

# Lw560 and Lw565

Very Sensitive 5.0 Megapixel  
USB 2.0 Camera



## High Resolution CCD Sensor with Global Shutter

Lumenera's Lw560 and Lw565 digital cameras are designed to be a versatile solution for traffic, machine vision, 3D biometrics, ophthalmology and low light imaging. High sensitivity allows these cameras to be deployed in the most light challenged applications. With a fully global electronic shutter and a short image integration time, this camera can capture high-speed motion images with no blur. The scientific-grade option 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.

## Vivid Color and NIR Streaming Video Control

The Lw560 and Lw565 utilize a high quality CCD sensor providing great color images in the visible light spectrum, while still remaining sensitive in the Near Infrared (NIR) light spectrum (with the -WOIR option). Full streaming of uncompressed video along with still image captures are easily controlled through a set of stable and reliable USB device drivers. Region of interest and binning modes allow the camera to run at faster frame rates (23 fps at 640x480 resolution) 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 on board memory for frame buffering to ensure delivery of each image to your application.

## Plug-and-Play with No Framegrabber

The Lw560 is a board level camera module, while the Lw565 is a fully enclosed camera that meets FCC 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

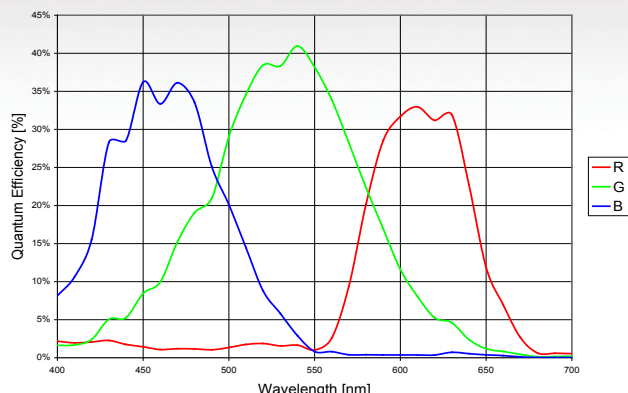
All Lumenera cameras are supported by an experienced team of technical support and imaging experts. We understand your imaging needs and are here to help you get the most out of your camera.

## Features

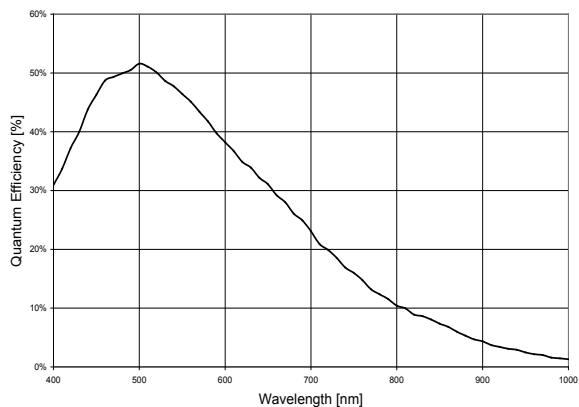
- High quality Sony Super HAD ICX655 CCD sensor
- Color or monochrome, interline transfer, progressive scan 5.0 MP imager with global electronic shutter
- Vivid color response (with color model)
- Excellent NIR sensitivity (with monochrome model)
- Standard industrial or optional scientific-grade quality 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
- USB cameras are software compatible with Windows XP, Windows Vista and Windows 7, 32 and 64-bit operating systems
- Complete SDK available
- Full one (1) year warranty



Color Quantum Efficiency



Monochrome Quantum Efficiency

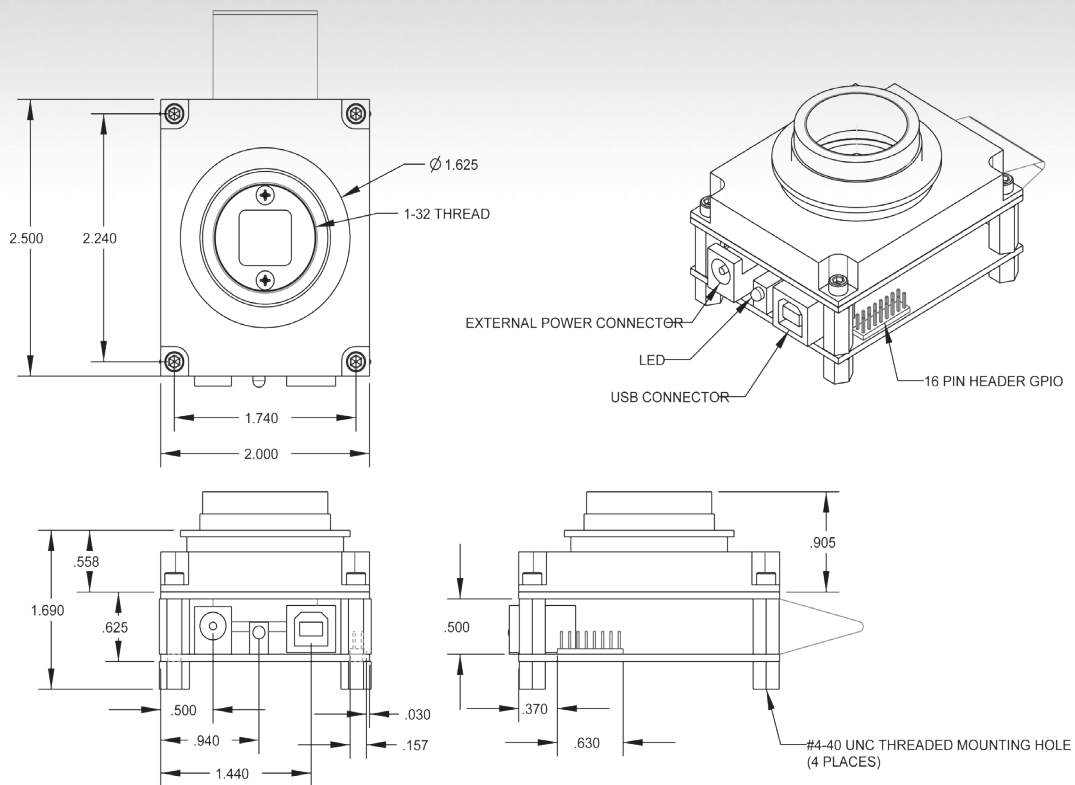


Ordering Options	
Lw560M	5.0 MP Monochrome Camera Module (Board Level)
Lw560C	5.0 MP Color Camera Module (Board Level)
Lw565M	5.0 MP Monochrome Camera (Enclosed)
Lw565C	5.0 MP Color Camera (Enclosed)
LuSDKSW	Software Developer's Kit (Web Download)
LuSDK-DVD	Software Developer's Kit (DVD)
La20515	5 V DC, 500 mA minimum, 2.1 mm tip, center positive
Camera Includes	
Lu802	2 m USB 2.0 A to B cable
Customization Options	
-SCI	Scientific-grade
-WOIR	Plain glass in optical path (color cameras only)
-WIR	With IR cut filter in optical path (monochrome cameras only)
-CS	With adjustable CS-mount lens mount

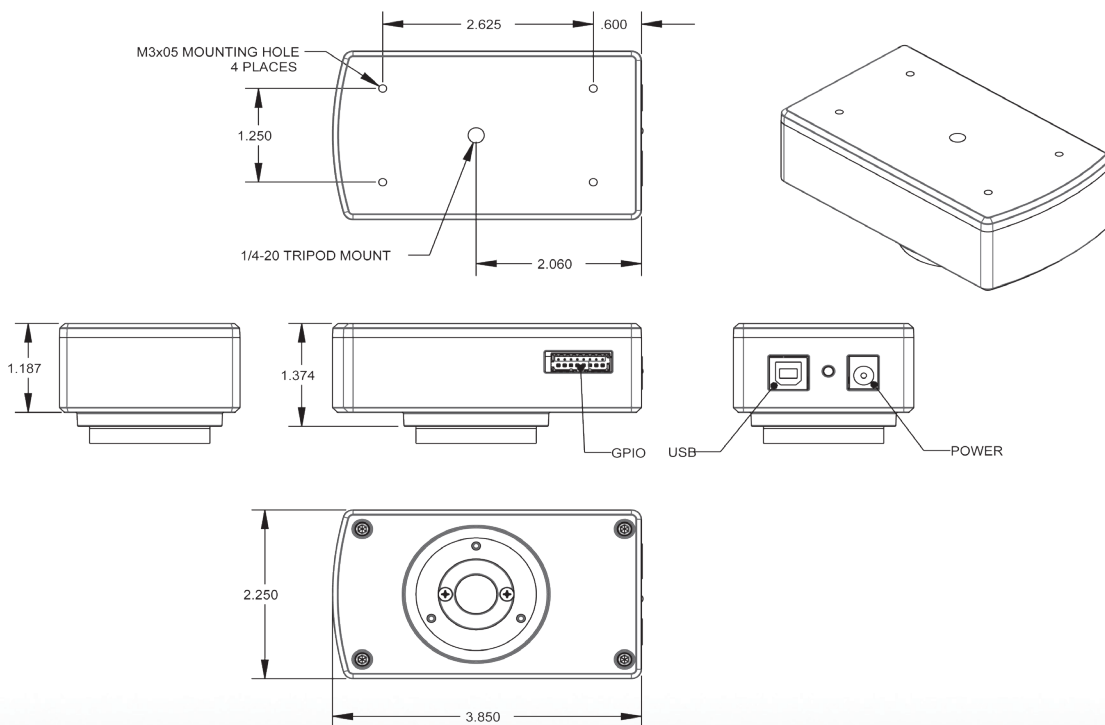
Sensor Specifications		
Image Sensor	Sony Super HAD ICX655, CCD, color or mono, progressive scan	
Optical Format	>2/3"	
Active Area	8.45 x 7.07 mm	
Pixel Size	3.45 x 3.45 μm	
Resolution	2448 x 2048 pixels	
Region of Interest Control	Any multiple of 8 x 8 pixels, 16 x 16 pixels minimum	
Camera Specifications		
Frame Rate	9 fps (burst), 8.5 fps (sustained) at full resolution, 23 fps at 640 x 480 (at 2 x binning or with ROI)	
Bit Depth	8 or 14-bit	
Binning Modes	2 x 2 and 4 x 4	
Exposure Control	Manual and automatic control	
Exposure Range	58.3 μs to 111 ms (video), 2 μs to 71 min (snapshot)	
Gain Control	Manual and automatic control	
Gain Range	1 to 25.6 x	
White Balance	Manual and automatic control	
Trigger Modes	Hardware and software triggerable	
Camera Characteristics		
Sensitivity	3.5 DN/(nJ/cm <sup>2</sup> ) [at 8-bit, 1 x gains]	
Dynamic Range	58 dB	
Pixel Well Depth	7950 e-	
Quantum Efficiency	42% (green peak), 52% (mono peak)	
Read Noise	10 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	Board Level	50.8 x 63.5 x 42.9 mm 1.740 x 2.240 x 2.037 inch
	Enclosed	57.2 x 97.8 x 44.9 mm 2.250 x 3.850 x 1.374 inch
Mass	Board Level	130 g
	Enclosed	300 g
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	
Camera Software		
Operating Systems	Windows XP, Windows Vista, Windows 7, 32 and 64-bit	
Software Interfaces	Windows API, .NET, DirectX	
Power and Emissions		
Power Consumption	~2.5 W	
Power Requirement	USB bus power only (optional 5 V DC, 500 mA minimum, 2.1 mm tip, center positive)	
Emissions Compliances	Board Level	FCC Class B ready
	Enclosed	FCC Class B, CE Certified
Hazardous Materials	RoHS, WEEE Compliant	
Warranty	One (1) year	
System Requirements		
Recommended PC Specs:	<ul style="list-style-type: none"> <li>Pentium 4, 1.3 GHz or higher</li> <li>512 Mb RAM</li> <li>60 MB hard drive free space or more</li> <li>USB 2.0 Port</li> <li>Windows XP, Vista or 7</li> </ul>	
	<ul style="list-style-type: none"> <li>600 MHz Processor</li> <li>256 MB of SDRAM</li> <li>20 MB hard drive free space</li> <li>USB 2.0 Port</li> <li>Windows XP 32-bit</li> </ul>	



Board Level Mechanical Drawings



Enclosed Mechanical Drawings



\* All units are in inches