

Lw160R & Lw165R

Industry leading 1.4 Megapixel Research
Grade USB 2.0 Board Level and Enclosed Cameras



High Dynamic Range in Low Light Conditions

Lumenera's Lw160R and Lw165R megapixel cameras are designed for use in a wide variety of applications, particularly in low-light conditions and where high dynamic range and very low noise are required. With 1392 x 1040 resolution and on-board processing these cameras deliver outstanding image quality and value for industrial and scientific imaging applications.

Superior Sensitivity and Color Reproduction

Equipped with a high quality Sony ICX285 CCD sensor, the Lw160R and Lw165R cameras have the unmatched light sensitivity needed for low light applications. Superior performance is achieved through low noise electronics, high grade components and Lumenera's unique thermal management techniques. With an extremely high dynamic range and large 6.45 μm square pixels, this camera is an excellent choice for light-challenged applications.

Live Stream and Still Image Capturing

Uncompressed images in live streaming video and still image capture are provided across a USB 2.0 digital interface. No framegrabber is required. Advanced camera control is available through a comprehensive Software Developer's Kit, with numerous sample applications and associated source code available to quickly integrate camera functions into OEM applications.

Customization

Camera models are offered in both enclosed (Lw165R) and board-level (Lw160R) form. Custom form factor (sizes) as well as color and monochrome camera models are available. Take advantage of Lumenera's engineering expertise to make any other software or hardware customizations required for unique applications.

Maximize Camera Performance Within Your Own Application

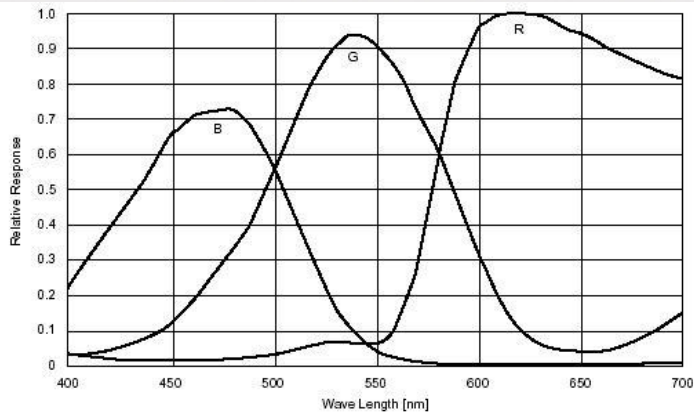
The Lumenera Camera SDK provides a full suite of features and functions that allow you to maximize the camera's performance within your own vision application. The SDK is compatible with all of our USB and GigE-based cameras and includes over 50 sample applications. Microsoft DirectX/DirectShow, Windows 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 is provided with the .NET API interface and is accompanied by a full API manual describing all camera functions and properties.

Features

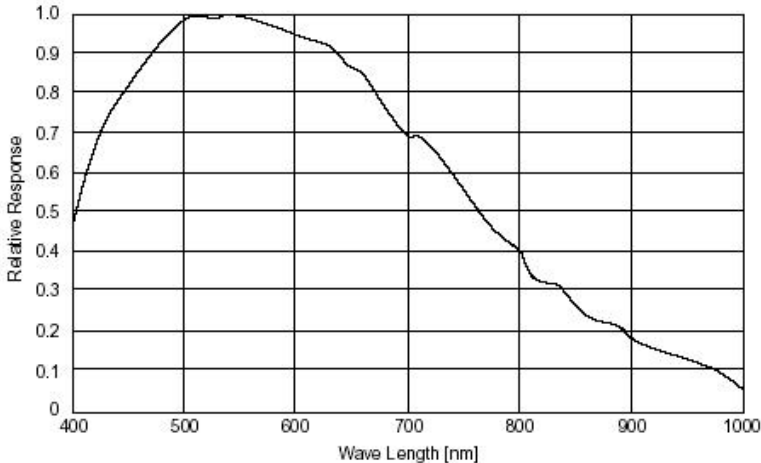
- Best-in-class Sony ICX285 EXview HAD CCD sensor
- Excellent sensitivity with high color fidelity
- Color or monochrome, Interline transfer progressive scan CCD, 1.4 megapixel sensor
- 30 fps at full 1392 x 1040 resolution
54 fps 640 x 480 (binned)
- Binning and Region of Interest (ROI) options improve sensitivity and provide higher frame rates
- Global shutter and fast exposures for capturing fast moving objects
- GPIO for control of peripherals and synchronization of lighting (4 in / 4 out)
- 14-bit imaging provides high contrast images
- Simplified cabling - video and full camera control over a single USB cable
- Adjustable lens mount. C-mount, CS optional.
- DirectShow compatible
- Software compatible with Windows 10, Windows 8.1, Windows 7, Linux, 32 and 64-bit operating systems
- Complete SDK available
- FCC Class B, CE
- Four (4) year warranty



Color Quantum Efficiency Curves



Monochrome Quantum Efficiency Curve



Ordering Options

Lw160RM	1.4 Megapixel Monochrome Module (Board Level)
Lw160RC	1.4 Megapixel Color Camera Module (Board Level)
Lw165RM	1.4 Megapixel Monochrome Camera (Enclosed)
Lw165RC	1.4 Megapixel Color Camera (Enclosed)
LuSDK	Software Developer's Kit (Web download)
La050300	5 VDC, 2.5 A Power Supply

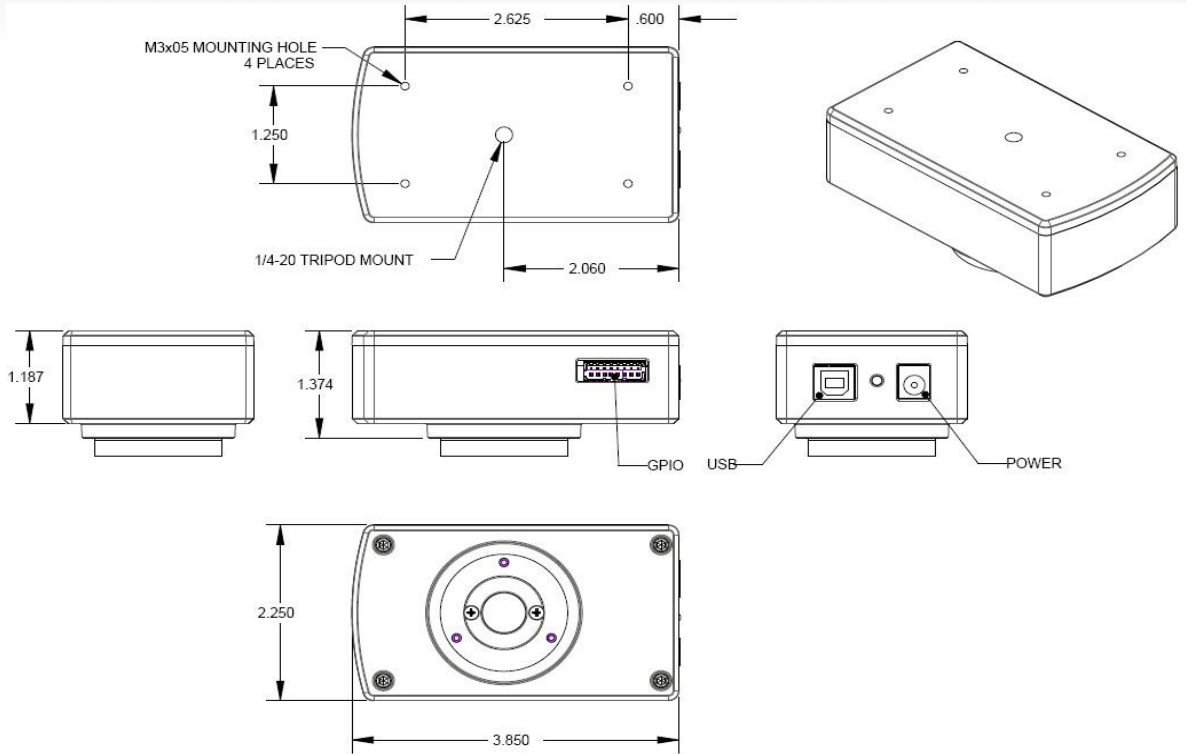
Customization Options

-WOIR	Without IR Cut Filter (in optical path)
-CS	With Adjustable CS-mount lens mount
-WOCG	Without Cover Glass

Sensor Specifications	
Image Sensor	Sony ICX285, EXview HAD CCD, color or mono, progressive scan
Optical Format	2/3"
Imager Size	Diagonal 11.00 mm
Pixel Size	6.45 x 6.45 μ m
Resolution	1392 x 1040 pixels
Region of Interest Control	Any multiple of 8 x 8 pixels (8 x 8 pixels minimum)
Camera Specifications	
Frame Rate	30 fps at 1392x1040, 54 fps at 640 x 480 (ROI)
Bit Depth	8 or 14-bit
Binning Modes	2 x 2, 4 x 4
Exposure Control	Manual and automatic
Exposure Range	3 μ s to 211 ms (video), 2 μ s to 10 min (snapshot)
Gain Control	Manual and automatic
Gain Range	0.5 to 35 x
White Balance	Manual and automatic control
Camera Characteristics	
Sensitivity	5.3 DN/(nJ/cm ²) [at 8-bit, 1 x gains]
Dynamic Range	70 dB
Full Well Capacity	18,500 e-
Quantum Efficiency	44 % (color peak), 62 % (mono peak)
Read Noise	6 e-
Dark Current Noise	<1 e-/s at 22 °C
Mechanical Specifications	
Data Interface	USB 2.0
Lens Mount	Adjustable C-mount standard, (CS-mount option)
Dimensions (HxWxD)	39.62 x 57.15 x 96.52 mm (enclosed) 1.56 x 2.25 x 3.8 inches (enclosed)
Mass	300 g (enclosed)
Operating Temperature	0 to 50 °C
Storage Temperature	-30 to 70 °C
Operating Humidity	0 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
Power and Emissions	
Power Consumption	~2.5 W
Power Requirement	USB bus power (optional La20515 power supply may be required for PCs with shared USB resources)
Emissions Compliances	FCC Class B, CE Certified
Hazardous Materials	RoHS, WEEE Compliant
Warranty	Four (4) year
Camera Includes	
Lu802	3 m USB 2.0 A to B cable
System Requirements	
Recommended PC Specs	<ul style="list-style-type: none"> • Pentium 4, 1.3 GHz or higher • 1 GB RAM • 100 MB hard drive free space or more • USB 2.0 or 3.0 Port • Windows 10, 8.1, 7; Linux



Enclosed Mechanical Drawings



Board Level Mechanical Drawings

