

# IMX662-AAQR/AAQR1

Diagonal 6.45 mm (Type 1/2.8) CMOS Solid-state Image Sensor with Square Pixel for Color Cameras

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## Description

The IMX662-AAQR/AAQR1 is a diagonal 6.45 mm (Type 1/2.8) CMOS active pixel type solid-state image sensor with a square pixel array and 2.40 M effective pixels. This chip operates with analog 3.3 V, digital 1.1 V, and interface 1.8 V triple power supply, and has low power consumption. High sensitivity, low dark current and no smear are achieved through the adoption of R, G and B primary color mosaic filters. This chip features an electronic shutter with variable charge-integration time.

(Applications: Security cameras)

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## Features

- ◆ CMOS active pixel type dots
- ◆ Built-in timing adjustment circuit, H/V driver and serial communication circuit
- ◆ Input frequency: 24 MHz / 27 MHz / 37.125 MHz / 72 MHz / 74.25 MHz
- ◆ Number of recommended recording pixels: 1920 (H) × 1080 (V) approx. 2.07M pixel
- ◆ Readout mode
  - All-pixel scan mode
  - Horizontal / Vertical 2/2-line binning mode
  - Window cropping mode
  - Horizontal / Vertical direction - Normal / Inverted readout mode
- ◆ Readout rate           Maximum frame rate in All-pixel scan mode: 12 bit: 60 frame/s, 10 bit: 90 frame/s
- ◆ High dynamic range (HDR) function
  - Digital overlap HDR
  - Clear HDR
- ◆ Synchronizing sensors function
- ◆ Variable-speed shutter function (resolution 1H unit)
- ◆ 10-bit / 12-bit A/D converter
- ◆ CDS / PGA function
  - 0 dB to 30 dB: Analog Gain 30 dB (step pitch 0.3 dB)
  - 30.3 dB to 72 dB: Analog Gain 30 dB + Digital Gain 0.3 dB to 42 dB (step pitch 0.3 dB)
- ◆ Supports I/O
  - CSI-2 serial data output (2 Lane / 4 Lane) RAW10 / RAW12 output
- ◆ Anti-reflective coating glass on both sides (IMX662-AAQR1), Non anti-reflective coating glass (IMX662-AAQR)

## STARVIS 2

\* STARVIS 2 and  are registered trademarks or trademarks of Sony Group Corporation or its affiliates. The STARVIS 2 is back-illuminated pixel technology used in CMOS image sensors for security camera applications. It features a sensitivity of 2000 mV or more per 1 μm<sup>2</sup> (color product, when imaging with a 706 cd/m<sup>2</sup> light source, F5.6 in 1 s accumulation equivalent). It also has a wide dynamic range (AD 12 bit) of more than 8 dB compared to STARVIS for the same pixel size in a single exposure, and achieves high picture quality in the visible-light and near infrared light regions.

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**Device Structure**

- ◆ CMOS image sensor
- ◆ Image size Diagonal 6.45 mm (Type 1/2.8) approx. 2.40 M pixels, All pixels
- ◆ Total number of pixels 2014 (H) × 1196 (V) approx. 2.40 M pixels
- ◆ Number of effective pixels 1965 (H) × 1113 (V) approx. 2.18 M pixels
- ◆ Number of active pixels 1937 (H) × 1097 (V) approx. 2.12 M pixels
- ◆ Number of recommended recording pixels 1920 (H) × 1080 (V) approx. 2.07 M pixels
- ◆ Unit cell size 2.9 μm (H) × 2.9 μm (V)
- ◆ Optical black  
Horizontal (H) direction: Front 0 pixels, rear 0 pixels  
Vertical (V) direction: Front 20 pixels, rear 0 pixels
- ◆ Dummy  
Horizontal (H) direction: Front 0 pixels, rear 0 pixels  
Vertical (V) direction: Front 0 pixels, rear 0 pixels
- ◆ Package 114 pin LGA

**Image Sensor Characteristics**

(Tj = 60 °C)

Item		Value	Remarks
Sensitivity (F5.6)	Typ.	18383 Digit/lx/s (IMX662-AAQR) 19556 Digit/lx/s (IMX662-AAQR1)	12 bit converted value
Saturation signal	Min.	3895 Dight	12 bit converted value

**Basic Drive Mode**

Drive mode	Recommended number of recording pixels	Maximum frame rate [frame/s]	Output interface	ADC [bit]
All-pixel	1920 (H) × 1080 (V) approx. 2.07 M pixels	90	CSI-2	10
Horizontal/ Vertical 2/2-line binning	960 (H) × 540 (V) approx. 0.52 M pixels	90	CSI-2	10

**Comparison Image under Complex Lighting Environment**

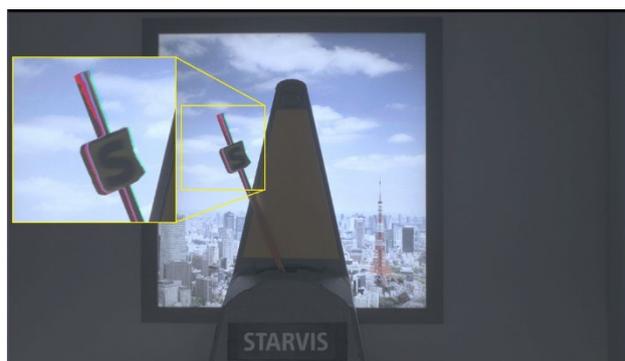
IMX662 has a wider dynamic range than conventional type. Also, when shooting a fast-moving target the image taken with Clear HDR does not have chromatic aberration compared to DOL HDR.



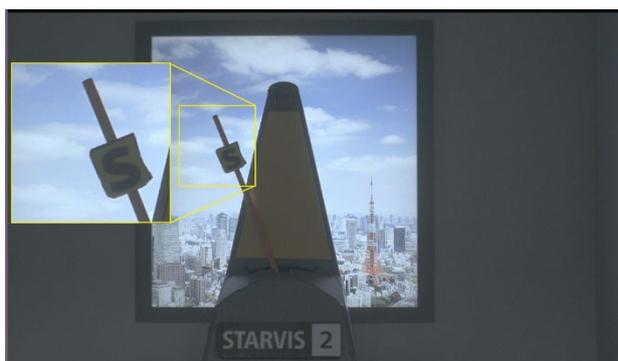
Conventional: One shot



IMX662: One shot



Conventional: DOL HDR



IMX662: Clear HDR

