera consistency. Our cameras deliver the high quality and reproducible image results that are critical to your application.

Most industrial cameras are available to order with a scientific option (-SCI), which includes microscopy-grade glass, ideal for collimated light source applications.

Lumenera cameras meet stringent FCC Class B and CE EMI certification requirements which are critical to obtaining FDA and other type approvals.



You've seen the 'R' product code in some of our cameras. What does it mean?

The 'R' identifies that Lumenera's expert team has engineered the product to have substantially low read noise and dark current noise, combined with increased frame rates.

These cameras feature lower noise electronics, high grade components, and Lumenera's unique thermal management technology.

The end result is high quality images with extremely low noise and high dynamic range.

USB 2.0

Widest portfolio of USB 2.0 cameras in the industry

Lumenera's USB 2.0 cameras leverage the simple plug-and-play interface that is available on almost every computer.

Here is a selection of our most popular USB 2.0 cameras.



Lw110

1.4 MP 1/3" CCD

- 640 x 480 resolution
- Sony Super HAD sensor
- 60 fps at full resolution

Model # Lw070 / Lw075

1.4 MP 1/2" CCD

- 1392 x 1040 resolution
- Sony ICX205 sensor
- 30 fps at full resolution

Model # Lu130 / Lw130R / Lw135R

1.4 MP 2/3" CCD

- 1392 x 1040 resolution
- Sony ICX205 sensor
- 30 fps at full resolution

Model # Lw160R / Lw165R

1.4 MP 2/3" Cooled CCD

- 1390 x 1040 resolution
- Sony ICX205 sensor
- 15 fps at full resolution
- Low dark current noise

Model # Lw1160P-SCI



Lu370

2.0 MP 1/1.8" CCD

- 1616 x 1216 resolution
- Sony ICX274 sensor
- 12 fps at full resolution

Model # Lw230 / Lw235

5.0 MP 2/3" CCD

- 2448 x 2048 resolution
- Micron MT9P031 sensor
- 9 fps at full resolution

Model # Lw560 / Lw565

1.3 MP 1/3" CMOS

1280 x 1024 resolution

Sony IMX035 sensor

30 fps at full resolution

Color only

Model # Lw110 / Lw115

1.3 MP 1/2" CMOS

1280 x 1024 resolution

Micron MT9M001 sensor

30 fps at full resolution

Mono only

Model # Lu170 / Lu171 / Lu175

2.0 MP 1/2" CMOS

1600 x 1200 resolution

SOI 286 Sensor

10 fps at full resolution

Color only

Model # Lu200 / Lu205

3.1 MP 1/2" CMOS

2048 x 1536 resolution

Micron MT9T001 sensor

12 fps at full resolution

Color only

Model # Lu370 / Lu371 / Lu375

5.0 MP 1/2.5" CMOS

2592 x 1944 resolution

Micron MT9P031 sensor

7 fps at full resolution

Model # Lw570 / Lw575

More cameras available on our website
lumenera.com

Custom Cameras



Lumenera was founded on creating custom products, providing quick prototyping and shortened time-to-market for your imaging solution. Sometimes using a camera that is available off-the-shelf causes more challenges, and can be more costly than getting a custom solution designed. Partner with Lumenera to tailor an imaging solution that best meets your unique application and budgetary requirements.

Lumenera manufacturers at our North American headquarters (located in Ottawa, Canada), the same location as our design engineers, allowing for faster prototyping and modifications. This also grants us superior supply chain management and quality control over the end product.

Why Us?

- Choose the best architecture for your application
- Sensor + Image Processing + Digital Output
- Improve time to market with rapid prototyping
- Reduce development costs and risk
- Volume efficiencies to reach target price points
- Differentiate from your competitor
- Mechanical enclosure design to meet environmental requirements
- Manufacturing and quality controls you can count on for consistencies in color reproduction and product reliability
- Leverage our extensive experience with imaging
- Dedicated sales engineers accelerate integration





Lumenera's Customization

Custom USB 3.1 Gen 1, USB 2.0 and GigE cameras can be adapted to fit your application requirements whether simple or complex.

Rely on Lumenera's expertise for timely modifications from hardware, software, firmware and drivers to complete made-to-spec solutions with alternate form factors such as private labeled enclosures, unique mechanicals and/or customized sensors.

Above are some examples of custom camera solutions we've created for our customers.

Single-Board Cameras*

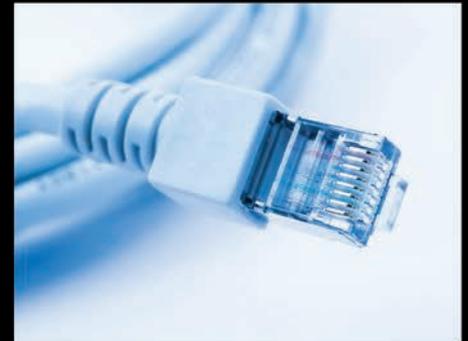
- Variety of CMOS image sensors available from VGA, 1.3 and 3 megapixel options
- Mini-USB connector, and GPIO connections available
- C, CS, and M-12 lens mount options
- Enclosure available for certain models

*Contact us for more details, or to discuss single-board camera options.

Gigabit Ethernet Going the Distance

Lumenera's GigE cameras allow for fast transfer of data (1000 Mb/s), using low cost standard cables over very long distances.

- Transfer images and control the cameras at distances up to 100m
- Reduce system cost by using inexpensive, standard cables
- GigE is a widely adopted interface around the world, with Ethernet ports available on most computing and network devices



USB 3.1 GEN 1 CAMERAS

	Lt225	Lt425	Lt345R	Lt545R	Lt945R	Lt1245R	Lt365R
SENSOR TYPE	2/3" CMOS	1" CMOS	1/1.8" CMOS	2/3" CMOS	1" CMOS	1.1" CMOS	2/3" CCD
RESOLUTION	2.2 MP (2048 x 1088)	4.0 MP (2048 x 2048)	3.2 MP (2064 x 1544)	5.1 MP (2464 x 2056)	8.9 MP (4112 x 2176)	12.3 MP (4112 x 3008)	2.8 MP (1936 x 1456)
FRAME RATE*	170	90	120	75	42	30	53
BIT DEPTH	8 or 12	8 or 14					
PIXEL PERFECT	5.5 µm	5.5 µm	3.45 µm	3.45 µm	3.45 µm	3.45 µm	4.54 µm
SENSOR	CMOSIS CMV2000 Rev3	CMOSIS CMV4000 Rev3	SONY IMX252	SONY IMX250	SONY IMX255	SONY IMX253	SONY ICX674
SHUTTER	Global	Global	Global	Global	Global	Global	Global
COLOR/MONO	Color/Mono/ NIR	Color/Mono/ NIR	Color or Mono	Color or Mono	Color or Mono	Color or Mono	Color or Mono
LENS MOUNT	C	C	C	C	C	C	C

*Frame rate at full resolution.

LARGE FORMAT CAMERAS

Lt1665R	Lt1965R	Lt1265R	Lm11059	Lg11059	Lt16059H	Lt29059	Lt29059H
1" CCD	1" CCD	1" CCD	35 mm CCD	35mm CCD	35 mm CCD	35 mm CCD	35 mm CCD
6.0 MP (2752 x 2192)	9.1 MP (3376 x 2704)	12 MP (4250 x 2838)	11 MP (4008 x 2672)	11 MP (4006 X 2672)	16 MP (4864 x 3232)	29 MP (6576 x 4384)	29 MP (6576 x 4384)
27	19	15	4.3	5	12	6	6
8 or 14	8 or 14	8 or 14	8 or 14	8 or 14	8 or 14	8 or 14	8 or 14
4.54 µm	3.69 µm	3.1 µm	9.0 µm	9.0 µm	7.4 µm	5.5 µm	5.5 µm
SONY ICX694	SONY ICX814	SONY ICX834	ON Semi-conductor KAI-11002	ON Semi-conductor KAI-11002	ON Semi-conductor KAI-16070	ON Semi-conductor KAI-29050	ON Semi-conductor KAI-29052
Global	Global	Global	Global	Global	Global	Global	Global
Color or Mono	Color or Mono	Color or Mono	Color or Mono	Color or Mono	Color or Mono	Color or Mono	Color or Mono
C	C	C	Canon EF				

CONTINUED



USB 2.0 CAMERAS

	Lw070 / Lw075	Lm075	Lu130 / Lu135	Lm135	Lw130R / Lw135R	Lw160R / Lw165R	Lm165
SENSOR TYPE	1/3" CCD	1/3" CCD	1/2" CCD	1/2" CCD	1/2" CCD	2/3" CCD	2/3" CCD
RESOLUTION	VGA (640 x 480)	VGA (640 x 480)	1.4 MP (1392 x 1040)				
FRAME RATE*	60	60	15	15	30	30	15
BIT DEPTH	8 or 12	8 or 12	8 or 12	8 or 12	8 or 14	8 or 14	8 or 12
PIXEL PERFECT	7.4 µm	7.4 µm	4.65 µm	4.65 µm	4.65 µm	6.45 µm	6.45 µm
SENSOR	Sony ICX424	Sony ICX424	Sony ICX205	Sony ICX205	Sony ICX205	Sony ICX285	Sony ICX285
SHUTTER	Global	Global	Global	Global	Global	Global	Global
COLOR/MONO	Color	Color	Color or Mono				
LENS MOUNT	C or CS	C or CS	C or CS	C or CS	C or CS	C or CS	C or CS

*Frame rate at full resolution.

Lw230 / Lw235	Lw560 / Lw565	Lm085	Lu100 / Lu101 / Lu105	Lw110 / Lw115	Lu170 / Lu171 / Lu175	Lu200B / Lu205B	Lu370 / Lu371 / Lu375	Lw570 / Lw575
1/1.8" CCD	2/3" CCD	1/3" CMOS	1/2" CMOS	1/3" CMOS	1/2" CMOS	1/2" CMOS	1/2" CMOS	1/2.5" CMOS
2.0 MP (1616 x 1216)	5.0 MP (2448 x 2048)	VGA 752 x 480	1.3 MP (1280 x 1024)	1.3 MP (1280 x 1024)	1.3 MP (1280 x 1024)	2.0 MP (1600 x 1200)	3.1 MP (2048 x 1536)	5.0 MP (2592 x 1944)
12	8.5	60	15	30	30	10	12	7
8 or 12	8 or 14	8 or 10	8 or 10	8 or 10	8 or 10	8 or 10	8 or 10	8 or 12
4.4 µm	3.5 µm	6.0 µm	5.2 µm	3.6 µm	5.2 µm	4.2 µm	3.2 µm	2.2 µm
Sony ICX274	Sony ICX655	Micron MT9V032	Omnivision OV9620 (c)/ OV9121(m)	Sony IMX035	Micron MT9M001	SOI 268	Micron MT9T001	Micron MT9P031
Global	Global	Global	Rolling & Half Global	Rolling	Rolling	Rolling & Half Global	Rolling	Rolling & Half Global
Color or Mono	Color or Mono	Color or Mono	Mono	Color	Mono	Color	Color	Color or Mono
C or CS	C or CS	C or CS	C, CS or M12	C or CS	C, CS or M12	C or CS	C, CS or M12	C or CS

CONTINUED



3rd Party Partners

Leveraging the Lumenera API with USB3 Vision and GigE standards, Lumenera cameras are quickly integrated with support from partners, including but not limited to:

- Cognex
- MVTec – Halcon, ActiveTools
- National Instruments – LabVIEW, Vision Builder AI
- NorPix – StreamPix
- The MathWorks – MATLAB
- VISIONx Inc. – VisionGauge
- A & B Software – ActiveUSB

Contact us regarding additional software packages.



Camera Feature Set

- Stable device drivers
- Interface options
 - Fast USB 3.1 Gen 1 (5 Gb/s),
 - Robust USB 2.0 (480 Mb/s),
 - Long reach GigE (1000 Mb/s)
- GPIOs - control of peripherals/synchronization of lighting
- Selectable 8, 10, 12 or 14-bit pixel data
- Color, monochrome, and enhanced NIR options
- Universal SDK available
- Linux support for select platforms and cameras
- Software compatible with Windows10, 8, 7, XP at 32- and 64-bit
- ARM and x86 hardware support
- USB3 Vision
- DirectShow/DirectX compatible
- FCC Class B, CE (enclosed cameras)
- Operate multiple cameras on one computer
- C/.NET and Python programming interfaces
- Highly deterministic capture and strobe timing

Ordering Options

-SCI

Scientific cameras which are manufactured with a higher grade glass and tested on a collimated light source.

-WOCG

Without any cover glass on the camera sensor.

-WOG

Without any glass within lens mount.

-WOIR

For USB 3.1 Gen 1 Cameras:
AR/AR glass within lens mount.

For USB 2.0 & GigE Cameras:
Plain glass within lens mount.

- WIR

With IR glass installed for mono cameras.

- CC

Conformally coated.





7 Capella Court,
Ottawa, ON K2E 8A7

t +1 (613) 736-4077
tf +1 (866) 636-4077

e info@lumenera.com
w lumenera.com



© 2018 LUMENERA CORPORATION, ALL RIGHTS RESERVED.
Design, features and specifications are subject to change without notice. Version 09062018