



CMOS IMAGE SENSORS

Canon CMOS Sensors Expand Your Possibilities



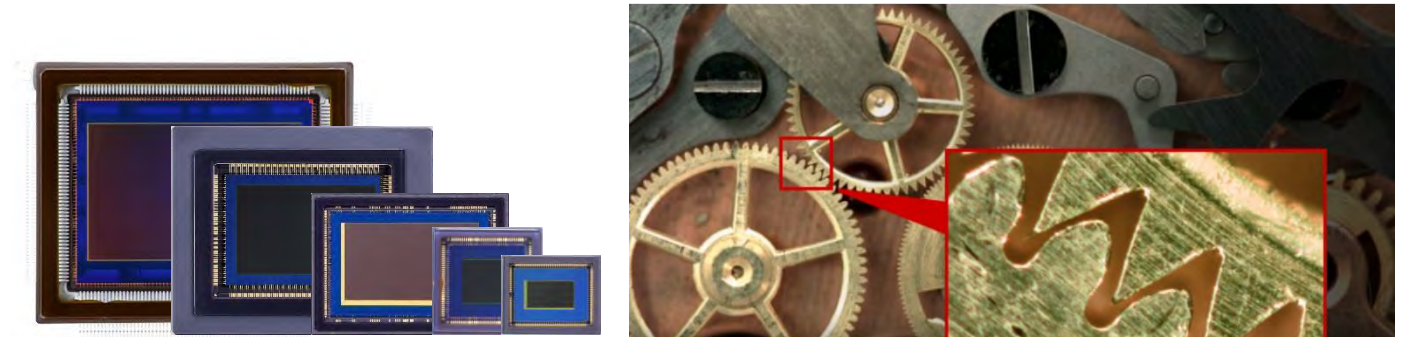
Canon

Delighting You Always

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CMOS IMAGE SENSORS

Canon has been manufacturing CMOS sensors since 2000 for exclusive use in Canon products. Building on that expertise and success, Canon is now committed to continually redefining what's possible with new CMOS sensor products for use in industrial vision. If you are in the design phase of your project, Canon sensors will be ready and available when you need them.

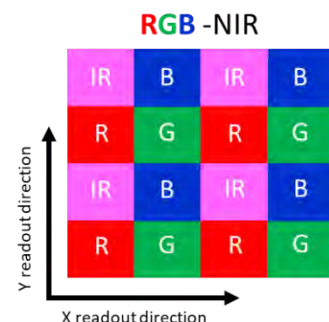
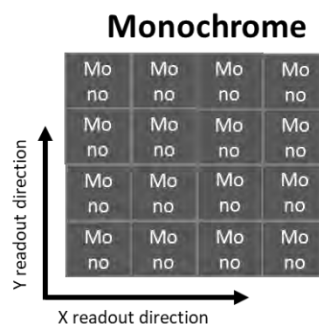
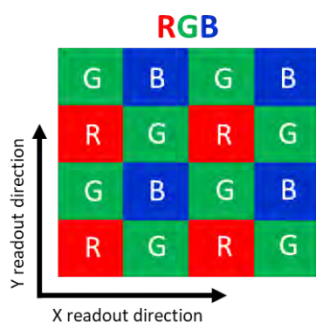


Would you like to capture:

- clear and high-resolution images?
- moving subjects in high resolution, even when cropping or digitally zooming?
- images in low-light environments with as little as 0.001 lux of illumination?
- distortion-free images even when shooting fast-moving objects?
- in environments in which there is a significant difference between dark and bright lighting, such as near the entrance of the building?



Various color filter type:





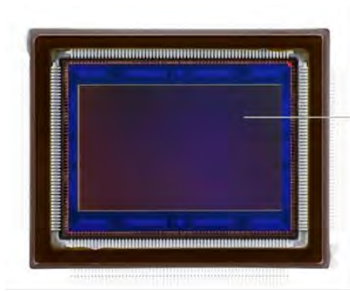
Product	Shutter Type	Image Size	Resolution	Pixel Size (μm)	Chroma	IF	Max Frame Rate (fps)	Application
LI7050	Rolling-shutter	1 / 1.8"	2.1M	4.1	RGB	MIPI CSI2	60 (Normal 12bit)	Surveillance
							30(HDR 12bit)	
35mmFHDXS	Rolling-shutter	35mm Full Size	2.7M	19	B / W	Analog (Serial)	115 (FullHD)	Space science / Surveillance
	Rolling-shutter	35mm Full Size	2.7M	19	RGB	Analog (Serial)	115 (FullHD)	Space science / Surveillance
	Rolling-shutter	35mm Full Size	2.7M	19	RGB / IR	Analog (Serial)	115 (FullHD)	Space science / Surveillance
	Rolling-shutter	35mm Full Size	2.7M	19	B / W	Analog (Serial)	115 (FullHD)	Space science / Surveillance
NEW LI3030SAM	Rolling-shutter	35mm Full Size	2.7M	19	B / W	Analog (Serial)	115 (FullHD)	Space science / Surveillance
NEW LI3030SAI	Rolling-shutter	35mm Full Size	2.7M	19	RGB / IR	Analog (Serial)	115 (FullHD)	Space science / Surveillance
LI7060	Rolling-shutter	1 / 2.32"	2.8M	3.2	RGB	MIPI CSI2	60	Surveillance
		2 / 3"	5M	3.4	B / W	LVDS	120	Industry
		2 / 3"	5M	3.4	RGB	LVDS	120	Industry / Surveillance
		2 / 3"	5M	3.4	RGB / IR	LVDS	120	Industry / Life science
LI5010/LI5020 (3U5MGXS)	Rolling-shutter	1"	12M	3.2	RGB	LVDS	60 (4K2K)	Surveillance
		APS-H	120M	2.2	B / W	LVDS	9.4	Industry
		APS-H	120M	2.2	RGB	LVDS	9.4	Surveillance / Industry
		APS-H	120M	2.2	RGB / IR	LVDS	9.4	Life science / Surveillance
NEW LI8020SAC	Rolling-shutter	APS-H	250M	1.5	B / W	LVDS	5	Surveillance / Industry
NEW LI8020SAM	Rolling-shutter	APS-H	250M	1.5	RGB	LVDS	5	Surveillance / Industry



	250MP		120MP			19um 35mmFHD						5MP Global shutter						1/1.8"	1"
	LI8020SAC	LI8020SA M	120MXSC	120MXSM	120MXSI	35MMFHD XSAC	35MMFHD XSMA	LI3030SAI	LI3030SAM	LI5010SAC	LI5010SAM	LI5010SAI	LI5020SAC	LI5020SAM	LI5020SAI	LI7050SAC	LI7030SAC		
Filter Type	RGB	Monochrome	RGB	Monochrome	RGB-NIR	RGB	Monochrome	RGB-NIR	Monochrome	RGB	Monochrome	RGB-NIR	RGB	Monochrome	RGB-NIR	RGB	RGB		
Sensitivity (e-/ix/sec)	4,600 (Green)	11,000	10,000 (Green)	20,000	10,000 (Green)	1,100,000	2,100,000	1,400,000	3,000,000	30,000 (Green)	47,000	30,000 (Green)	30,000 (Green)	54,000	30,000 (Green)	55,000 (Green)	22,000		
Dark Random Noise	3.8 erms @ 12dB		2.3e rms @ gain x8, Room Temperature			2.2e rms@gainx16, room temperature		4.4e rms@gainx16, 40°C		2.6e rms @ Analog gain x1		2.6e rms @ Analog gain x1		1.1e rms @ room temperature		2.6e rms @ 4K3K, 24fps(12bit)			
Saturation	5,400 [e] (@6dB)		10,000 [e] (@gain x0.5)			61,000[e]@gainx1	67,000[e]@gainx1			12,000e – Dynamic Range Priority Mode (@ Analog gain 0 dB)	7,000e – Frame Rate Priority Mode (@ Analog gain 0 dB)	12,000e – Dynamic Range Priority Mode (@ Analog gain 0 dB)	7,000e – Frame Rate Priority Mode (@ Analog gain 0 dB)			30,000 [e] (@gainx1)	25,000 [e]		
Resolution (megapixels)	250		122			2.76				5		5				2.12	12		
Effective Pixels (H x V)	19568 x 12588		13272 x 9176			2160 x 1280				2592 x 2056		2592 x 2056				1936 x 1096	4004 x 3000		
Sensor Size	APS-H (29.35mm x 18.88mm)		APS-H (29.22mm x 20.20mm)			35mm				Approx. 2/3 inch (8.8mm x 7.0mm)		Approx. 2/3 inch (8.8mm x 7.0mm)				1/1.8 inch (7.94mm x 4.49mm)	1 inch (12.8mm x 9.6mm)		
Pixel Size[um]	1.5 x 1.5		2.2 x 2.2			19 x 19				3.4 x 3.4		3.4 x 3.4				4.1 x 4.1	3.2 x 3.2		
Maximum Frame Rate	5 fps		9.4 fps			98 fps full area readout				60fps – Dynamic Range Priority Mode		60fps – Dynamic Range Priority Mode				60fps	4K3K video at 24 fps (12bit)		
Shutter Type	Rolling		Rolling			1080-row readout: 115 fps				120fps – Frame Rate Priority Mode		120fps – Frame Rate Priority Mode				30 fps (HDR)	4K2K video at 60 fps (10bit)		
I/F	LVDS		LVDS			Rolling Analog				Global electronic shutter function		Global electronic shutter function				Rolling	Rolling		
Power Consumption (Type)	2.0W (under recommended operating conditions)		2.5 W (under recommended operating conditions)			1.7W				500mW (all pixels @ 120 fps)		510mW (all pixels @ 120 fps) 440mW (all pixels @ 42 fps)Low Power mode				320mW (all pixels @ 60 fps)	540 mW @4K2K readout, 60fps (10bit)		

Model: LI8020SA

ULTRA-HIGH 250MP RESOLUTION



250MP Ultra High Resolution

1.5 μ m pixel size
RGB/ Mono
APS-H
5fps

The Canon LI8020SA CMOS sensor is an ultra-high resolution CMOS sensor at 250 megapixels in APS-H format (29.37mm x 18.90mm) with a square pixel arrangement of 1.5 μ m x 1.5 μ m pixels, and all pixel progressive reading of 5 fps. Pixel design is RGB (Color), Monochrome.

General Description

This is a CMOS type solid-state imaging sensor having a size equivalent to APS-H, and a square pixel arrangement with 250million effective pixels. An all-pixels progressive reading of 5 fps is possible by the 16 channels digital signal output. A rolling electronic shutter function for movies is provided for controlling electric charge accumulation periods.

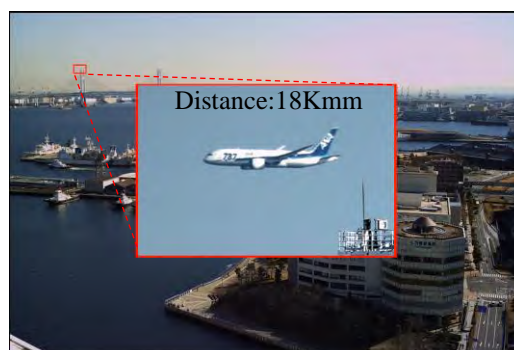
Capturing detail 125 times greater than in full HD resolution, the LI8020SA CMOS sensor from Canon offers remarkably high 250 MP resolution to uncover more detail than ever before. This innovative, APS-H format sensor leverages a square pixel arrangement of 1.5 μ m x 1.5 μ m pixels, achieving ultra-high resolution in a compact design for use in a wide range of applications.

Features

WIDE AREA MONITORING

The sensor was able to capture images enabling the distinguishing of lettering on the side of an airplane flying at a distance of approximately 18Km from the shooting location. (depends on Lens)

- Small 1.5 μ m pixels occurs across 16 digital output channels
- Frame rate of 5fps in 250MP all-pixel readout mode
- Capturing detail 125 times greater than in full HD resolution



Application

Wide area surveillance using LI 8020 SAC (Color)

For applications such as wide-area surveillance, you can use wide-angle photography and magnify the image to see objects that cannot be seen visually. Benefits: fewer cameras, less camera switching

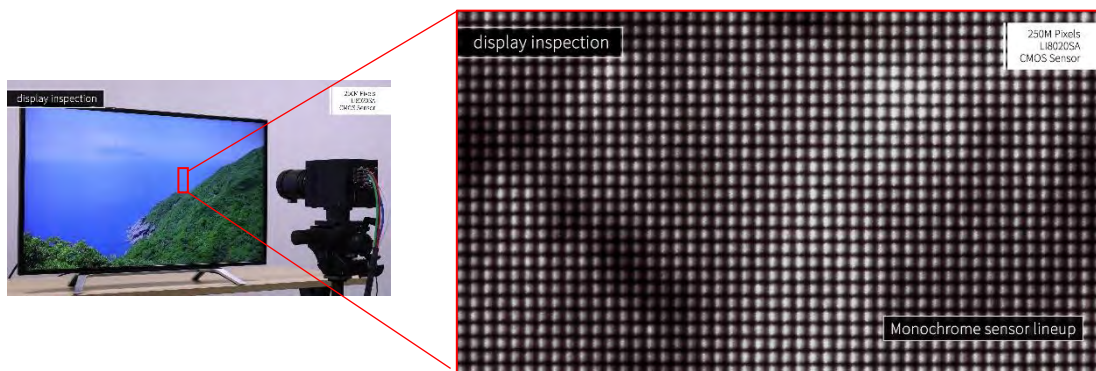


Wide-angle images can be magnified to see distant piers and cars crossing bridges



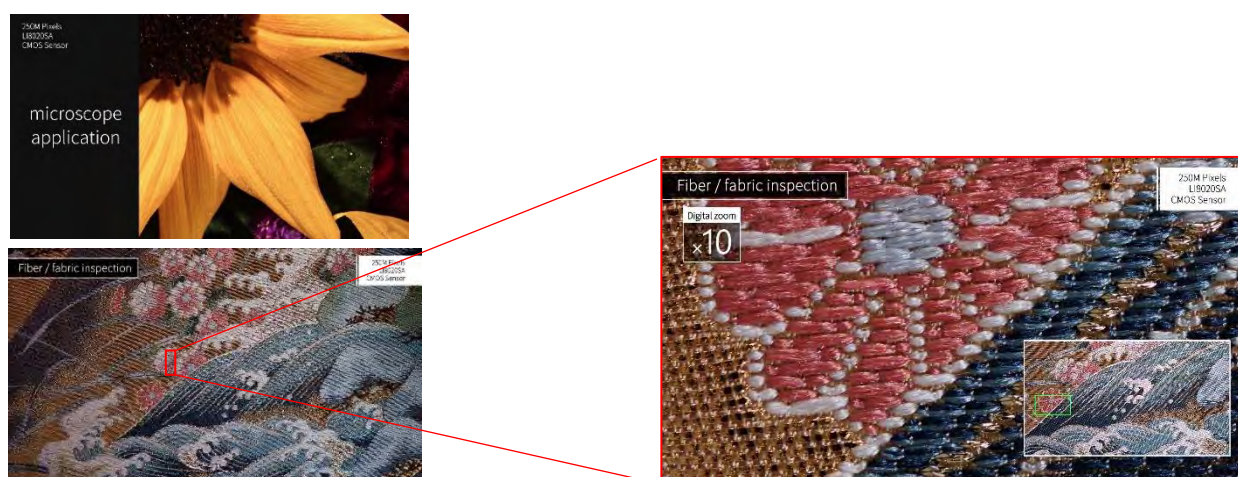
FPD inspection using LI 8020 SAM (Monochrome)

Flat-panel display (FPD) manufacturers need to continually find small productivity improvements on inspection, and Canon CMOS sensors offer the high-value flat panel display inspection process according to technology like high resolution, frame rate, power consumption. Canon's technology offers the capabilities to take your flat panel display inspection system to improve, delivering on speed and efficiencies that increase productivity.



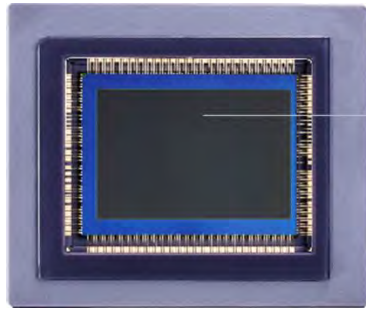
Microscope application, Digital archive

Make possible the capture of clear, high-quality images, even using digital zoom. What's more CMOS sensors from Canon deliver the high image quality needed to enhance the accuracy and efficiency of document scanners for inspection and archiving.



Model: 120MXS

HIGH 120MP RESOLUTION



120MP High Resolution

2.2um pixel size
RGB/ Mono/ RGB-IR
APS-H
9.4fps

The Canon 120MXS is an ultra-high resolution CMOS sensor at 120 megapixels in APS-H format (29.22mm x 20.20mm) with a 2.2μm pixel size and all pixel progressive reading of 9.4 fps

*120MXS series consists of 120MXSC (RGB), 120MXSM (monochrome) and 120MXSI (RGBIR).

General Description

CMOS type solid-state imaging sensor having a size equivalent to APS-H, and a square pixel arrangement with 120 million effective pixels. An all pixel progressive reading is 9.4 fps. A rolling electronic shutter function for movies is provided for controlling electric charge accumulation periods.

Features

1) Capturing wide areas while also preserving fine details throughout the image

Approximately 60 times the 1920 x 1080 pixel resolution of Full HD. What's more, this CMOS sensor performs parallel processing to support the high-speed readout of large volumes of pixels and this not only makes possible the capture of clear, high-quality images, even when cropping or using digital zooming but also supports the capture of moving subjects in high resolution.

2) ROI (Region of Interest)

Allows users to an arbitrary region to read from the sensor, reducing the amount of reading information and allowing for image capture at an increased framerate. Using this function, 8K (7680 x 4320 pixels) video can be captured at 19 frames per second (fps), 4K (3840 x 2160 pixels) at 39 fps and full HD (1920 x 1080 pixels) at 77 fps

3) High Speed output

Utilizing high-speed parallel processing technology that enables fast readout of images with large pixel counts, the sensor realizes high signal readout speeds of up to 11.3 Gbps and continuous shooting of approximately 9.4 frames per second (fps)

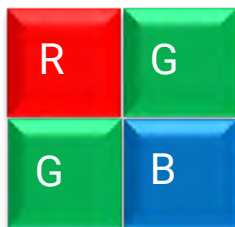


Application

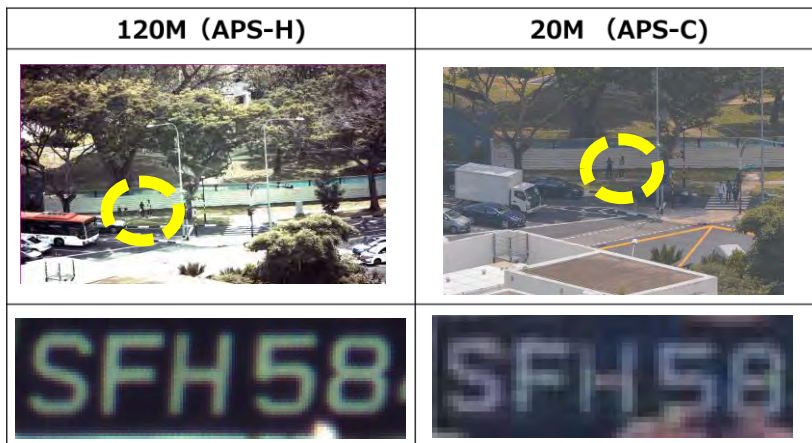
WIDE AREA MONITORING

The new RGB-IR color filter enables simultaneous color and near-infrared image capture using only one sensor.

- Simultaneous shooting of visible light and near infrared light
- Frame rate of 9.4fps in 120MP all-pixel readout mode
- Frame rates of 19 fps (8K), 39 fps (4K), 77fps (FHD)



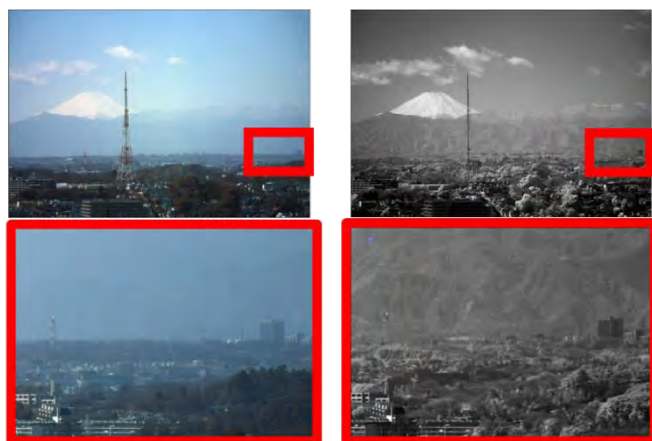
On-chip RGGB
filter array



EF lens 300mm, Distance:300m



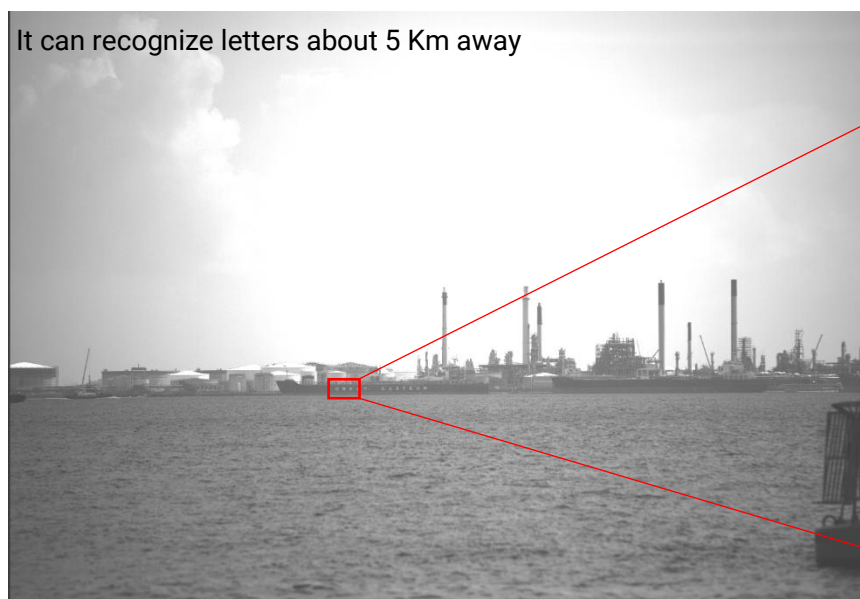
On-chip 4 band RGB
plus NIR filter array



120MXSI Visible spectrum

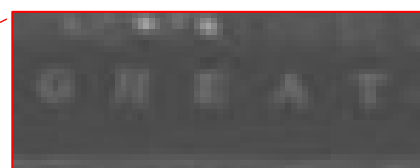
120MXSI Near-infrared spectrum

It can recognize letters about 5 Km away

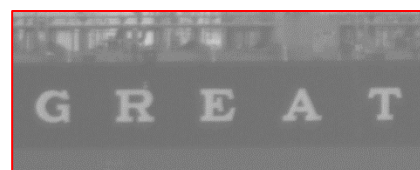


EF lens 200mm, Distance:5,000m

20MP

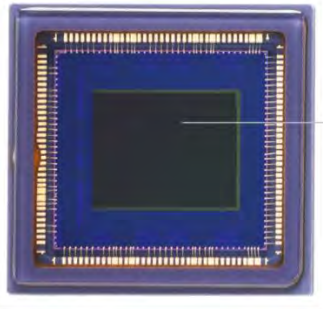


120MP



Model: LI5010/LI5020

5MP Global Shutter Sensor



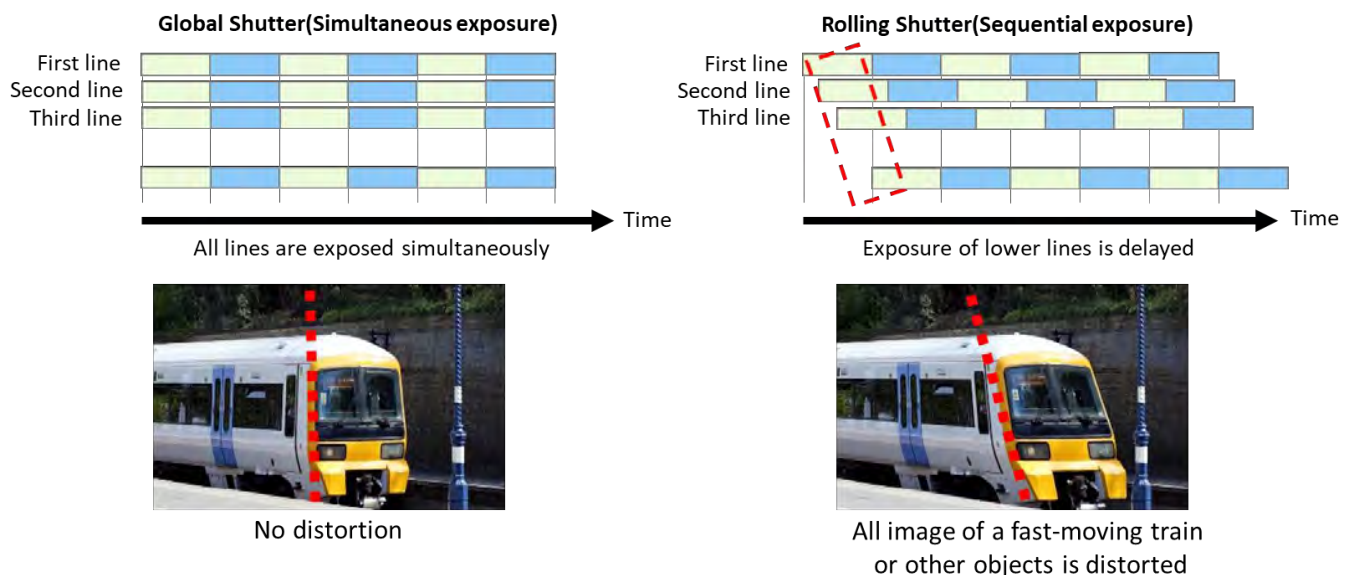
5MP
Global Shutter

3.4um pixel size
RGB/ Mono/ RGB-IR
2/3 inch
120fps

The Canon LI5010/LI5020 global shutter CMOS sensor deploys an innovative new pixel design to achieve 120 fps at only 500mW power consumption.

*LI5010SA /LI5020SA series consists of color, monochrome and RGBIR.

COMPARISON OF ROLLING SHUTTER AND GLOBAL SHUTTER



CMOS sensor equipped with a global shutter function that, because it exposes all of the sensor's pixels at the same time, enables the capture of distortion-free images even when shooting fast-moving objects. The sensor contributes to high-image-quality video capture by making possible the realization. Global shutter image sensor employs a new pixel design introducing new drive readout and light guiding technologies significantly expanding the full well capacity, reducing noise.

Application

- FA (Factory Automation)
- Intelligence Transportation System (ITS)
- Drone (Precision agriculture)
- Medical



Feature

1) Global Shutter Function

Adopts a global shutter that exposes all pixels simultaneously. This allows for the accurate image capture of even subjects moving at high speeds, making the sensors ideal for cameras performing such tasks as inspecting parts on factory conveyor belts.

2) High Frame Rate / Low power consumption

Using a high frame rate would lead to increased electricity consumption. However, through proprietary Canon circuit technology, the sensors achieve low energy consumption.

3) New Pixel Design

Available in monochrome (LI5020SAM), color (LI5020SAC), and a specialized RGB-NIR color filter array (LI5020SAI). Global shutter image sensor employs a new pixel design introducing new drive readout and light guiding technologies significantly expanding the full well capacity, reducing noise.

	3U5MGXSBAC LI5010SAC	3U5MGXSBAM LI5010SAM	3U5MGXSAI LI5010SAI	3U5MGXSCAC LI5020SAC	3U5MGXSCAM LI5020SAM	3U5MGXSCAI LI5020SAI
Filter Type	RGB	Monochrome	RGB-NIR	RGB	Monochrome	RGB-NIR
Sensitivity (e-/lx/sec)	30,000 (Green)	47,000	30,000 (Green)	30,000 (Green)	54,000	30,000 (Green)
Dark Random Noise	2.6e rms @ Analog gain x1			2.6e rms @ Analog gain x1		
Saturation (@ Analog gain 0 dB)	12,000e – Dynamic Range Priority Mode			12,000e – Dynamic Range Priority Mode		
	7,000e – Frame Rate Priority Mode			7,000e – Frame Rate Priority Mode		
Resolution	5 megapixels			5 megapixels		
Effective Pixels	2592 x 2056 (Horizontal x Vertical)			2592 x 2056 (Horizontal x Vertical)		
Sensor Size	Approx. 2/3 inch (8.8mm x 7.0mm)			Approx. 2/3 inch (8.8mm x 7.0mm)		
Pixel Size	3.4µm x 3.4µm			3.4µm x 3.4µm		
Maximum Frame Rate	60fps – Dynamic Range Priority Mode			60fps – Dynamic Range Priority Mode		
	120fps – Frame Rate Priority Mode			120fps – Frame Rate Priority Mode		
Shutter Type	Global electronic shutter function			Global electronic shutter function		
Power Consumption (Type)	500mW (all pixels @ 120 fps)			510mW (all pixels @ 120 fps) 440mW (all pixels @ 42 fps) Low Power mode		

RGB-IR sensors

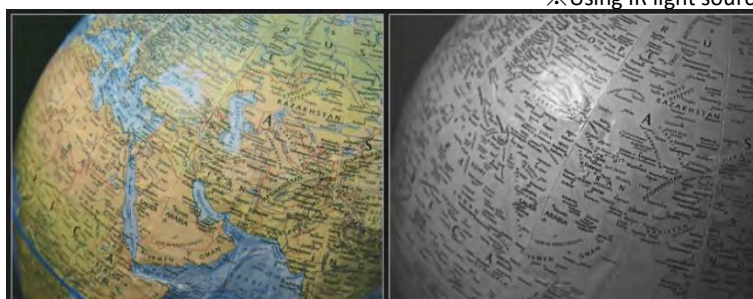
The new RGB-IR color filter enables simultaneous color and near-infrared image capture using only one sensor.



Visible spectrum

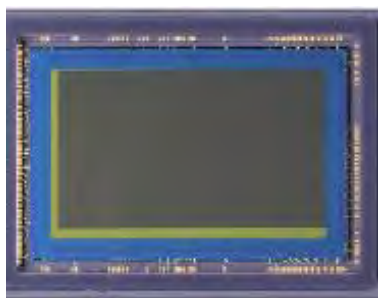
Near-infrared spectrum

※Using IR light source

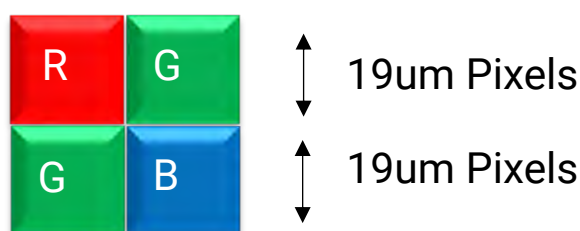


Model: 35MMFHDXSCA

EXTREME LOWLIGHT SENSITIVITY 2MP Full-size



The Canon 35MMFHDXSCA CMOS sensor's pixels and readout circuitry deploy new technologies to minimize noise, allowing for enormous 19 μ m pixel sizes in a compact design.



EXTREME LOWLIGHT SENSITIVITY

High sensitivity and the number of saturation electrons have been achieved through the adopted larger pixel size of 19 μ m (square) with the proprietary device design technologies. The largest imaging area of 16:9 among the image circles of 35mm full frame lenses is secured. You can shoot movies using the 35mm full frame lens group.

Large Pixel Sizes with Minimal Noise

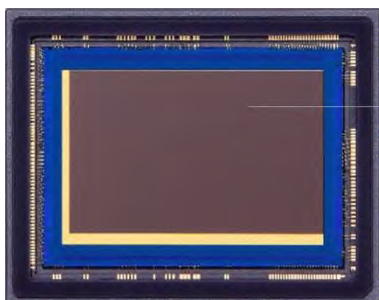
By using a progressively increasing electric field profile to efficiently transfer electrons off the large photodiode, Canon's 35MMFHDXS_A CMOS sensors can effectively leverage 19 μ m pixels while minimizing noise. Further, proprietary designs are leveraged to minimize dark current over long exposure times. These features, combined with a full area scan frame rate of 98fps at a resolution of 2160 x 1280, enable excellent imaging in applications requiring highly sensitive capture in low light.

Device Structure		Image Sensor Characteristics	
Image size	35mm full frame	Sensitivity(Green)	1,100,000 e/lx/sec
Resolution	2.76 megapixels	Saturation signal	61,000 e
Number of effective pixels	2160(H) \times 1280(V)	Sensitivity(Monochrome)	2,100,000 e/lx/sec
Pixel size	19um(H) \times 19um(V)	Basic Drive Mode	
Input drive frequency	21MHz	All pixel scan	2160(H) \times 1280(V), 98fps 1920(H) \times 1080(V), 115fps
Package	180pin PGA		
Supply voltage	5.0V, 3.3V		
Chroma	RGB,Mono		
Shutter Type	Rolling		



Model: LI3030SA

EXTREME LOWLIGHT SENSITIVITY 2MP Full-size



2MP Ultra-High Sensitivity

19μm pixel size
Mono/ RGB-IR
35mmFHD Full-Frame
98fps

By designing a pixel with a deeper well, photons with longer wavelengths can be more efficiently converted into electrons, providing a substantial increase in quantum efficiency (QE) in the Near Infra-Red region. This deeper well resulted in an almost 45% increase in QE at 800nm versus the standard monochrome 19μm pixel size sensor (Canon 35MMFHDXSMA CMOS sensor).

Featuring 19μm pixel sizes available in monochrome (LI3030SAM) or with a specialized RGB-NIR color filter array (LI3030SAI), this new family of Canon CMOS sensors allows for expanded possibilities in a wide range of applications.

Technical Specifications		
Model Name	LI3030SAM	LI3030SAI
	35MMFHDXSBI	35MMFDXSBM
Filter Type	RGBIR	Monochrome
Sensitivity (e/lx/sec @gain x1)	1,400,000 (green)	3,000,000
Resolution	2.76 megapixels	
Effective Pixels	2160 x 1280 (Horizontal x Vertical)	
Sensor Size	41.04mm x 24.32mm (Full Frame)	
Pixel Size	19μm x 19μm	
Maximum Frame Rate (All Pixels)	98 fps	
Shutter Type	Rolling	
Dark Random Noise	4.4e rms @ gain x16, 40°C	



Application

Applications / Night vision / Surveillance / Bio Science telescope / Biomedical imaging / Machine vision / Security

Using a prototype camera equipped with an ultra-sensitive 35 mm full-size CMOS sensor "LI 3030 SAI", we simultaneously shot color and near-infrared video under faint light * indoors without windows. We are able to check the color of a person's face and clothes, which are difficult to see with the naked eye, with color video, and to check the eyes behind the sunglasses with near-infrared video.



the naked eye



RGB(Color) image



Near-infrared image

High Sensitivity in Low Light

Light from just one candle illuminates the cave through high quantum efficiency, from the visible to the near-infrared wavelengths.



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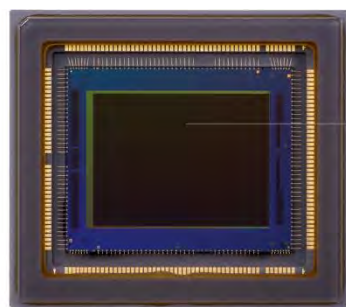
JM VISTEC SYSTEM PTE LTD

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Model: LI7030SA

12-megapixel, 1-inch

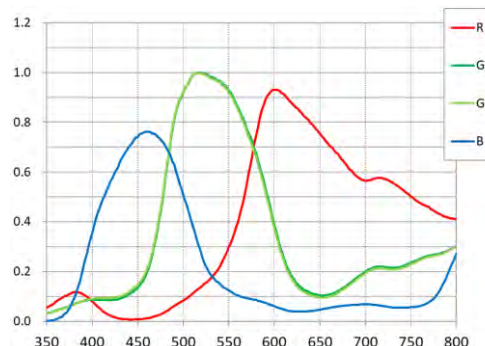
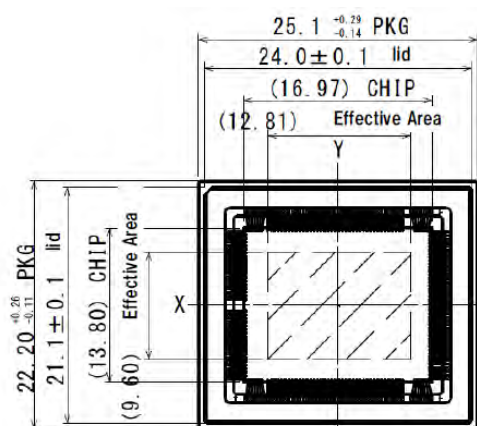


12MP
4K Wide Dynamic Range

3.2um pixel size
RGB
1inch
24fps(4K3K@12bit)

The LI7030SA is a size equivalent to 1 inch, and 3.2 μm square pixel arrangement with 12MP. 4K3K video at 24 fps (12bit), 4K2K video at 60 fps (10bit) and HD720p video at 120 fps (10bit) are possible. The sensors feature focal plane shutter function for video and electronic shutter function for still picture by charge storage period control. The sensor has an RGB on-chip color filter as color filter. High sensitivity, low noise, and low dark current are achieved through proprietary CANON CDS circuit technology and a perfect charge transfer buried-type photodiode.

Filter Type	RGB
Sensitivity	22,000 e/lx/sec @Analog gain x1(TBD)
Sensor Size	1 inch
Number of Effective Pixels	4004 x 3000 (Horizontal x Vertical)
Pixel Size	3.2 μm x 3.2 μm
Shutter	Rolling shutter
Dark Random Noise	2.6 e rms @4K3K readout, 24fps(12bit)
Maximum Frame Rate	12 bit, 24 fps (All Pixels)
Saturation	10 bit, 60 fps (4K2K) 25,000 e (TBD)@Analog gain x1
Dark Current	17 e/sec (TBD)@package reverse side 60°C
Output Format	LVDS output maximum 648 Mbps @ 12 bit
Output Channels	Data:12 lanes CLK:2 lanes
Drive Frequency	27 MHz (recommended)
Power Consumption	540 mW(Typ.) @All pixels readout 60fps (10bit)
Power Supplies	3.3 V, 1.8 V
Package Type	154 pin ceramic LGA
Package Size	25.10 mm x 22.20 mm x 2.99 mm



Features

1) Wide-Dynamic Range/Low Noise

The sensor has Canon's low-noise technology with delivering high-quality imaging. This delivers wide dynamic range and achieved excellent imaging characteristics at low illuminance.

(Saturation: 25,000e(TBD))@Anlog gain x1

2) Operating Mode

- 4K3K mode: 24 fps (12bit)
- 4K2K 30fps mode: 30 fps (12bit)
- 4K2K 60fps mode: 60 fps (10bit)
- HD720p mode: 120 fps (10bit)

Application

- Surveillance
- Streaming Camera
- Video industry

Sample Image



Exposure Time 16.4ms, Digital Gainx1, Analog Gainx1



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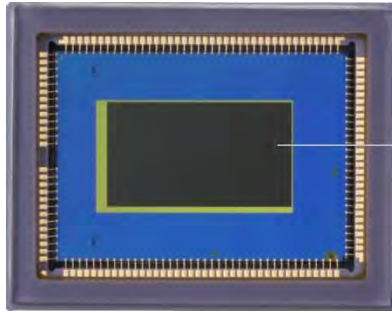
JM VISTEC SYSTEM PTE LTD

10 Kaki Bukit Ave 1 #07-06 Singapore 417942

Tel : +65 6748 5517 Email : info@jm-vistec.com

Model: LI7050

1/1.8" 2.1MP HDR sensor



2.1MP High Dynamic Range

4.1um pixel size
RGB
1/1.8 inch
60fps (30fps:HDR)

The 1/1.8" LI7050 features approximately 2.1 million effective pixels (1936 x 1096), pixel pitch of 4.1 μm (micrometers) per side and a framerate of 60 fps (30 fps during HDR drive operation). The sensor will be compatible with the MIPI CSI-2 interface used by consumer-oriented cameras for a wide variety of purposes. With a pixel size of 4.1, it is suitable for monitoring in low light environments.

General Description

The newly developed LI7050 CMOS sensor is equipped with an HDR drive function that realizes a wide dynamic range of 120 dB at low noise levels. Even during normal drive operation, the sensor can achieve dynamic range of 75 dB—greater than that of image sensors used in conventional digital cameras.

Specification

- Low Noise
- Excellent low-light shooting performance
- **0.08 lx (F=1.4, 1/60[s],S/N=1) (normal mode)**
- High Dynamic Range (HDR)driving function
- Black Level correction (Digital OB clamp function)
- Defect correction function
- Flicker suppression drive function
- MIPI-CSI2 interface
- Read area control
- Reverse function
(Left and Right • up and down)

Optical Size	約1/1.8 inch (FHD)
Effective Pixel	1936x1096 (2.1MP)
Pixel size	4.1 μm × 4.1 μm
Color Filter	RGB bayer
Shutter type	RS
Dynamic Range	75 dB* 120 dB (HDR)*
Saturation	13,000(fd-inc off)* 30,000(fd-inc on)*
Sensitivity	54,000 e-/lx/s *
Frame Rate	60 fps 30 fps (HDR)
Output	MIPI-CSI2 12bit 4lane 出力 576 Mbps/ 648 Mbps(max)
Supply Voltage	3.3 V, 1.8V, 1.2V
Operation tem.	TBD
PKG Type	Seramic LGA
PKG Size	16.9mm × 13.2mm x 2.74mm



Features

1) 120dB High Dynamic Range

Light is detected simultaneously in both bright and dark fields

(Normal 75dB、HDR drive mode 120dB)

-Enables cameras to record high-quality video, even when positioned at building entrances and other locations where there are significant variations in illumination levels.

-During normal drive operation, the sensor realizes a noise level of 75 dB and captures video without blown-out whites and crushed blacks in environments with illumination levels between, for example, 0.08 lux and 500 lux.

2) MIPI CSI-2 interface

A standardized interface ensures board applications

-The LI7050 supports the MIPI CSI-2 interface utilized by a wide range of consumer and industrial-use cameras, thereby greatly expanding the number of possible equipment combinations.

3) High Sensitivity & Low Noise

-Both night time and daytime shooting is possible with a single camera

- When recording in an environment with illumination levels between, for example, 0.08 lux and 80,000 lux, the sensor's wide dynamic range enables video capture without blown-out whites and crushed blacks.

0.08lux minimum illuminance level (S/N=1, F1.4, 60fps)

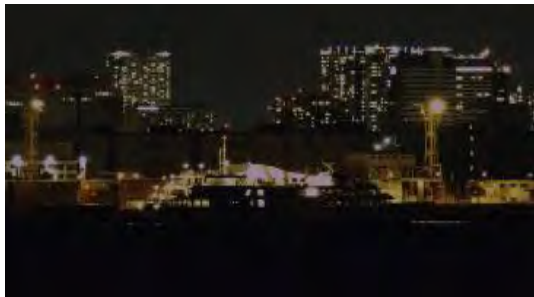
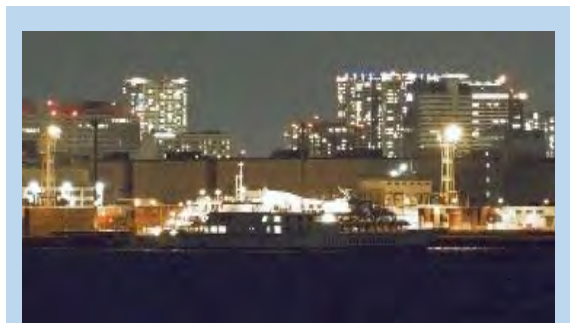


Image seen with the naked eye
(reference image)



Standard Mode

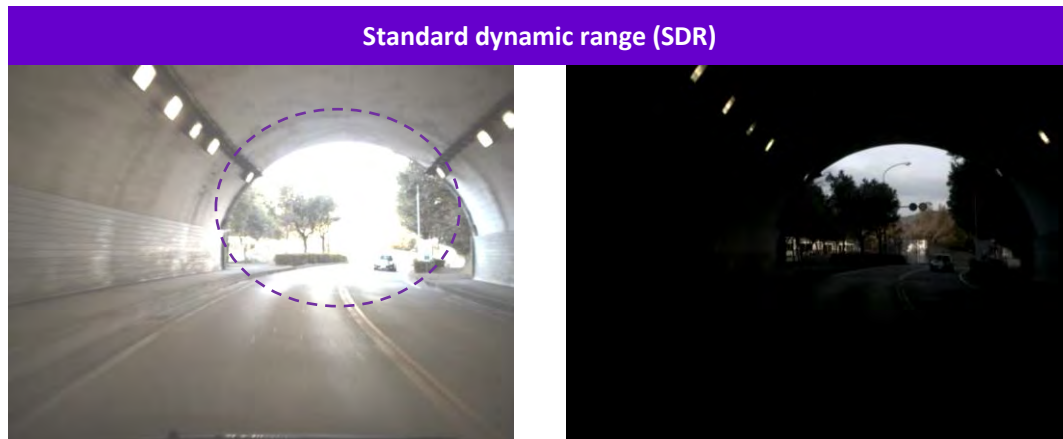


HDR Mode



High Dynamic Range (HDR)

With the recent increase in demand for surveillance cameras, there are growing needs for image sensors capable of delivering both high dynamic range and high image quality in usage environments in which there is a significant difference between dark and bright lighting, such as near the entrances of buildings. High dynamic range (HDR), compared with standard dynamic range (SDR), indicates a greater luminance range between the lightest and darkest parts of an image.

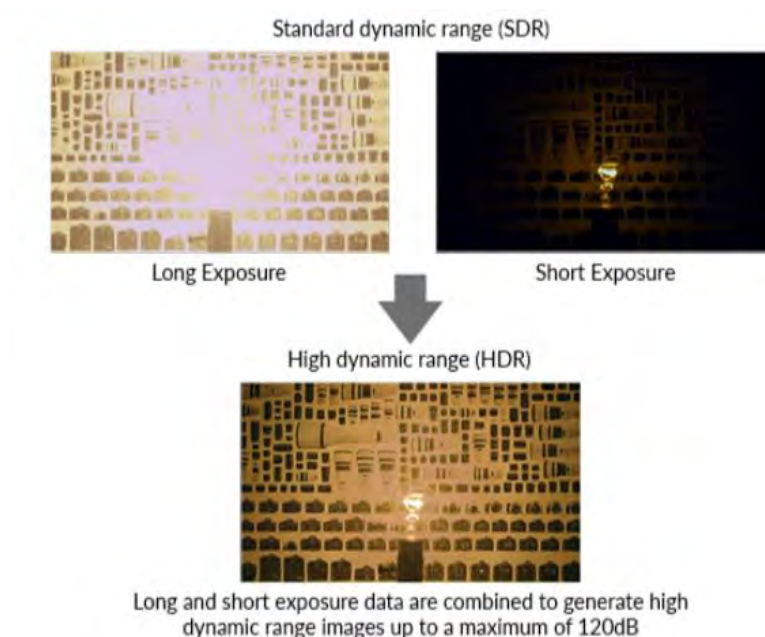


Overexposure outside the tunnel entrance

Underexposure inside the tunnel

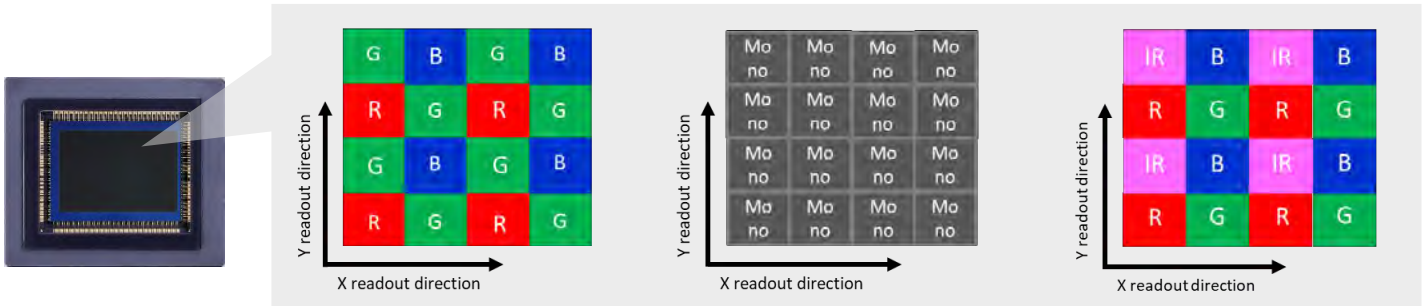


Both light and dark areas can be seen, producing a natural-looking image



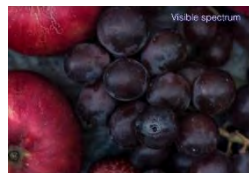
Specialized RGB-NIR Pixel Filter Array

By replacing one of the green filters on a standard color CMOS sensor with a Near Infra-Red (NIR) filter, image processing from this sensor allows for the separation of visible and NIR spectrums. Discrete analysis of these bands from a single image simplifies dual sensor systems by reducing size, weight, and power (SWaP) requirements, provides added capabilities to systems that can benefit from the additional band.



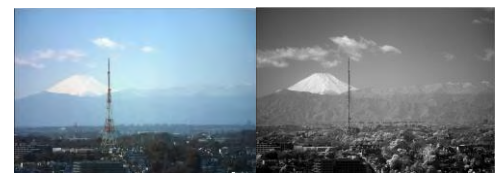
Factory Automation Food Inspection

- Products quality management
- Foreign object detection



Surveillance/ Security

- Wide area monitoring
- NDVI/precision agriculture



Biology/Medical

- Medical apprication



Capable of simultaneous acquisition of visible-light and near-infrared wavelength images

