Lm130 & Lm135

1.4 Megapixel Mini USB 2.0 Camera

High Dynamic Range with Global Shutter

Lumenera's Lm135 digital camera is designed to be a compact, cost-effective, versatile solution for machine vision, 3D biometrics and stop motion photography. The fully global electronic shutter, which looks and feels of a mechanical shutter, that can capture images of high speed motion with little to no blur and this camera provides many of the features needed for stop motion image captures. Combine this with the excellent sensitivity and high dynamic range and you get a versatile camera that can be used in the most light challenging applications.

On Chip Binning for Increased Sensitivity

This camera utilizes its high quality CCD sensor to its maximum by providing either vivid color or highly sensitive visible light and near IR monochromatic images. 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 (30+ fps at 640 x 480 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.

Small Size and Locking Connectors

The compact design of the Lm135, measuring 44 x 44 x 56 mm, make it ideal for installation in small spaces or in compact enclosures. The fully locking USB 2.0 cabling and digital interface ensures a simple plug and play installation – and one standard cable minimizes camera clutter. No frame grabber required. Simplified and economical IO cabling is provided through a locking RJ45 connector supporting 2 optically isolated ports (1IN/1OUT) and 3 configurative bi-directional I/O ports.

Write 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.

Features

- Small form factor measuring 44 x 44 x 56 mm
- High quality Sony HAD ICX205 CCD sensor
- Color or monochrome, interline transfer, progressive scan 1.4 MP CCD sensor
- Locking industrial mini USB and RJ45 GPI/O connector for control of peripherals and synchronization of lighting
- 3 software configurable bidirectional I/O ports and 2 optically isolated ports (1in/1out)
- 32 MB RAM frame buffer
- Excellent sensitivity
- Simplified cabling - video, power and full camera control over a single mini USB cable
- 8 mounting points
- Binning and Region of Interest (ROI) options improve sensitivity and provide higher frame rates
- FCC Class B, CE Certified
- Select 8 or 12-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) warranty

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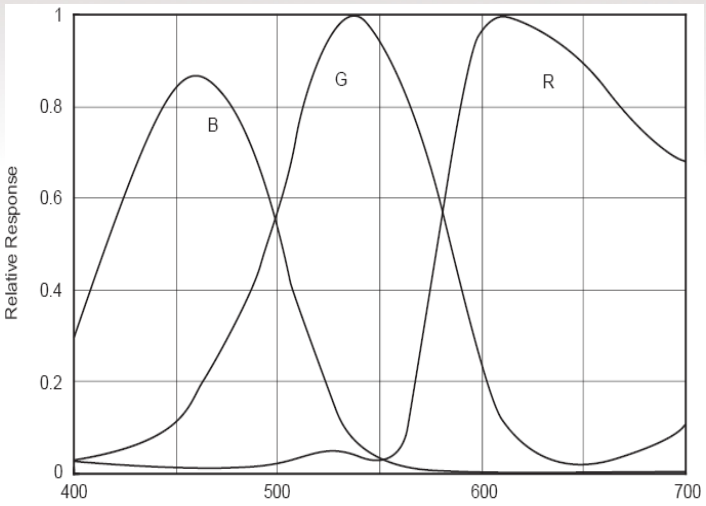
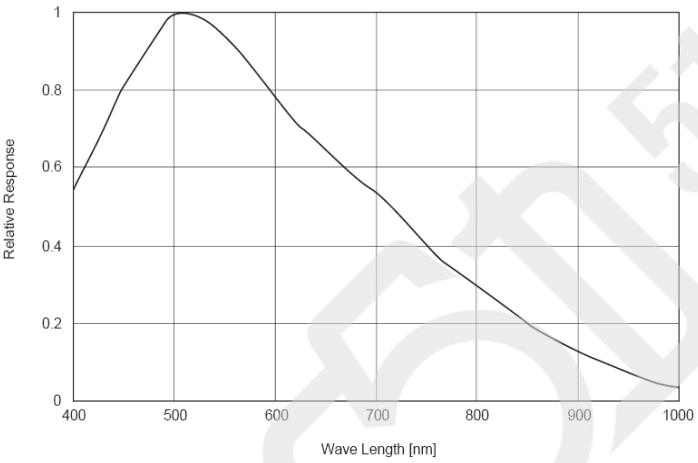
Color Quantum Efficiency Curves



Monochrome Quantum Efficiency Curve



Ordering Options	
Lm130M	1.4 MP Mini Monochrome Module (Board Level)
Lm130C	1.4 MP Mini Mini Color Camera Module (Board Level)
Lm135M	1.4 MP Mini Mini Enclosed Color Camera
Lm135C	1.4 MP Mini Mini Enclosed Monochrome Camera
LuSDK	Software Developer's Kit (Web download)
Camera Includes	
Lu802m	Locking 2M USB 2.0 A to mini B cable
Lu905	Tripod mount

Sensor Specifications	
Image Sensor	Sony ICX205, HAD CCD, color or mono, progressive scan
Optical Format	1/2"
Imager Size	Diagonal 8.00 mm
Pixel Size	4.65 x 4.65 um
Resolution	1392 x 1040 pixels
Region of Interest Control	Any multiple of 8 x 8 pixels, 16 x 16 pixels minimum
Camera Specifications	
Frame Rate	15 fps @ 1392x1040, 60 fps @ 640x480
Bit Depth	8 or 12-bits
Binning Modes	2 x 2 and 4 x 4
Exposure Control	Manual and automatic control
Exposure Range	3us to 2.05s (video), 33.5us to 71m (snapshot)
Gain Control	Manual and automatic control
Gain Range	1 to 23.8 x
White Balance	Manual and automatic control
Camera Characteristics	
Sensitivity	2.5 DN/(nJ/cm^2) [at 8-bit, 1 x gains]
Dynamic Range	62 dB
Full Well Capactiy	10,000 e-
Quantum Efficiency	32 % (peak color) 44 % (peak mono)
Read Noise	8 e-
Dark Current Noise	2 e- at 25 ^{0}C
Mechanical Specifications	
Data Interface	USB 2.0, locking mini-B connector
Lens Mount	Adjustable C-mount standard, optional adjustable CS-mount available
Dimensions (HxWxD)	45.47 x 43.94 x 43.94 mm (enclosed) 1.79 x 1.73 x 1.73 inch (enclosed)
Mass	130 g (enclosed)
Operating Temperature	0 to 50 ^{0}C
Storage Temperature	-30 to 70 ^{0}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
Power and Emissions	
Power Consumption	~2.5 W
Power Requirement	USB bus power only
Emissions Compliances	FCC Class B, CE Certified
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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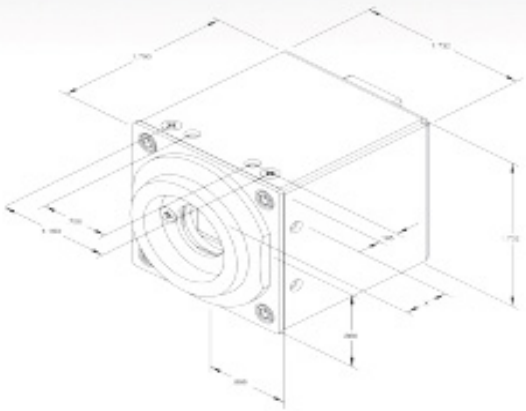
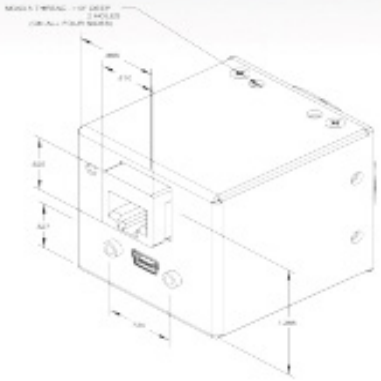
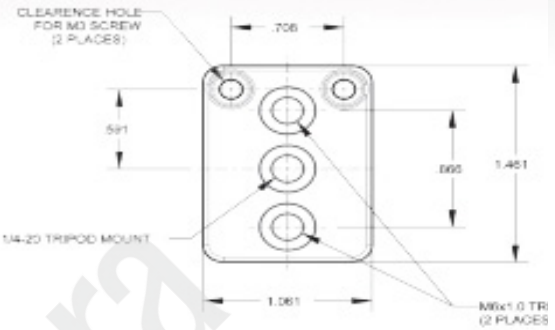
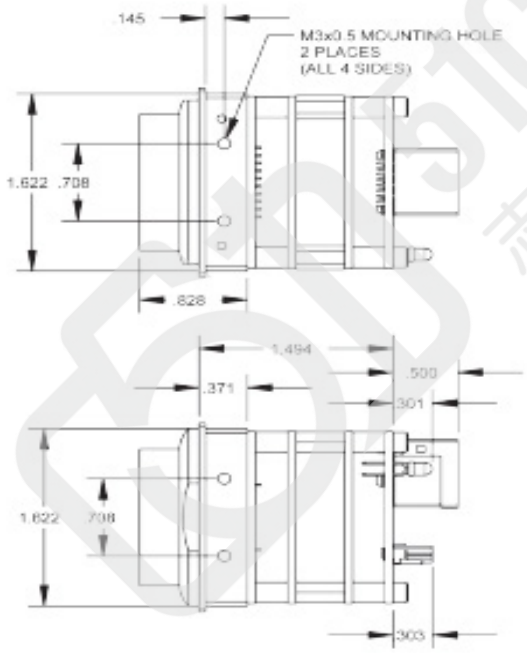
Enclosed Mechanical Drawings

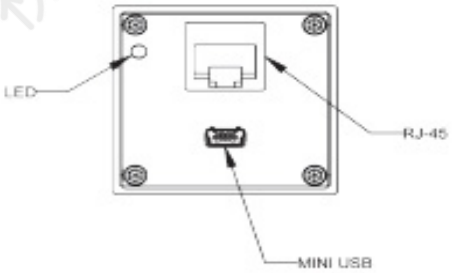


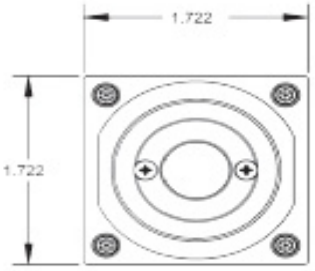




Board Level Mechanical Drawings







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