SONY

Ver.1.0

IMX585-AAQJ1

Diagonal 12.84 mm (Type 1/1.2) CMOS Solid-state Image Sensor with Square Pixel for Color Cameras

Description

The IMX585-AAQJ1 is a diagonal 12.84 mm (Type 1/1.2) CMOS active pixel type solid-state image sensor with a square pixel array and 8.40 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)

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: 3840 (H) × 2160 (V) approx. 8.29M 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 2H units)
- ◆ 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 / 8Lane / 4Lane × 2ch)
  - RAW10 / RAW12 / RAW16 (Clear HDR) output

STARVIS 2

* STARVIS 2 is a registered trademark or trademark 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^2 (color product, when imaging with a 706 cd/m^2 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.

Device Structure

◆CMOS image sensor	
◆Image size	Diagonal 12.84 mm (Type 1/1.2) approx. 8.40 M pixels, All pixels
◆Total number of pixels	3856 (H) × 2220 (V) approx. 8.56 M pixels
◆Number of effective pixels	3856 (H) × 2180 (V) approx. 8.40 M pixels
◆Number of active pixels	3856 (H) × 2176 (V) approx. 8.39 M pixels
◆Number of recommended recording pixels	3840 (H) × 2160 (V) approx. 8.29 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	122 pin LGA

Image Sensor Characteristics

(Tj = 60 °C)

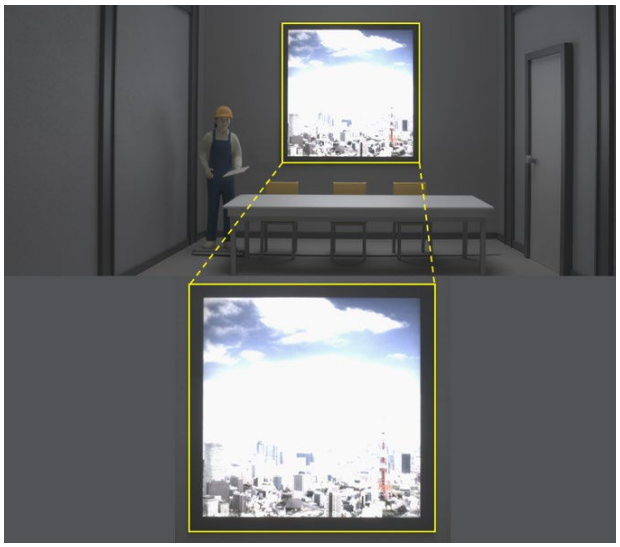
Item		Value	Remarks
Sensitivity (F5.6)	Typ.	19556 Digit/lx/s	12 bit converted value
Saturation signal	Min.	3895 Digit	12 bit converted value

Basic Drive Mode

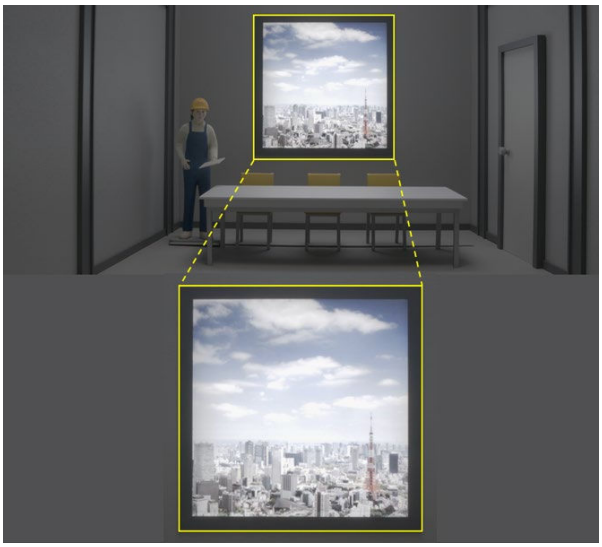
Drive mode	Recommended number of recording pixels	Maximum frame rate [frame/s]	Output interface	ADC [bit]
All-pixel	3840 (H) × 2160 (V) approx. 8.29 M pixels	90	CSI-2	10
Horizontal/ Vertical 2/2-line binning	1920 (H) × 1080 (V) approx. 2.07 M pixels	90	CSI-2	10

Comparison Image under Complex Lighting Environment

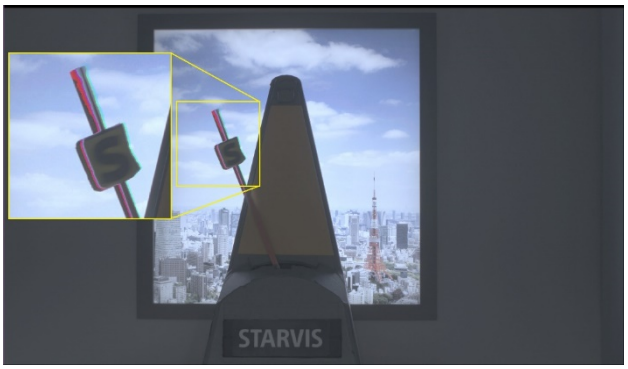
IMX585 has a wider dynamic range than conventional type. Also, when shooting a fast-moving target the image taken with Clear HDR does not have chromatic aberration compared to DOL HDR.



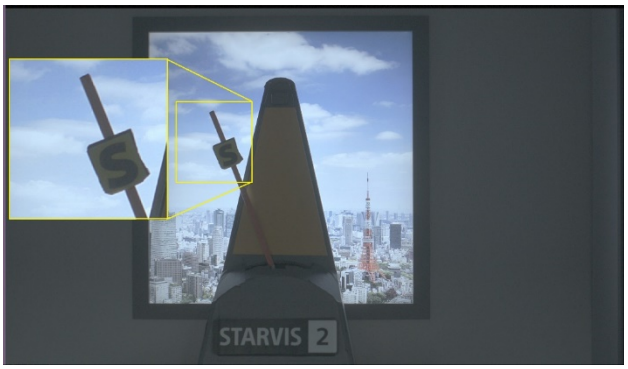
Conventional: One shot



IMX585: One shot



Conventional: DOL HDR



IMX585: Clear HDR

Image Sensors for Security Cameras:
https://www.sony.net/cis-security/