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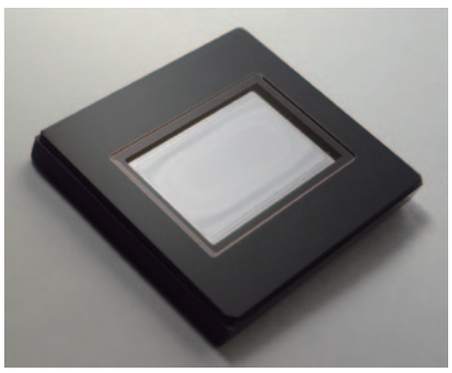
120 frames per second CMOS Image Sensor for Super Hi-Vision (SHV) Camera

-Capable of clear imaging of fast-moving subjects

Advances are being made by the Science & Technology Research Laboratories on the Super Hi-Vision (SHV) system. SHV is an advanced broadcasting service with enhanced picture and sound quality that conveys a stronger sensation of presence than is possible with today's HDTV. A recent joint development with the Research Institute of Electronics, Shizuoka University, involved the construction of a CMOS image sensor*1 for an SHV camera with a frame rate*2 of 120 fps, which will allow a fast-moving subject to be clearly captured on video.

The previous SHV system could handle ultrahigh-definition video images with approximately 33 million pixels (7680 horizontal × 4320 vertical pixels) by using progressive scanning at approximately 60 frames per second. The recent enhancement doubled the frame rate; the new image sensor is for an SHV camera operating at up to 120 fps (progressive scanning).



120 fps CMOS image sensor for SHV system

The large number of pixels of the SHV image sensor had previously made it difficult to achieve high-speed operation. However, our newly developed devices such as a circuit that converts the analog signal outputs from each pixel into digital signals (AD converter circuit) and a circuit to output the digital signal from the sensor (signal output circuit) have made it possible to increase the sensor's speed of operation. This image sensor can shoot a fast-moving subject in clear, smooth, moving ultrahigh-definition images. STRL will continue to conduct R&D on SHV.

*1 CMOS image sensor: an image sensor that uses complementary metal oxide semiconductors. Compared with a CCD image sensor, it is faster and has more functions.
*2 Frame rate: the number of images per second.

Table 1: Image sensor specifications

Sensor type	CMOS Image Sensor
Active pixel array size*	21.5 horizontal × 12.1 vertical mm
Number of active pixels	7680 horizontal × 4320 vertical pixels
Frame rate	120 fps
Scanning system	progressive scanning
ADC resolution	12 bit
Power consumption*	Approx. 2.5W

*Compared with the previous SHV image sensors, the new device is smaller and consumes less power.

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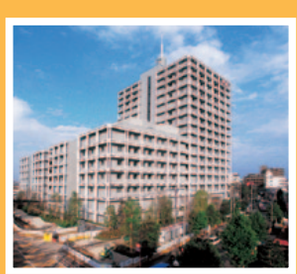

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