

# Product Document



**CMOSIS / AWAIBA**

is now

# Member of the ams Group

The technical content of this CMOSIS / AWAIBA document is still valid.

**Contact information:**

**Headquarters:**

ams AG

Tobelbaderstrasse 30

8141 Premstaetten, Austria

Tel: +43 (0) 3136 500 0

e-Mail: [ams\\_sales@ams.com](mailto:ams_sales@ams.com)

Please visit our website at [www.ams.com](http://www.ams.com)



## CMV12000

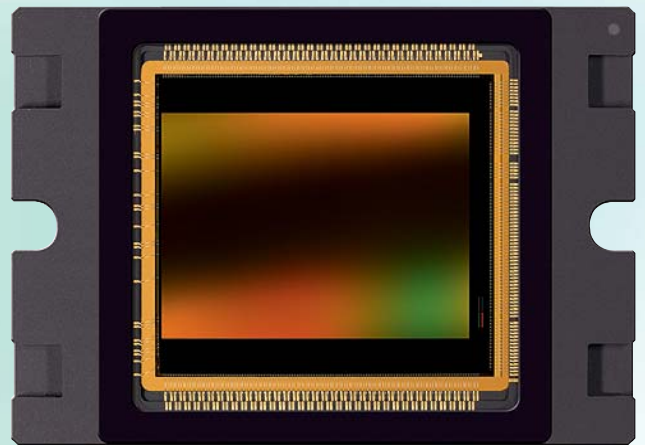
# 12MP high speed global shutter image sensor

### SENSOR DESCRIPTION

The CMV12000 is a global shutter CMOS image sensor with 4096 by 3072 pixels in a APS-C optical format supporting super HD imaging (4k). The image array consists of 5.5  $\mu\text{m}$  by 5.5  $\mu\text{m}$  pipelined global shutter pixels, which allow exposure during read out while performing CDS operation reducing fixed pattern and dark noise significantly. The CMV12000 has 64 12-bit digital LVDS outputs (serial) each running at 600 Mbps. The image sensor also integrates a programmable gain amplifier and offset regulation. Each channel runs at 600 Mbps maximum, which results in 300 fps frame rate at full resolution in 10-bit mode. Higher frame rates can be achieved in row-windowing mode or row-subsampling mode. All operation modes are all programmable using a SPI interface. A programmable on-board sequencer generates all internal exposure and read out timings. External triggering and exposure programming is also possible. Extended optical dynamic range can be achieved by multiple integrated high dynamic range modes. A 12-bit per pixel mode is available at reduced frame rates.

### APPLICATION FIELDS

- Machine vision
- Motion control
- Traffic monitoring
- High speed inspection
- Broadcast



### SENSOR FEATURES

- Pipelined global shutter with CDS
- 4096 (H) x 3072 (V) active pixels on a 5.5  $\mu\text{m}$  pitch
- 300 frames/s at full resolution in 10 bit mode
- 132 frames/s at full resolution in 12 bit mode
- ROI windowing capability  
(up to 32 separate ROIs - row based only)
- X-Y mirroring function
- 64 LVDS-outputs @ 600 Mbps multiplexable to 32, 16, 8, 4 and 2 at reduced frame rate
- Multiple High Dynamic Range modes supported up to 90 dB
- On chip temperature sensor
- On chip timing generation
- SPI-control
- On chip pixel averaging  
(increased frame rate and dynamic range)
- 3.3 V signaling
- Monochrome and Bayer (RGB) configuration
- Ceramic 237-pins  $\mu\text{PGA}$  package (47 mm x 33.8 mm)
- 2 sided AR-coated cover glass lid

Please address all product inquiries and ordering information to:

CMOSIS · Coveliersstraat 15 · B-2600 Antwerpen · Phone: +32 3 260 17 33 · Fax: +32 3 260 17 79 · info@cmosis.com



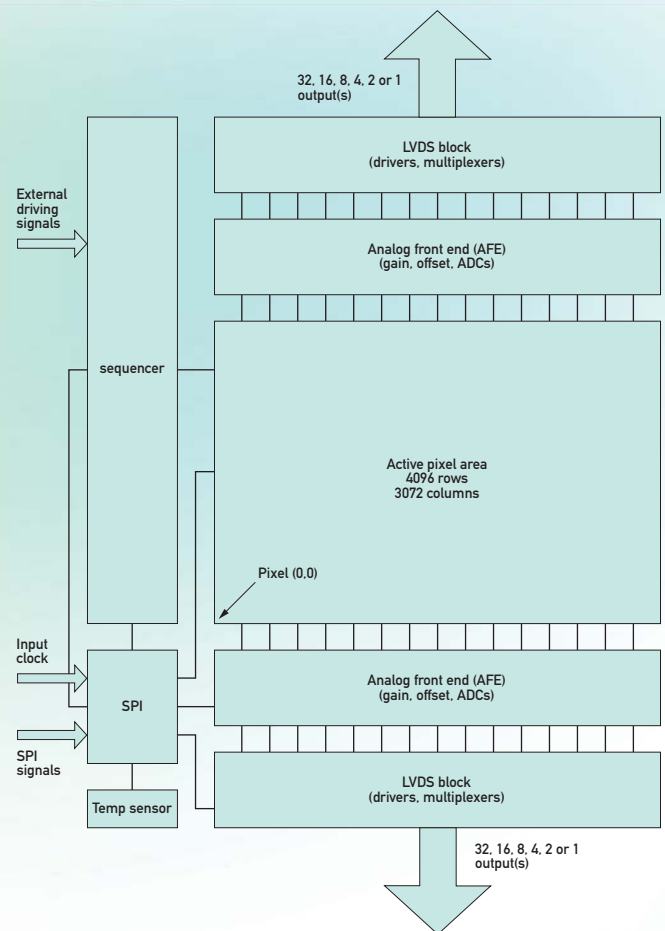


# CMV12000

## 12MP high speed global shutter image sensor

### SENSOR SPECIFICATIONS

Specification	Value
Part status	Pre-Production
Resolution	12MP - 4096 (H) x 3072 (V)
Pixel size	5.5 x 5.5 $\mu\text{m}^2$
Optical Format	APS-like
Shutter Type	Pipelined global shutter with true CDS
Frame Rate	300 fps (10 bit) 132 fps (12 bit)
Output Interface	64 LVDS @ 600 Mbps
Sensitivity	4.64 V/lux.s
Conversion gain	0.075 LSB/e
Full well charge	13500 e-
Dark noise	13 e- (RMS)
Dynamic range	60 dB
SNR max	41.3 dB
Parasitic light sensitivity	1/50000
Extended dynamic range	Yes, up to 90 dB
Dark current	125 e-/s (25°C)
Fixed pattern noise	< 1 LSB (<0.1 % of full swing)
Chroma	Mono and RGB
Supply voltage	1.8 V / 3.3 V
Power	4200 mW
Operating temperature range	-30°C to +70°C (TBC)
RoHS compliance	Yes (TBC)
Package	237 pins $\mu$ PGA



### ORDERING INFORMATION

CMV12000	Description
CMV12000-2E5M1PA	Monochrome version
CMV12000-2E5M1PN	Monochrome version with removeable glass lid
CMV12000-2E12M1PA	Monochrome version NIR enhanced
CMV12000-2E5C1PA	RGB Bayer Color version