



# Industrial and Scientific Cameras

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



# 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

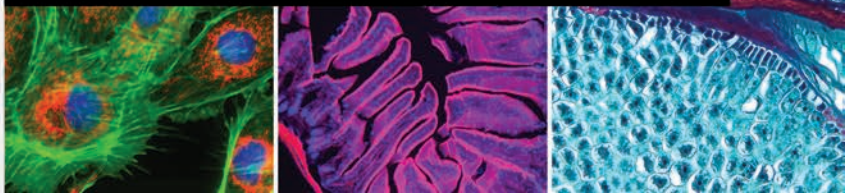
# Scientific Cameras

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](http://lumenera.com)

## USB 3.1 GEN 1 CAMERAS

	Lt225	Lt425	Lt345R	Lt545R	Lt945R	Lt1245R	Lt365R
<b>SENSOR TYPE</b>	2/3" CMOS	1" CMOS	1/1.8" CMOS	2/3" CMOS	1" CMOS	1.1" CMOS	2/3" CCD
<b>RESOLUTION</b>	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)
<b>FRAME RATE*</b>	170	90	120	75	42	30	53
<b>BIT DEPTH</b>	8 or 12	8 or 12	8 or 12	8 or 12	8 or 12	8 or 12	8 or 14
<b>PIXEL PERFECT</b>	5.5 µm	5.5 µm	3.45 µm	3.45 µm	3.45 µm	3.45 µm	4.54 µm
<b>SENSOR</b>	CMOSIS CMV2000 Rev3	CMOSIS CMV4000 Rev3	SONY IMX252	SONY IMX250	SONY IMX255	SONY IMX253	SONY ICX674
<b>SHUTTER</b>	Global	Global	Global	Global	Global	Global	Global
<b>COLOR/MONO</b>	Color/Mono/ NIR	Color/Mono/ NIR	Color or Mono	Color or Mono	Color or Mono	Color or Mono	Color or Mono
<b>LENS MOUNT</b>	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	Canon EF	Canon EF	Canon EF	Canon EF

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## USB 2.0 CAMERAS

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

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### 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.





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