Lt29059H
High Resolution 29 Megapixel, USB 3.1 Gen 1 Camera
Ideal for applications such as: Traffic, Flat Panel Inspection, UAVs and Surveillance

High Resolution CCD Sensor with Global Shutter and NIR Enhancement
Lumenera’s progressive scan Lt29059H digital camera is built for rugged 24/7 use. A proven high resolution 35 mm format CCD sensor with a fully global electronic shutter captures excellent quality images with zero blur. The KAI-29052 sensor doubles the NIR sensitivity of the KAI-29050 sensor, provides better sensitivity performance in the green (540nm) and red (620nm) wavelengths, and offers lower read noise. It also provides high smear rejection (>100 dB) and up to 64 dB linear dynamic range. Completely integrated Canon EF lens controller offers increased longevity and durability (no external cabling is required). The industrial-grade Lt29059H is ideally suited for applications requiring high resolution such as: intelligent traffic systems, high-resolution industrial inspection, surveillance and UAVs.

High Quality Images for Difficult Lighting Environments
The high quality CCD sensor provides both monochrome and vivid color images for the most demanding environments. Full streaming uncompressed video and still image captures are easily controlled through a set of stable and reliable USB 3.1 Gen 1 device drivers. Region of interest and binning modes enable the camera to run at faster frame rates by selecting a specific portion of an image and only transmitting that data. Image capture synchronization is achievable using either a hardware or software trigger and is complemented by 256 MB of on board memory for frame buffering to ensure image delivery.

Built for Reliability and Ease of Integration
The compact, light-weight design of the Lt29059H ensures easy integration into tight spaces and enclosures. The robust enclosure is designed to effectively dissipate heat and increase reliability by avoiding the need for a fan. The fully locking USB 3.1 Gen 1 cabling, power connector and digital interface ensure a simple plug-and-play installation. No framegrabber is required. Simplified I/O cabling is provided through a 12 pin GPIO connector supporting 1 output, 1 input and 2 software configurable I/O ports.

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.

Superior Technical Assistance Center
All Lumenera cameras are supported by an experienced team of imaging experts for pre-sale and post-sale technical support. We understand your imaging needs and are here to help you get the most out of your camera.
### Sensor Specifications
- **Image Sensor**: TrueSense KAI-29052, CCD, color, monochrome
- **Optical Format**: 35 mm
- **Imager Size**: Diagonal 43.47 mm
- **Pixel Size**: 5.5 x 5.5 µm
- **Resolution**: 6576 x 4384 pixels
- **Region of Interest Control**: Yes

### Camera Specifications
- **Frame Rate**: ~6 fps at full resolution, faster with ROI
- **Bit Depth**: 8 or 14-bit
- **Binning**: 2x2, 4x4, 8x8
- **Electronic Shutter**: Global
- **Exposure Control**: Manual and automatic control
- **Exposure Range**: Video mode: ~21 µs to 780 ms (4-tap) / 950 ms (2-tap) / 1750 ms (1-tap) (video)  
  Snapshot mode: ~35 µs to 71 minutes (snapshot)
- **Gain Control**: Manual and automatic control
- **Gain Range**: ~0.6 to ~43
- **White Balance**: Manual and automatic control
- **Trigger Modes**: Hardware and software triggerable

### Camera Characteristics
- **Sensitivity (8-bit)**:  
  - Mono: 4.9 DN/(nJ/cm²), Color: 4.8 DN/(nJ/cm²)  
  - Global and channel gains at unity
- **Dynamic Range**: ~62.5dB
- **Full Well Capacity**: ~15,000 e-
- **Quantum Efficiency**: 44% @ 450nm peak color, 44% @ 530nm peak mono
- **Read Noise**: ~11 e-
- **Nominal Dark Current**: Photodiode: 7 [e-/pixel/sec]  
  - VCCD: 140 [e-/pixel/sec]

### Mechanical Specifications
- **Data Interface**: USB 3.0, locking connector
- **General Purpose I/O**: Locking Hirose HR10A-10R-12PB(71)
- **Lens Mount**: Canon EF mount (focus/iris support), Supports other mounts with 3rd party adapter rings
- **Dimensions**: 76.2 x 76.2 x 82.6 mm  
  - 3.0 x 3.0 x 3.25 inch
- **Mass**: ~600 g
- **Operating Temperature**: 0 to 50 ºC (Requires recommended heat sinking to external enclosure)
- **Storage Temperature**: -30 to 70 ºC
- **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 / DirectShow, USB3 Vision

### Power and Emissions
- **Power Consumption**: ~13 W (average)
- **Power Requirement**: 12V DC via DC connector or GPI/O
- **Emissions Compliances**: FCC Class B, CE Certified
- **Hazardous Materials**: RoHS, WEEE Compliant
- **Warranty**: Four (4) year

### Ordering Options
- **Lt29059HM**: 29MP NIR Mono Camera, La120315 12V DC Power supply
- **Lt29059HC**: 29MP NIR Color Camera, La120315 12V DC Power supply
- **La120315**: Locking 12V DC international power supply
- **La303L**: USB 3.0 Cable (3m / 9.75 ft, A Male to B Male Locking)

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**Color Quantum Efficiency Curve**

**Monochrome Quantum Efficiency Curve**

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**Customization Options**

- **-WOIR**: AR/AR glass within lens mount
- **-WOG**: Without any glass within lens mount
Mechanical Drawings