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TECHNOLOGY GROUP

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Lw130R and Lw135R

Very Low Noise Research-Grade 1.4 Megapixel USB 2.0 Camera for Custom OEM Applications



Low Noise CCD Sensor with Global Shutter

Lumenera's Lw130R and Lw135R digital cameras have improved noise and speed performance over their predecessors. These redesigned research-grade cameras accumulate very little dark current noise making them ideal for OEM applications that require long integration times including gel documentation, microplate readers, PCR, cell counting and machine vision. High sensitivity allows these cameras to be deployed in the most light-challenged applications. With a fully global electronic shutter and small image integration time, this camera can capture high-speed motion images with no blur. The scientific grade option (-SCI) is built under a strictly controlled clean room environment to ensure that there are no visible defects found in the optical path. This is a key requirement for applications using collimated light sources, including custom and OEM microscopy.

Vivid Color and NIR Streaming Video Control

The Lw130R and Lw135R utilize a high quality CCD sensor providing great color images in the visible light spectrum, while still being sensitive in the Near Infrared (NIR) (with the -WOIR option). Full streaming of uncompressed video along with still image captures are easily controlled through a set of stable, reliable USB device drivers. Region of interest and binning modes allow the camera to run at faster frame rates while only providing the image data you need. Image capture synchronization is achievable using either a hardware or software trigger and is complemented by 32 MB of onboard memory for frame buffering to ensure delivery of each image to your application.

Plug-and-Play with No Framegrabber

The Lw130R is a board level module, while the Lw135R is a fully enclosed camera that meets FFC Class B and CE emission requirements. Standardized USB 2.0 cabling and digital interface ensure a simple plug-and-play installation with only one cable to minimize clutter. No framegrabber is required. An general purpose I/O port is provided through a 16 pin Molex connector supporting 4 input and 4 output ports.

Maximize Camera Performance Within Your Own Vision Application

The Lumenera Camera SDK provides a full suite of features and functions that allow you to maximize the performance of your camera within your application. The SDK is compatible with all USB and GigE-based cameras. Microsoft DirectX/DirectShow, Windows API and .NET API interfaces are provided allowing you the choice of application development environments from C/C++ to VB.NET or C#.NET. Full inline IntelliSense autocompletion and documentation is provided with the .NET API interface and is accompanied by a full API manual describing all the camera functions and properties.

Superior Technical Assistance Center

All Lumenera cameras are supported by an experienced team of pre-sales and technical support and imaging experts. We understand your imaging needs and are here to help you get the most out of your camera.

Features

- High quality Sony HAD ICX205 CCD sensor
- 30 fps at full resolution
- Incredibly low dark current noise in an uncooled camera
- Color or monochrome, interline transfer, progressive scan 1.4 MP imager with global electronic shutter
- Vivid color response (with color model)
- Excellent NIR sensitivity (with monochrome model)
- Standard industrial or optional scientific-grade quality available
- 4 input and 4 output software controllable GPI/O ports for control of peripherals and synchronization of lighting
- 32 MB RAM frame buffer
- Simplified cabling - video, power and full camera control over a single USB cable
- Binning and Region of Interest (ROI) features improve sensitivity and provide higher frame rates
- C-Mount lens mount provided (CS-mount optional)
- FCC Class B, CE Certified
- Select 8 or 14-bit pixel data
- DirectX/DirectShow compatible
- Software compatible with Windows 10, Windows 8.1, Windows 7, Linux, 32 and 64-bit operating systems
- Complete SDK available
- Four (4) year warranty

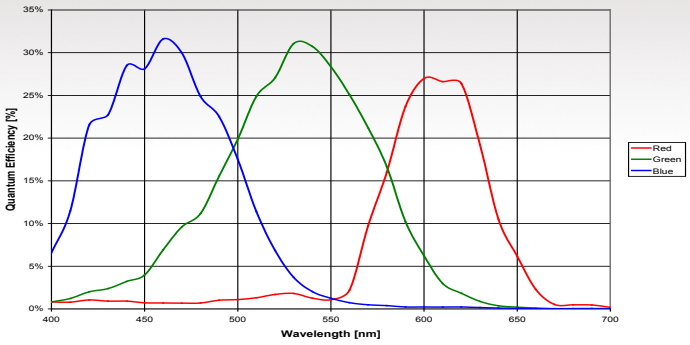
Lumenera corporation

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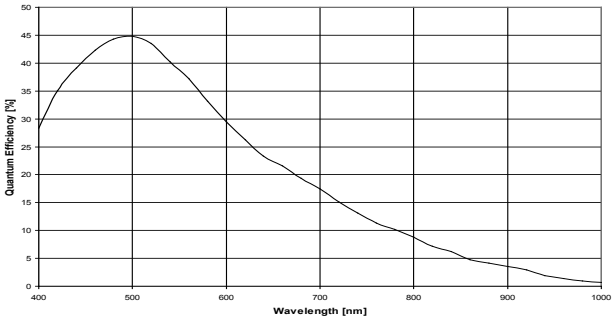
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Color Quantum Efficiency Curves



Monochrome Quantum Efficiency Curve

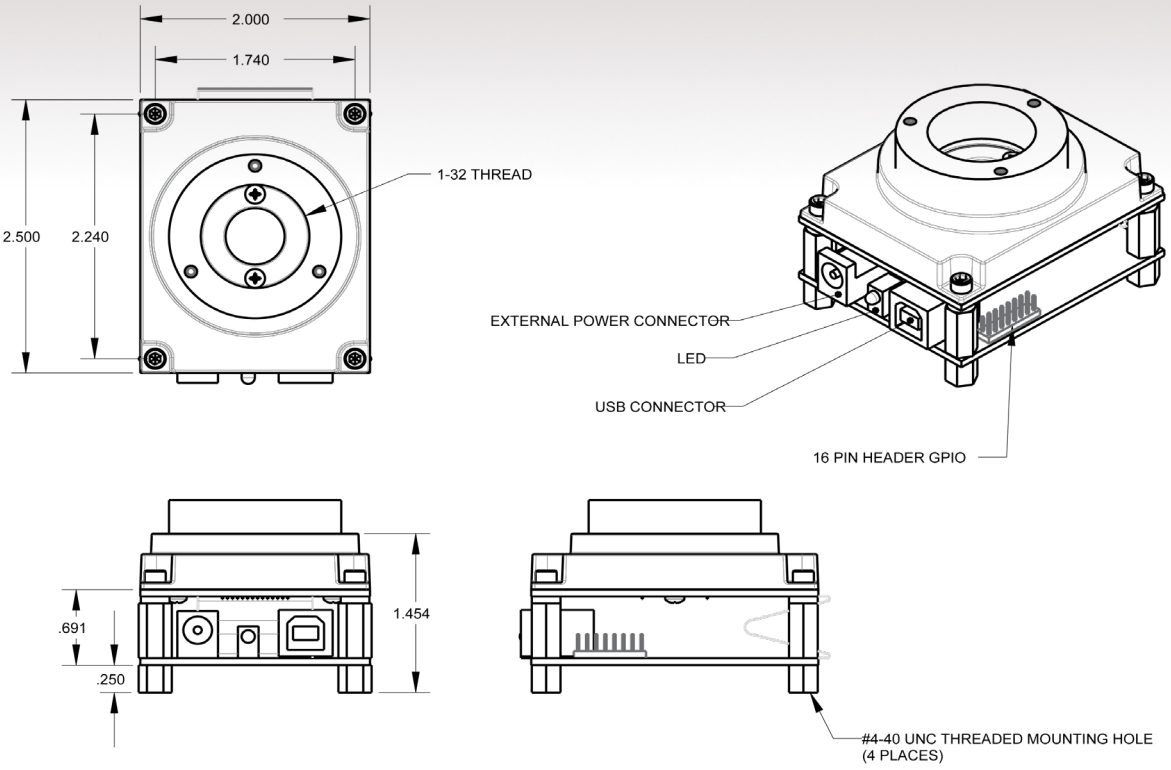


Ordering Options	
Lw130RM	1.4 MP Monochrome Camera Module (board level)
Lw130RC	1.4 MP Color Camera Module (board level)
Lw135RM	1.4 MP Monochrome Camera (enclosed)
Lw135RC	1.4 MP Color Camera (enclosed)
LuSDK	Software Developer's Kit (web download)
La050300	5 V DC, 500 mA minimum, 2.1 mm tip, center positive
Camera Includes	
Lu802	3m USB 2.0 A to B cable
Customization Options	
-SCI	Scientific-grade
-WOIR	Plain glass in optical path (only for color cameras)
-WIR	With IR cut filter in optical path (only for monochrome cameras)
-CS	With adjustable CS-mount lens mount

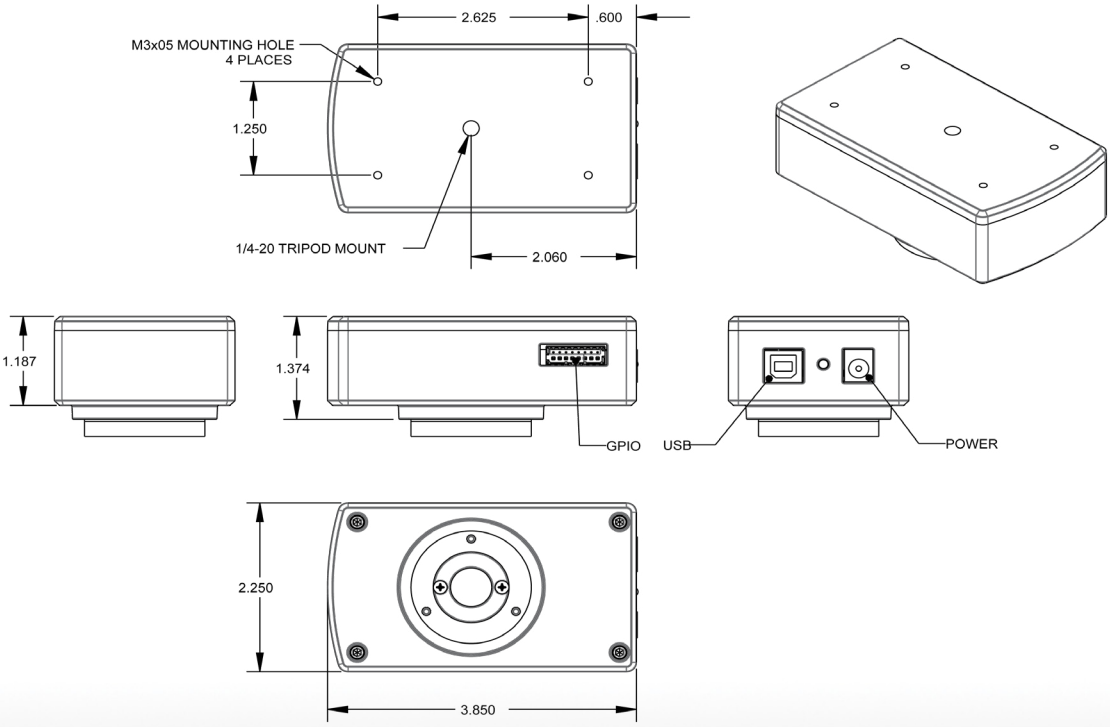
Sensor Specifications	
Image Sensor	Sony HAD ICX205, progressive scan CCD, color or mono,
Optical Format	1/2"
Imager Size	Diagonal 8.00 mm
Pixel Size	4.65 x 4.65 µm
Resolution	1392 x 1040 pixels
Region of Interest Control	Any multiple of 8 x 8 pixels, 120 x 120 pixels minimum
Camera Specifications	
Frame Rate	30 fps at 1392x1040
Bit Depth	8 or 14-bit
Binning Modes	2 x 2, 4 x 4 (binning mode)
Exposure Control	Manual and automatic control
Exposure Range	48 µs to 500 ms (video), 5.4 µs to 8 min (snapshot)
Gain Control	Manual and automatic control
Gain Range	0.5 to 15 x
White Balance	Manual and automatic control
Trigger Modes	Hardware and software triggerable
Camera Characteristics	
Sensitivity	2.5 DN/(nJ/cm^2) [at 8-bit, 1 x gains]
Dynamic Range	64.6 dB
Full Well Capacity	14,500 e-
Quantum Efficiency	32 % (peak color) 44 % (peak mono)
Read Noise	8.5 e-
Dark Current Noise	< 1 e-/s at 22 °C
Mechanical Specifications	
Data Interface	USB 2.0
General Purpose I/O	16 pin Molex connector
Lens Mount	Adjustable C-mount standard, optional adjustable CS-mount available
Dimensions (HxWxD)	57.2 x 97.8 x 44.9 mm (enclosed) 2.250 x 3.850 x 1.374 inch (enclosed)
Mass	300 grams (enclosed)
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 to 200 Hz) vibration
Onboard Memory	Camera has onboard non-volatile memory storage
Camera Software	
Operating Systems	Windows 10, Windows 8.1, Windows 7, Linux, 32 and 64-bit operating systems
Software Interfaces	Windows API, .NET, DirectX
SDK available	Yes
Power and Emissions	
Power Consumption	~2.5 W
Power Requirement	USB bus power (optional 5 V DC, 500 mA minimum, 2.1 mm tip, center positive)
Emissions Compliances	FCC Class B ready (board level) FCC Class B, CE Certified (enclosed)
Hazardous Materials	RoHS, WEEE Compliant
Warranty	Four (4) year
System Requirements	
Recommended PC Specs	• Pentium 4, 1.3 GHz or higher • 512 MB RAM • 60 MB hard drive free space or more • USB 2.0 Port • Windows 10, 8.1, 7; Linux

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Board Level Mechanical Drawings



Enclosed Mechanical Drawings



* All units are in inches

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