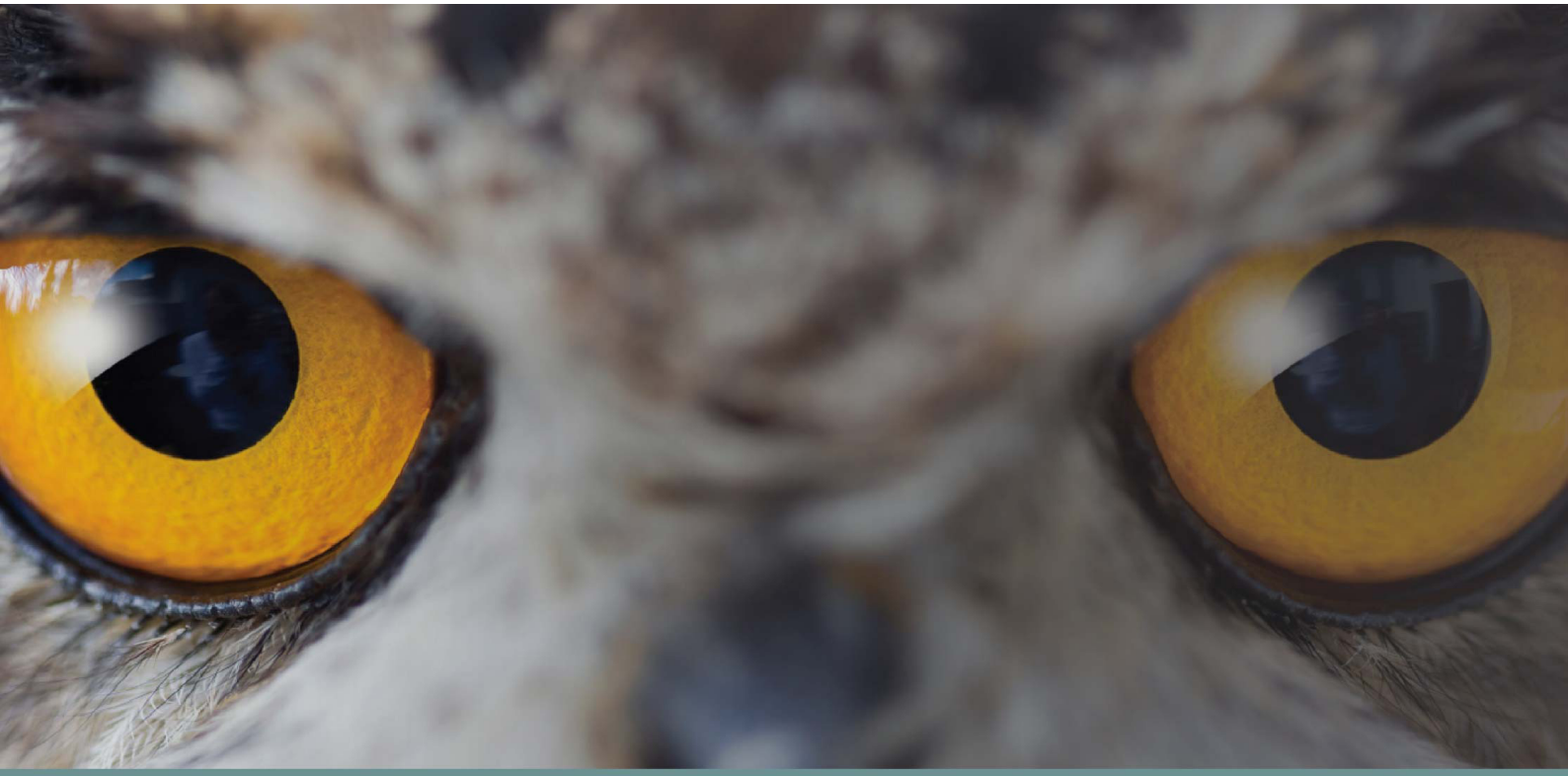

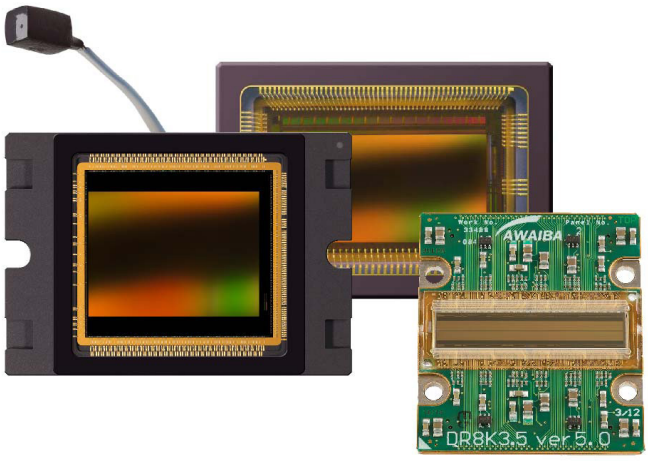

PRODUCT CATALOG

CMOS IMAGE SENSORS

www.cmosis.com

CMOSIS
member of the ams group

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ABOUT CMOSIS

ABOUT CMOSIS

CMOSIS is a pure-play supplier of standard, off-the-shelf as well as custom area and line scan CMOS image sensors. CMOSIS' imagers feature global and rolling shutter, low noise, high dynamic range and high frame rates through high-speed on-chip ADC and digital interfaces. CMOSIS' image sensors serve a broad range of applications for diverse markets including machine vision, medical, broadcast, traffic, scientific and photography imaging. The CMOSIS offer further includes miniature camera modules for endoscopy-like applications.

CMOSIS offers innovative turnkey image sensor solutions from specification and design, over prototyping and product qualification, to volume production in a one-stop-shop model.

CMOSIS operates from Belgium, Germany, Portugal and the USA and employs more than 115 people.

CMOSIS is a member of the ams group. ams sensor solutions take sensing to the next level by providing a seamless interface between humans and technology and enable our customers to create highly differentiated products that are smarter, safer, easier to use and more eco-friendly. ams develops high-performance solutions for the most challenging applications in sensors, sensor interfaces, power management and wireless.

FACILITIES

CMOSIS has facilities in Antwerp (Belgium), Nuremberg (Germany), Funchal (Portugal, Madeira) and Cary (USA, NC).

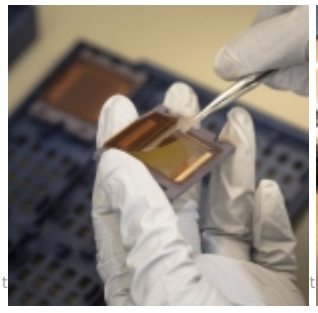
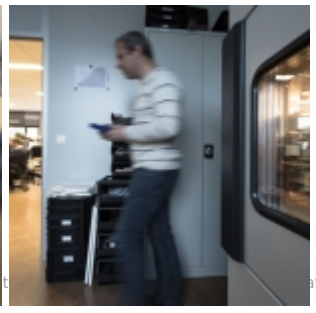
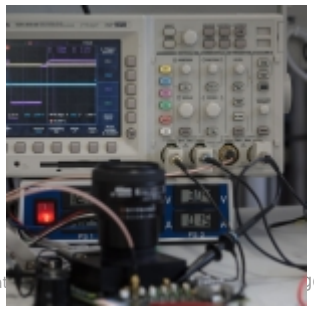
In Antwerp we are housed in the building of the former ATEA or "Ateliers de Téléphonie et d'Electricité d'Anvers". This Belgian telecom company was founded in 1892 at this site. More than 1600 m2 office space includes IC design workstations, clean room facilities for wafer and final device testing, laboratories for electro-optical sensor test and characterization, and set-ups for environmental and lifetime evaluations. CMOSIS probes electro-optically 8” and 12” wafers.

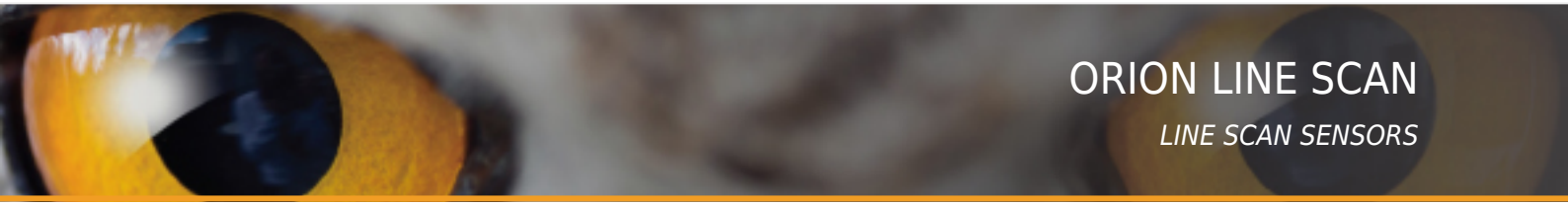
The Nuremberg facility focuses on the production and supply logistics for all line scan imagers, endoscopic image sensor sensors and related camera modules based on wafer scale optics and assemblies.

In Funchal we have a design team, image sensor evaluation and characterisation and customer support for the line scan sensors, endoscopy imagers and modules.

CMOSIS operates a state-of-the-art design environment with best-in-class design tools

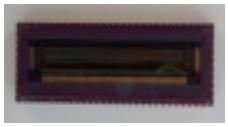
- Schematic entry, simulation front-end and IC layout tools from Cadence Design Systems
- Analog, digital and mixed signal simulation with Mentor Graphics AdvanceMS
- High-capacity simulation capabilities with Mentor Graphics ADiT turbo
- RTL-to-GDSII with Cadence Encounter
- Hierarchical verification (DRC, LVS) and extraction with Mentor Graphics Calibre
- Solid Edge for IC package design



ORION LINE SCAN

LINE SCAN SENSORS



Orion is a digital high speed line scan sensor with configurable photo-diode size. Over the SPI interface the photo-diode size can be configured to a 10µm x 10µm size or 10µm x 200µm size. Independently form the photo-diode the conversion capacitance can be configured over SPI interface. The larger conversion capacitance, resulting in a full well capacity of 300ke- results in outstandingly high SNR. The smaller conversion capacitance, resulting in a full well capacity of 30ke- results in very high sensitivity, ideal for high speed scanning applications or detecting extremely low signal levels. The high aspect ratio photo-diode makes the Orion sensors ideal for spectrometric and OCT applications where the light is gathered over a wide area.

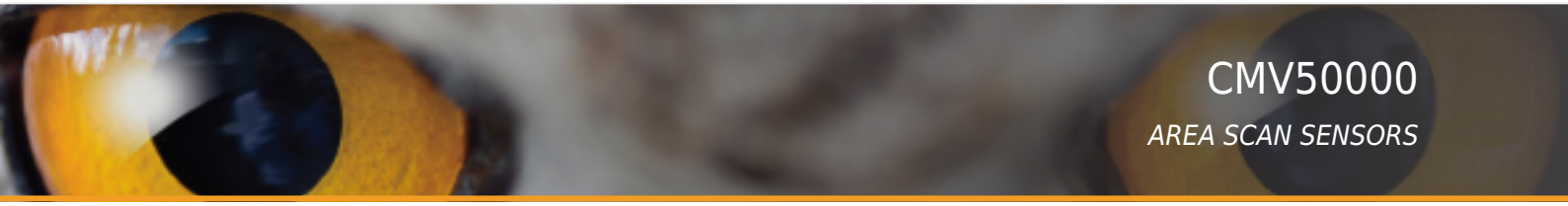
Please note that we offer today only engineering samples, production ramp up is expected towards Q3 2017. For pricing and lead time please contact cis_orders@ams.com.

SPECIFICATIONS

Resolution	1k 2k 4k
Pixel size	10 x 10 and 10 x 200
Shutter type	Global shutter
Frame rate	60k scan/s
Output interface	11/ 13 bit
Sensitivity	113 DN/nJ/cm2 @12bit (10 x 10 um2 pixel) and 211 DN/nJ/cm2 @12bit (10 x 200 um2 pixel)
Conversion gain	0.248 DN/e (13 bit)(Big Well) | 0.022 DN/e (13 bit) (Small Well)
Full well charge	30k e- (10 x 10 um2 pixel) and 300k e- (10 x 200 um2 pixel)
Dark noise	2.05 DN
Dynamic range	59.15 dB (10 x 10 um2 pixel) and 59.44 dB (10 x 200 um2 pixel)
Fixed pattern noise	DSNU: 6 [DN] PRNU: 1%
Chroma	Mono
Supply voltage	3.3 V
Power	500 mw per 2K segment
Operating temperature range	0ºC – 50 ºC
RoHS compliance	Yes
Socket	Andon Electronics (http://www.andonelectronics.com) Orion 2K Ceramic LCC: 694-76-SM-G10-L14-1

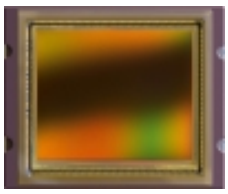
ORDERING INFO - ORION LINE SCAN

Part Number	Version	Chroma	Microlens	Package	Glass
Orion-1K	10x10 um or 10x200 um	Mono	No	BGA-CSP	No glass
Orion-2K	10x10 um or 10x200 um	Mono	No	Ceramic LCC	No glass
Orion-4K	10x10 um or 10x200 um	Mono	No	BGA-CSP	No glass



CMV50000

AREA SCAN SENSORS



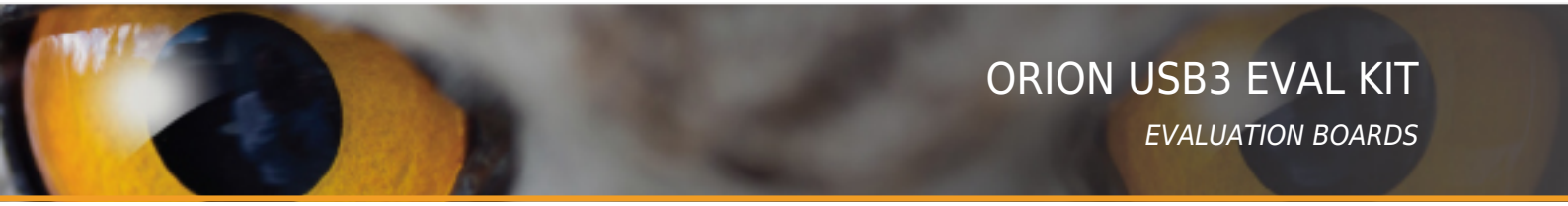
The CMV50000 is a high speed CMOS image sensor with 7920 x 6004 effective pixels (47.5Mp) developed for machine vision and video applications. The image array consists of 4.6µm pipelined 8T global shutter pixels which allow exposure during read out, while performing true CDS (Correlated Double Sampling) operation. The image sensor has 22 12bit sub-LVDS data outputs. The image sensor also integrates a programmable analog gain amplifier and offset regulation. Each output channel runs up to 830 Mbps maximum which results in 30 fps frame rate at full resolution in 12 bit. Higher frame rates can be achieved in row-windowing mode or row-subsampling mode. These modes are all programmable using the SPI interface. All internal exposure and read out timings are generated by a programmable on-board sequencer. External triggering and exposure programming is also possible. Extended optical dynamic range can be achieved by a dual exposure HDR mode.

SPECIFICATIONS

Part status	Sampling
Resolution	48MP - 7920 (H) x 6004 (V)
Pixel size	4.6 x 4.6
Optical format	35 mm (36.43 x 27.62 mm2)
Shutter type	Global shutter
Frame rate	30 fps
Output interface	22 LVDS @ 830 Mbps
Sensitivity	3.5 x10e7 DN/(W.s/m2) (@ 550 nm)
Conversion gain	0.272 DN/e
Full well charge	14500 e- (with binning 58000 e-)
Dark noise	8.8 e-
Dynamic range	64dB (binning: 68dB)
SNR max	41.6dB (binning: 47.6dB)
Parasitic light sensitivity	1/18000
Extended dynamic range	Yes, odd/even read out
Dark current	0.24e/s @ 20°C; 66.2e/s @60°C
Fixed pattern noise	6.6 DN rms
Chroma	Mono and RGB
Supply voltage	3.3/2.7/1.8/1.2V
Power	3W
Operating temperature range	-30°C to 70°C
RoHS compliance	Yes (TBC)
Package	141 pins PGA ceramic package
Socket	Andon Electronics (http://www.andonelectronics.com) 575-20-19A-141-01M-R27-L14 (thru-hole) 575-20-19A-141-93M-R27-L14 (surface mount)

ORDERING INFO - CMV50000

Part Number	Version	Chroma	Microlens	Package	Glass
CMV50000-1E3M1PA	3 um epi	mono	Yes	ceramic 141 pins PGA	double sided AR coated
CMV50000-1E3C1PA (available Q1 2017)	3 um epi	color	Yes	ceramic 141 pins PGA	double sided AR coated



ORION USB3 EVAL KIT

EVALUATION BOARDS

The Orion evaluation kit is a two board system used to evaluate Awaiba Orion 2K line CMOS image sensor. The kit consists of the CMOS image sensor and a circuit board containing all support circuits necessary to operate the CMOS image sensor. In addition, the kit includes a software that permits any user to aquire data and configure the system through an USB3 interface.

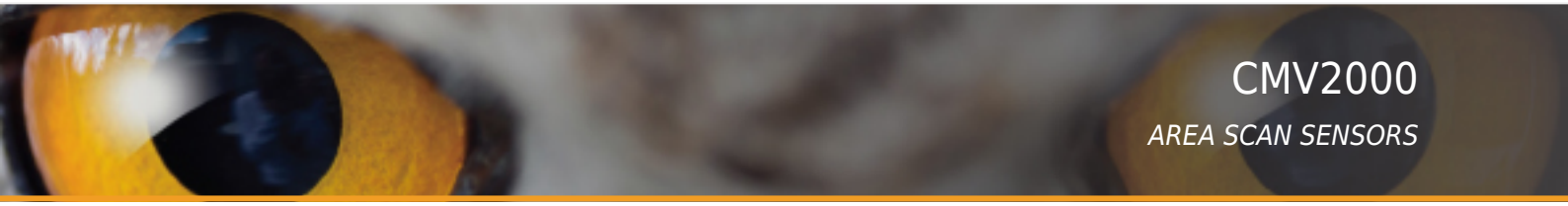
For pricing and lead time please contact cis_orders@ams.com.

SPECIFICATIONS

Supply voltage	USB Bus Power (5.0V)

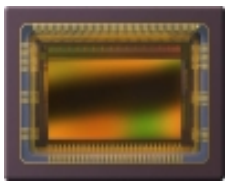
ORDERING INFO - ORION USB3 EVAL KIT

Part Number	Version	Chroma	Microlens	Package	Glass
Orion-2K-Ceramic-LCC-NanoUSB3	USB Evaluation Kit for 2K Ceramic LCC	N/A	No	Adapter Board + FGPA Board	N/A



CMV2000

AREA SCAN SENSORS



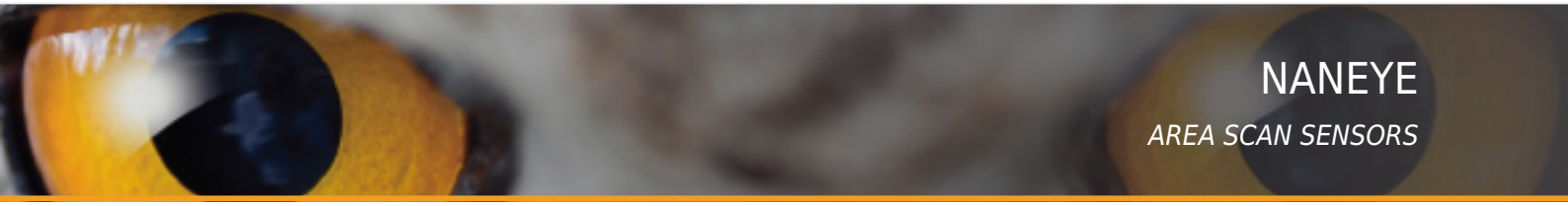
The CMV2000 is a high sensitivity, pipelined global shutter CMOS image sensor with 2048 x 1088 pixel resolution capable of HD format. Pipelining allows exposure during read out. The state-of-the-art pixel architecture offers true correlated double sampling (CDS) reducing the fixed pattern noise and dark noise significantly. The imager integrates 16 LVDS channels each running at 480 Mbps resulting in a 340 fps frame rate at full resolution at 10 bit per pixel. Driving and read-out are programmed over a serial peripheral interface. An internal timing generator produces the signals needed for read-out and exposure control of the image sensor. External exposure triggering remains possible. A 12 bit per pixel mode is available at reduced frame rate.

SPECIFICATIONS

Part status	Production
Resolution	2MP - 2048 (H) x 1088 (V)
Pixel size	5.5 x 5.5
Optical format	2/3''
Shutter type	Global shutter
Frame rate	340 fps (10 bit) 70 fps (12 bit)
Output interface	16 LVDS outputs @ 480 Mbps
Sensitivity	5,56 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	1,8V / 3,3V
Power	600 mW
Operating temperature range	-30 to +70 degC
RoHS compliance	Yes
Package	Ceramic 95 pins µPGA/LGA or 92-pins LCC
Socket	Andon Electronics (http://www.andonelectronics.com) 679-92-SM-G10-L14-1 (LCC) 10-12-06-095-400T4-R27-S14 (PGA, thru-hole) 10-12-06-095-414T4-R27-S14 (PGA, surface mount)

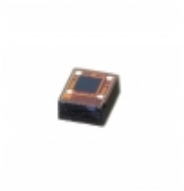
ORDERING INFO - CMV2000

Part Number	Version	Chroma	Microlens	Package	Glass
CMV2000-3E5M1PP	version 3	mono	Yes	ceramic 95pins µPGA	plain
CMV2000-3E5C1PP	version 3	RGB Bayer	Yes	ceramic 95pins µPGA	plain
CMV2000-3E12M1PP	version 3	mono - NIR enhanced (12 um epi)	Yes	ceramic 95pins µPGA	plain
CMV2000-3E5M1LP	version 3	mono	Yes	ceramic 95pins LGA	plain
CMV2000-3E5C1LP	version 3	RGB Bayer	Yes	ceramic 95pins LGA	plain
CMV2000-3E12M1LP	version 3	mono - NIR enhanced (12 um epi)	Yes	ceramic 95pins LGA	plain
CMV2000-3E5M1CA	version 3	mono	Yes	ceramic 92pins LCC	double-side AR coated
CMV2000-3E5C1CA	version 3	RGB Bayer	Yes	ceramic 92pins LCC	double-side AR coated
CMV2000-3E12M1CA	version 3	mono - NIR enhanced (12 um epi)	Yes	ceramic 92pins LCC	double-side AR coated
CMV2000-3E5M1PN	version 3	mono	Yes	ceramic 95pins µPGA	removable



NANEYE

AREA SCAN SENSORS



The NanEye 2D sensor provides a true system on chip camera head with fully self timed readout sequencing, AD conversion to 10 bit and bit serial data transmission over LVDS. AWAIBA's proprietary data interface technology permits cable length's up to 3m with out any additional components at the distal end. Due to the low energy dissipation on the interface no complicated shielding is required to meet EMC norms. With it's 250 x 250 pixels at 3um pitch the sensors provide clear and sharp images with outstanding MTF in a very compact size. A frame rate of 44FPS permit synchronization to any type of display. The NanEye sensor provides delay free, smooth video operation resulting in a safe operation and a clear diagnosis. The sensors are connected to minimal diameter cabling solutions. As an option, a small lens can be assembled to the chip, this option does not increase the total diameter of the sensor, making it the world most compact digital camera.

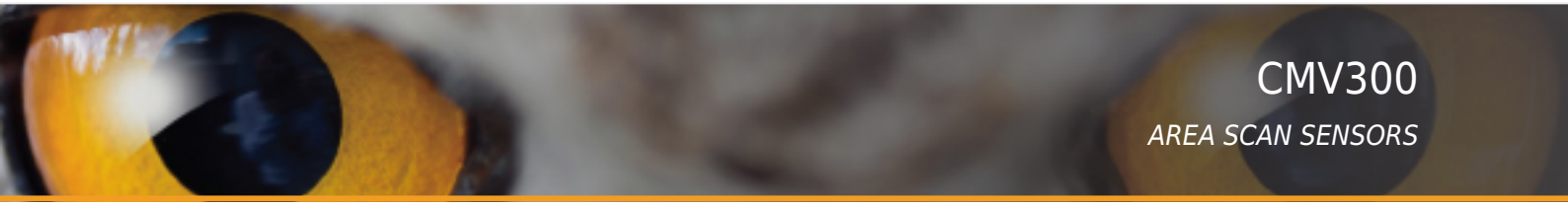
For pricing and lead time please contact cis_orders@ams.com.

SPECIFICATIONS

Part status	Production
Resolution	0.0625MP - 250 (H) x 250 (V)
Pixel size	3 x 3
Optical format	1/15"
Shutter type	Electronic rolling shutter
Frame rate	42 - 55 FPS
Output interface	10 bit digital LVDS
Sensitivity	11.5 DN/nJ/cm2 at maximum gain
Full well charge	15 ke-
Dark noise	1.1 DN rms
Dynamic range	58 dB
SNR max	41
Fixed pattern noise	DSNU: 2.8 [DN] PRNU: 4.8%
Chroma	Mono and RGB
Supply voltage	1.8V - 2.4V
Power	4.2 mW at nominal supply 2.1V
Operating temperature range	0ºC - 60ºC
RoHS compliance	Yes
Package	BGA

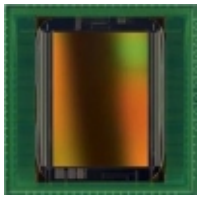
ORDERING INFO - NANEYE

Part Number	Version	Chroma	Microlens	Package	Glass
NanEye-B&W	Chip	Mono	No	BGA	No Glass
NanEye-RGB	Chip	RGB Bayer	No	BGA	No Glass



CMV300

AREA SCAN SENSORS



The CMV300 is a high speed CMOS image sensor with 640 by 480 pixels (1/3" optical format) developed for machine vision applications.The image array consists of 7.4µm x 7.4µm pipelined global shutter pixels allowing exposure during read out and CDS operation. The user can choose between four digital LVDS serial outputs of 12 bits each, or one 10-bit parallel CMOS output.

The image sensor integrates a programmable gain amplifier and offset regulation. Each LVDS channel runs at 480 Mbps maximum resultsing in 480 fps maximum at full resolution. Higher frame rates can be achieved in row-windowing or row-subsampling mode. All modes are programmable using the SPI interface.

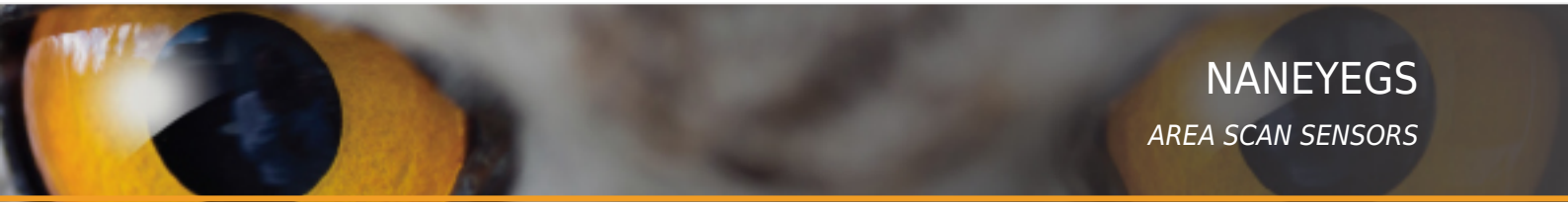
All internal exposure triggers, read-out timings and high speed clocks are generated by a programmable on-board sequencer and PLL. External triggering and exposure programming is also possible. Extended optical dynamic range can be achieved by multiple integrated high dynamic range modes.

SPECIFICATIONS

Part status	Production
Resolution	0.3MP - 640(H) x 480(V)
Pixel size	7.4 x 7.4
Optical format	1/3''
Shutter type	Global shutter
Frame rate	480 fps (LVDS 12 bit) 120 fps (CMOS 10 bit)
Output interface	4 LVDS outputs @ 480 Mbps - 10-bit CMOS output @ 40 Mhz (120 fps)
Sensitivity	6 V/lux.s
Conversion gain	0,2 LSB/e- (12 bit)
Full well charge	20,000 e-
Dark noise	20 e- (RMS)
Dynamic range	60 dB
SNR max	43 dB
Parasitic light sensitivity	1/50000
Extended dynamic range	Yes, up to 90 dB
Dark current	125 e-/s (25 degC)
Fixed pattern noise	< 4 LSB (12-bit) (<0,1% of full swing)
Chroma	Mono and RGB
Supply voltage	1,8V / 3,3V
Power	700 mW
Operating temperature range	-30 to +70 degC
RoHS compliance	Yes
Package	58 pins BGA
Socket	Andon Electronics (http://www.andonelectronics.com) 17-08-08-058-437T-R27-L14 (thru-hole) 17-08-08-058-329T-R27-L14 (surface mount) 17-08-08-058-321-G10-L14 (adapter)

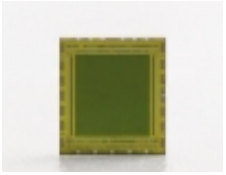
ORDERING INFO - CMV300

Part Number	Version	Chroma	Microlens	Package	Glass
CMV300-4E7M1WP	7 µm epi	Mono	Yes	CSP 58 pins BGA	plain
CMV300-4E7C1WP	7 µm epi	RGB Bayer	Yes	CSP 58 pins BGA	plain



NANEYEGS

AREA SCAN SENSORS



NanEye GS is a small form factor high sensitivity global shutter sensor with external trigger properties and frame rate up to 100FPS. The sensor features a high sensitivity global shutter pixel with 3.6um pitch. The global shutter property permits easy synchronization with external light sources or externally triggered events. The sensors data interface provides a bit serial LVDS data stream easy to receive in standard FPGA's or by standard deserializer components. The data output bus can be tristated in between the frame transfers to connect several devices on a dingle data bus. The serial configuration interface is implemented similar to I2C interface, however with the possibility to connect multiple identical devices on a same bus. The sensor main clock can be internally divided to accommodate lower data rate applications. The external sensor clock is provided over an LVDS differential link to avoid EMI/EMC issues even in case of remote sensor heads with extended connector lengths.

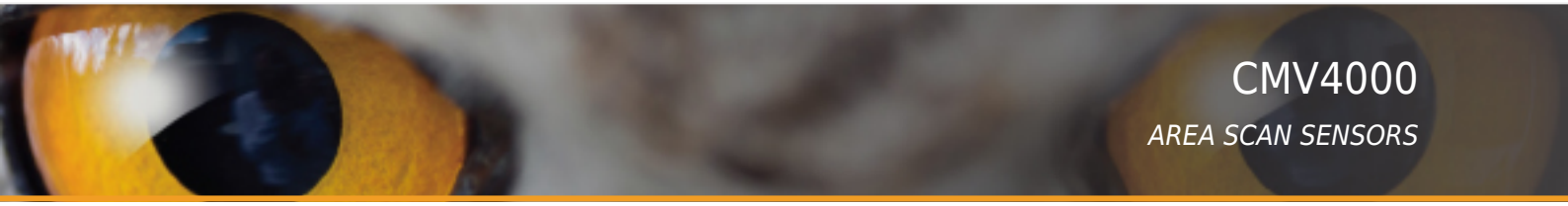
For pricing and lead time please contact cis_orders@ams.com.

SPECIFICATIONS

Part status	Production
Resolution	0.41 MP - 640 (H) x 640 (V)
Pixel size	3.6 x 3.6
Optical format	1/5"
Shutter type	Global shutter
Frame rate	100 - 50 - 25 FPS
Output interface	10 bit digital LVDS
Sensitivity	12 DN/nJ/cm2
Full well charge	16 ke-
Dynamic range	60 dB
Extended dynamic range	Yes
Fixed pattern noise	DSNU: 4 [DN] PRNU: 2%
Chroma	Mono and RGB
Supply voltage	3.3 V
Power	100 mW at nominal supply 3.3 V
Operating temperature range	0° - 60°C
RoHS compliance	Yes
Package	BGA

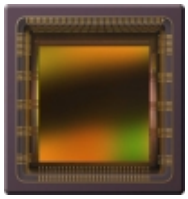
ORDERING INFO - NANEYEGS

Part Number	Version	Chroma	Microlens	Package	Glass
NanEyeGS-B&W	Chip	Mono	No	BGA	No Glass
NanEyeGS-RGB	Chip	RGB Bayer	No	BGA	No Glass



CMV4000

AREA SCAN SENSORS



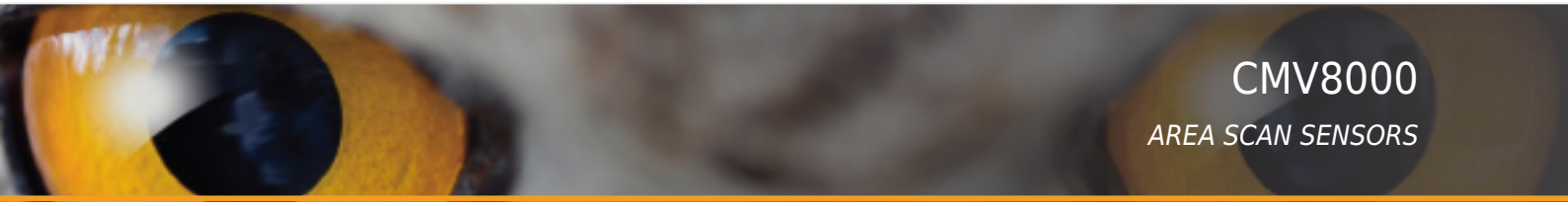
The CMV4000 is a high sensitivity, pipelined global shutter CMOS image sensor with 2048 x 2048 pixel resolution capable of HD format. Pipelining allows exposure during read out. The state-of-the-art pixel architecture offers true correlated double sampling (CDS) reducing the fixed pattern noise and dark noise significantly. The imager integrates 16 LVDS channels each running at 480 Mbps resulting in a 180 fps frame rate at full resolution at 10 bit per pixel. Driving and read-out are programmed over a serial peripheral interface. An internal timing generator produces the signals needed for read-out and exposure control of the image sensor. External exposure triggering remains possible. A 12 bit per pixel mode is available at reduced frame rate.

SPECIFICATIONS

Part status	Production
Resolution	4MP - 2048(H) x 2048 (V)
Pixel size	5.5 x 5.5
Optical format	1''
Shutter type	Global shutter
Frame rate	180 fps (10 bit) 37 fps (12 bit)
Output interface	16 LVDS outputs @ 480 Mbps
Sensitivity	5,56 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 degC)
Fixed pattern noise	< 1 LSB (<0,1% of full swing)
Chroma	Mono and RGB
Supply voltage	1,8V / 3,3V
Power	600 mW
Operating temperature range	-30 to +70 degC
RoHS compliance	Yes
Package	Ceramic 95 pins uPGA/LGA or 92-pins LCC
Socket	Andon Electronics (http://www.andonelectronics.com) 679-92A-SM-G10-L14-1 (LCC) 10-12-06-095-400T4-R27-S14 (PGA, thru-hole) 10-12-06-095-414T4-R27-S14 (PGA, surface mount)

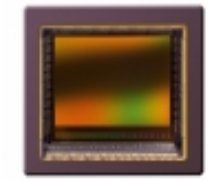
ORDERING INFO - CMV4000

Part Number	Version	Chroma	Microlens	Package	Glass
CMV4000-3E5M1PP	version 3	mono	Yes	ceramic 95pins µPGA	plain
CMV4000-3E5C1PP	version 3	RGB Bayer	Yes	ceramic 95pins µPGA	plain
CMV4000-3E12M1PP	version 3	mono - NIR enhanced (12 µm epi)	Yes	ceramic 95pins µPGA	plain
CMV4000-3E5M1LP	version 3	mono	Yes	ceramic 95pins LGA	plain
CMV4000-3E5C1LP	version 3	color	Yes	ceramic 95pins LGA	plain
CMV4000-3E12M1LP	version 3	mono - NIR enhanced (12 µm epi)	Yes	ceramic 95pins LGA	plain
CMV4000-3E5M1CA	version 3	mono	Yes	ceramic 92pins LCC	double side AR-coated
CMV4000-3E5C1CA	version 3	color	Yes	ceramic 92pins LCC	double side AR-coated
CMV4000-3E12M1CA	version 3	mono - NIR enhanced (12 µm epi)	Yes	ceramic 92pins LCC	double side AR-coated
CMV4000-3E5M1PN	version 3	mono	Yes	ceramic 95pins µPGA	removable



CMV8000

AREA SCAN SENSORS



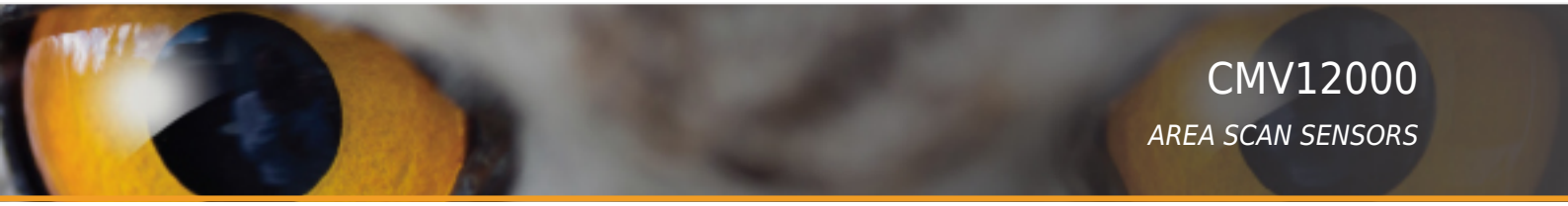
The CMV8000 is a global shutter CMOS image sensor with 3360 by 2496 pixels in a 4/3“ optical format. The image array consists of 5.5 um by 5.5 um pipelined global shutter pixels, which allow exposure during read out while performing CDS operation reducing fixed pattern and dark noise significantly. The CMV8000 has 16 digital LVDS outputs (serial) each running at 600 Mbps, which results in 104 fps frame rate at full resolution in 10-bit mode. Higher frame rates can be achieved in row-windowing mode or row-subsampling mode. A 12-bit per pixel mode is available at reduced frame rates.

SPECIFICATIONS

Part status	Pre-production
Resolution	8MP - 3360 (H) x 2496 (V)
Pixel size	5.5 x 5.5
Optical format	4/3"
Shutter type	Global shutter
Frame rate	104 fps (10 bit) 46 fps (12 bit)
Output interface	16 LVDS outputs @ 600 Mbps
Sensitivity	5.56 V/lux.s
Conversion gain	0.077 LSB/e-
Full well charge	11700 e-
Dark noise	8.6 e- (RMS)
Dynamic range	61 dB
SNR max	41,3 dB
Parasitic light sensitivity	1/20000
Extended dynamic range	Yes, up to 90 dB
Dark current	41.2 e-/s (25 °C)
Fixed pattern noise	< 1 LSB (<0,1% of full swing)
Chroma	Mono and RGB
Supply voltage	1,8V / 3,3V
Power	900 mW
Operating temperature range	-30 to +70 degC
RoHS compliance	Yes
Package	107 pins uPGA
Socket	Andon Electronics (http://www.andonelectronics.com) IS232-848107T-400T4-R27-L14 (thru-hole) IS232-848107T-414T4-R27-L14 (surface mount)

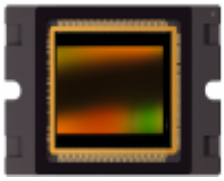
ORDERING INFO - CMV8000

Part Number	Version	Chroma	Microlens	Package	Glass
CMV8000ES-1E5M1PA	5 um epi	mono	Yes	ceramic 107pins µPGA	double sided AR coated
CMV8000ES-1E5C1PA	5 um epi	color	Yes	ceramic 107pins µPGA	double sided AR coated
CMV8000ES-1E5M1PN	5 um epi	mono	Yes	ceramic 107pins µPGA	removable



CMV12000

AREA SCAN SENSORS



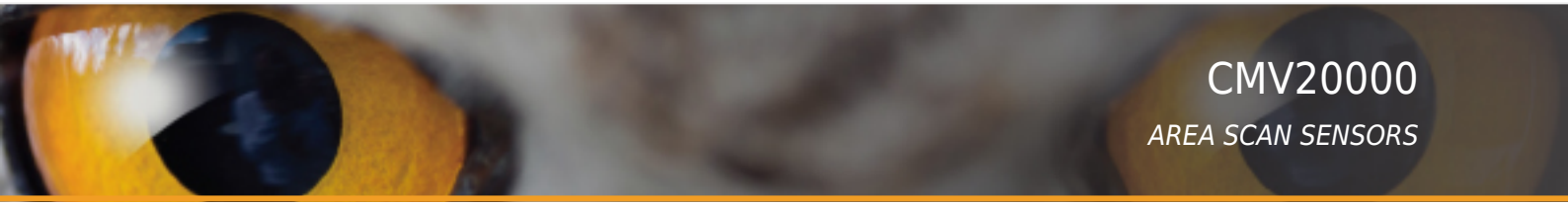
The CMV12000 is a high sensitivity pipelined global shutter CMOS image sensor with a resolution of 4096 x 3072 pixels (super HD format). Pipelining means that exposure during read out is possible. The state-of-the-art pixel design makes true correlated double sampling (CDS) possible which reduces the fixed pattern noise and dark noise significantly. The imager integrates 64 LVDS channels each running at 300 Mbps resulting in a 300 fps frame rate at full resolution with 10 bits per pixel data output. Driving and read-out programming can be set over a serial peripheral interface. An internal timing generator produces the signals needed for read-out and exposure of the image sensor while external exposure triggering remains possible.

SPECIFICATIONS

Part status	Production
Resolution	12MP - 4096(H) x 3072(V)
Pixel size	5.5 x 5.5
Optical format	APS-like
Shutter type	Global shutter
Frame rate	300 fps (10 bit) 132 fps (12 bit)
Output interface	64 LVDS outputs @ 600 Mbps multiplexable to 32, 16, 8, 4, 2 or 1 output(s)
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 degC)
Fixed pattern noise	< 1 LSB (<0,1% of full swing)
Chroma	Mono and RGB
Supply voltage	1,8V / 3,3V
Power	4200 mW
Operating temperature range	-30 to +70 degC (TBC)
RoHS compliance	Yes (TBC)
Package	237 pins µPGA
Socket	Andon Electronics (http://www.andonelectronics.com) 10-30-07-237-400T4-R27-L14 (thru-hole) 10-30-07-237-414T4-R27-L14 (surface mount) 10-30-07-237-405G10-L14 (adapter)

ORDERING INFO - CMV12000

Part Number	Version	Chroma	Microlens	Package	Glass
CMV12000-2E5M1PA	5 um epi	mono	Yes	ceramic 237pins µPGA	double sided AR coated
CMV12000-2E5C1PA	5 um epi	color	Yes	ceramic 237pins µPGA	double sided AR coated
CMV12000-2E12M1PA	12 um epi	mono - NIR enhanced	Yes	ceramic 237pins µPGA	double sided AR coated
CMV12000-2E5M1PN	5 um epi	mono	Yes	ceramic 237pins µPGA	removable



CMV20000

AREA SCAN SENSORS

The CMV20000 is a high sensitivity pipelined global shutter CMOS image sensor with a resolution of 5120 x 3840 pixels. Pipelining means that exposure during read out is possible. The state-of-the- art pixel design makes true correlated double sampling (CDS) possible which reduces the fixed pattern noise and dark noise significantly. The imager integrates 16 LVDS channels each running at 480Mbps resulting in a 30fps frame rate at full resolution (12 bits per pixel). Driving and read-out programming can be set over a serial peripheral interface. An internal timing generator produces the signals needed for read- out and exposure of the image sensor while external exposure triggering remains possible.

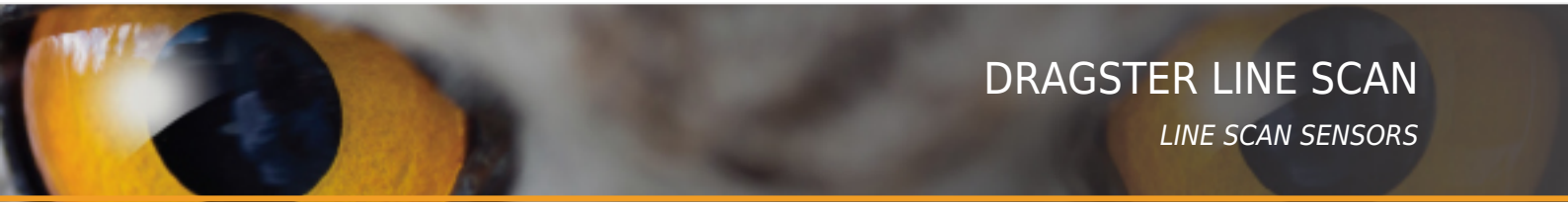
The CMV20000 is derived from a custom CMOS image sensor. This sensor is not for sale for traffic applications. Please contact CMOSIS for further information.

SPECIFICATIONS

Part status	Production
Resolution	20MP - 5120(H) x 3840(V)
Pixel size	6.4 x 6.4
Optical format	35mm
Shutter type	Global shutter
Frame rate	30 fps (12 bit)
Output interface	16 LVDS channels @ 480 Mbps
Sensitivity	8,3 V/lux.s
Conversion gain	0,25 LSB/e-
Full well charge	15000 e-
Dark noise	8 e- (RMS)
Dynamic range	66 dB
SNR max	41,7 dB
Parasitic light sensitivity	1/50000
Extended dynamic range	Yes, up to 90 dB
Dark current	125 e-/s (25 degC)
Fixed pattern noise	< 8 LSB (<0,2% of full swing)
Chroma	Mono and RGB
Supply voltage	1,8V / 3,3V
Power	1100 mW
Operating temperature range	-30 to +70 degC (TBC)
RoHS compliance	Yes (TBC)
Package	143 pins PGA
Socket	Andon Electronics (http://www.andonelectronics.com) 575-18-38-143-01M-R27-L14 (thru-hole) 575-18-38-143-93M-R27-L14 (surface mount)

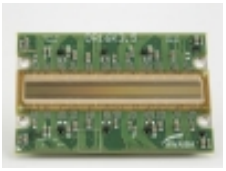
ORDERING INFO - CMV20000

Part Number	Version	Chroma	Microlens	Package	Glass
CMV20000-1E5M1PA	5 um epi	mono	Yes	ceramic 143pins PGA	double sided AR coated
CMV20000-1E5C1PA	5 um epi	color RGB Bayer	Yes	ceramic 143pins PGA	double sided AR coated
CMV20000-1E5M1PN	5 um epi	mono	Yes	ceramic 143pins PGA	removable



DRAGSTER LINE SCAN

LINE SCAN SENSORS



Designing high-speed highand resolution line-scan sensors were always in the core of AWAIBA's development activities. Repeatedly, AWAIBA has set a bench mark in the resolution and speed sensitivity of its custom line scan sensor design. With the Dragster series of digital line scan sensors AWAIBA offers a series of standard line scan sensors. Armed with ease of integration the Dragster line scan series remains unequaled in sensitivity, bandwidth, and SNR. Dragster is the most complete digital line scan sensor family available on the market. All sensors share the same electrical interface and are mainly pin compatible with each other. The Dragster sensors are highly scalable which make them ideal for various applications. In addition, they can easily be integrated in standard cameras or image processing boards.

The sensor can be delivred wihthout cover glass upon request.

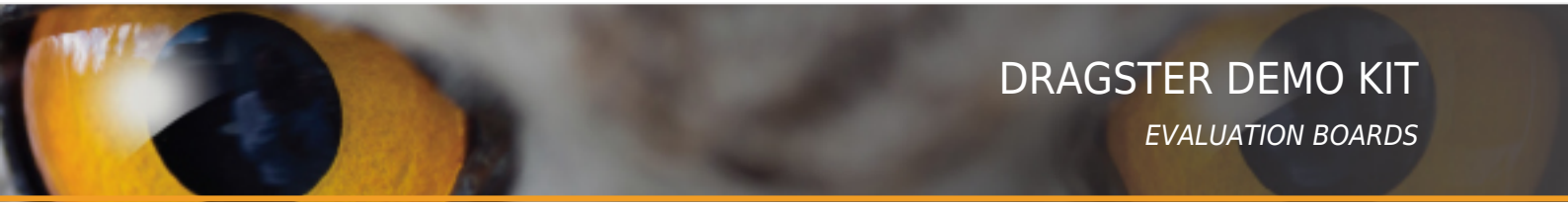
For pricing and lead time please contact cis_orders@ams.com.

SPECIFICATIONS

Resolution	2k up to 24k
Pixel size	7 x 7 and 3.5 x 3.5
Shutter type	Global shutter
Frame rate	up to 80k scans/s
Output interface	13 bit
Sensitivity	77 DN/nJ/cm2 (@12bit)
Conversion gain	0.076 DN/e-
Full well charge	46 ke-
Dark noise	22 e- rms
SNR max	44
Dark current	3 e-/ms
Fixed pattern noise	DSNU: 4 [DN] PRNU: 0.7%
Chroma	Mono and RGB
Supply voltage	3.3 V
Power	400 mw per 2K segment
Operating temperature range	0ºC - 60ºC
Package	LCC or Invar
Socket	Andon Electronics (http://www.andonelectronics.com) Dragster LCC: 690-90-SM-G10-L14-0 Rev1

ORDERING INFO - DRAGSTER LINE SCAN

Part Number	Version	Chroma	Microlens	Package	Glass
DR-B&W-2K-7-LCC	7 x 7 um	Mono	No	LCC	2 sided ARC
DR-B&W-2K-7-Invar	7 x 7 um	Mono	No	Invar	2 sided ARC
DR-B&W-2x2K-7-LCC	7 x 7 um	Mono	No	LCC	2 sided ARC
DR-RGB-2x2K-7-LCC	7 x 7 um	RGB Bayer	No	LCC	2 sided ARC
DR-B&W-2x2K-7-Invar	7 x 7 um	Mono	No	Invar	2 sided ARC
DR-RGB-2x2K-7-Invar	7 x 7 um	RGB Bayer	No	Invar	2 sided ARC
DR-B&W-4K-3.5-LCC	3.5 x 3.5 um	Mono	No	LCC	2 sided ARC
DR-B&W-4K-3.5-Invar	3.5 x 3.5 um	Mono	No	Invar	2 sided ARC
DR-B&W-4K-7-Invar	7 x 7 um	Mono	No	Invar	2 sided ARC
DR-B&W-2x4K-7-Invar	7 x 7 um	Mono	No	Invar	2 sided ARC
DR-RGB-2x4K-7-Invar	7 x 7 um	RBG Bayer	No	Invar	2 sided ARC
DR-B&W-6K-7-Invar	7 x 7 um	Mono	No	Invar	2 sided ARC
DR-B&W-8K-3.5-Invar	3.5 x 3.5 um	Mono	No	Invar	2 sided ARC
DR-B&W-8K-7-Invar	7 x 7 um	Mono	No	Invar	2 sided ARC
DR-B&W-2x8K-7-Invar	7 x 7 um	Mono	No	Invar	2 sided ARC
DR-RGB-2x8K-7-Invar	7 x 7 um	RGB Bayer	No	Invar	2 sided ARC
DR-B&W-16K-3.5-Invar	3.5 x 3.5 um	Mono	No	Invar	2 sided ARC
DR-B&W-24K-3.5-Invar	3.5 x 3.5 um	Mono	No	Invar	2 sided ARC



DRAGSTER DEMO KIT

EVALUATION BOARDS

The evaluation system features a highly configurable hardware which enables an easy setup of Awaiba's Dragster linescan family for a quick sensor evaluation.

Image data is transferred to a frame grabber over high speed camera link. Any grabber that supports at least a camera link base configuration can directly acquire data from any Dragster version. The system controls the sensor operation using an FPGA to define the state machine timings, it acquires data synchronously and multiplexes that data to one Camera-Link base interface.

Over an RS232 serial interface the user can have access to the state machine configuration and all sensor registers. It is possible to read back those sensor registers.

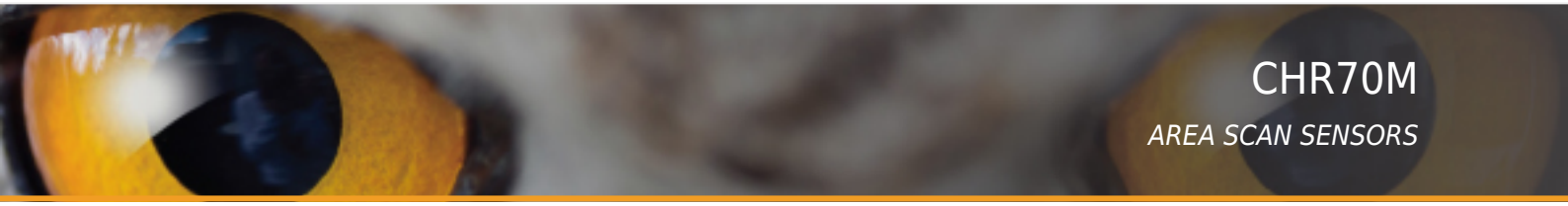
For pricing and lead time please contact cis_orders@ams.com.

SPECIFICATIONS

Power	12 V

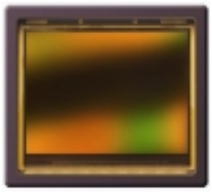
ORDERING INFO - DRAGSTER DEMO KIT

Part Number	Version	Chroma	Microlens	Package	Glass
Dragster-CL-Eval-Board	Camera Link Evaluation Board	N/A	No	Power Board + FPGA Board	N/A



CHR70M

AREA SCAN SENSORS



The CHR70M is a high resolution CMOS image sensor with 10000 by 7096 pixels. The image array consists of 3.1µm x 3.1µm pinned diode pixels which share a number of transistors (2 pixels sharing). The image sensor has 8 analog outputs, each running at 30MHz. This results in a frame rate of 3fps at full resolution. Higher frame rates can be achieved in windowing mode or subsampling mode.

The image sensor also integrates a programmable gain amplifier and offset regulation. These and other settings are all programmable using the SPI interface. All internal exposure and read out timings are generated by a programmable on-board sequencer. External triggering and exposure programming is also possible.

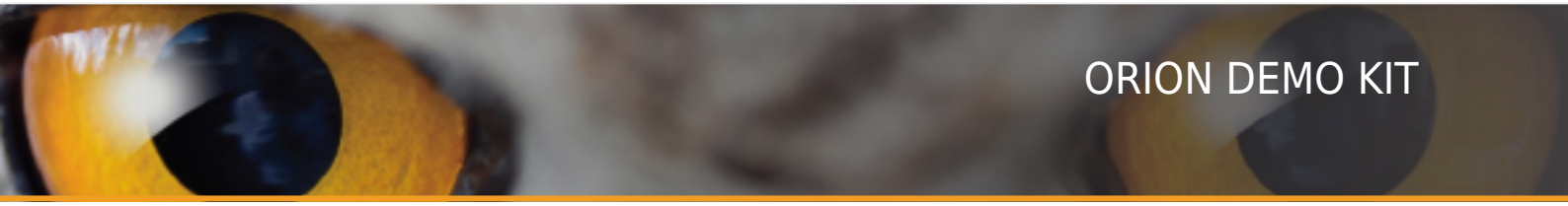
The CHR70M is derived from a custom CMOS image sensor. This sensor is not for sale for biometric applications.
Please contact CMOSIS for further information.

SPECIFICATIONS

Part status	Production
Resolution	70MP - 10000 (H) x 7096 (V)
Pixel size	3.1 x 3.1
Optical format	35mm
Shutter type	Electronic rolling shutter
Frame rate	3 fps
Output interface	8 analog channels
Sensitivity	0,88 V/lux.s
Conversion gain	64 uV/e-
Full well charge	13000 e-
Dark noise	7 e- (RMS)
Dynamic range	63 dB
SNR max	41,1 dB
Parasitic light sensitivity	-
Extended dynamic range	No
Dark current	3,2 e-/s (25 degC)
Fixed pattern noise	< 0,09% of full swing)
Chroma	Mono and RGB
Supply voltage	3,3V
Power	435 mW
Operating temperature range	0 to +60 degC (TBC)
RoHS compliance	Yes (TBC)
Package	65 pins PGA
Socket	Andon Electronics (http://www.andonelectronics.com) 575-13-85-065-01M-R27-L14 (thru-hole) 575-13-85-065-93M-R27-L14 (surface mount)

ORDERING INFO - CHR70M

Part Number	Version	Chroma	Microlens	Package	Glass
CHR71000-1E5M1PA	5 µm epi	mono	Yes	Ceramic PGA	double sided AR coated
CHR71000-1E5C1PA	5 µm epi	RGB Bayer	Yes	Ceramic PGA	double sided AR coated
CHR71000-1E5M1PN	5 µm epi	mono	Yes	Ceramic PGA	Removeable glass lid



ORION DEMO KIT

The Orion evaluation kit is a two board system used to evaluate the Awaiba Orion 1K and 2K line CMOS image sensor. The kit consists of the CMOS image sensor and a circuit board containing all support circuits necessary to operate the CMOS image sensor. In addition, the kit includes a software that permits any user to acquire data and configure the system through an USB3 interface.

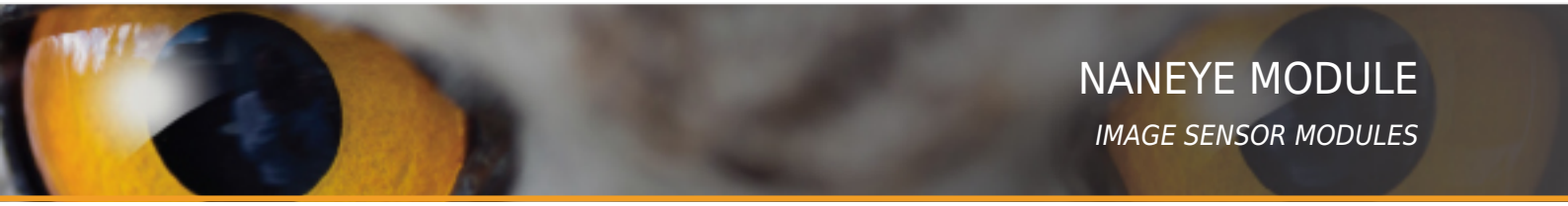
For pricing and lead time please contact cis_orders@ams.com.

SPECIFICATIONS

Supply voltage	USB Bus Power (5.0V)

ORDERING INFO - ORION DEMO KIT

Part Number	Version	Chroma	Microlens	Package	Glass
NanoUSB3-Orion	USB3 Evaluation Kit for 1K and 2K sensors	N/A	No	Adapter Board + FPGA Board	N/A



NANEYE MODULE

IMAGE SENSOR MODULES

The NanEye 2D sensor provides a true system on chip camera head with fully self timed readout sequencing, AD conversion to 10 bit and bit serial data transmission over LVDS. AWAIBA's proprietary data interface technology permits cable length's up to 3m with out any additional components at the distal end. Due to the low energy dissipation on the interface no complicated shielding is required to meet EMC norms. With it's 250 x 250 pixels at 3um pitch the sensors provide clear and sharp images with outstanding MTF in a very compact size. A frame rate of 44FPS permit synchronization to any type of display. The NanEye sensor provides delay free, smooth video operation resulting in a safe operation and a clear diagnosis. The sensors are connected to minimal diameter cabling solutions. A small lens is assembled to the chip, this option does not increase the total diameter of the sensor, making it the world most compact digital camera.

It is also possible under request the following options: No Black Paint, No Cable and No Bended Cable.

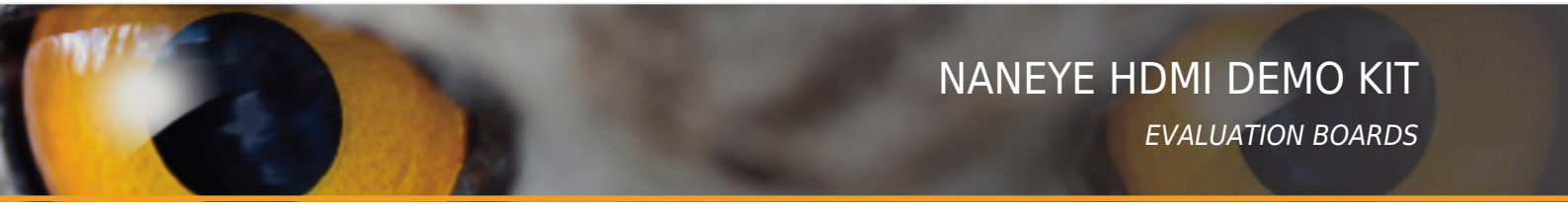
For pricing and lead time please contact cis_orders@ams.com.

SPECIFICATIONS

Part status	Production
Resolution	0.0625MP - 250 (H) x 250 (V)
Pixel size	3 x 3
Optical format	1/15"
Shutter type	Electronic rolling shutter
Frame rate	42 - 55 FPS
Output interface	10 bit digital LVDS
Sensitivity	11.5 DN/nJ/cm2 at maximum gain
Full well charge	15 ke-
Dark noise	1.1 DN rms
Dynamic range	58 dB
SNR max	41
Fixed pattern noise	DSNU: 2.8 [DN] PRNU: 4.8%
Chroma	Mono and RGB
Supply voltage	1.8V - 2.4V
Power	4.2 mW at nominal supply 2.1V
Operating temperature range	0ºC - 60ºC
RoHS compliance	Yes
Package	Chip + Lens + Cable

ORDERING INFO - NANEYE MODULE

Part Number	Version	Chroma	Microlens	Package	Glass
NanEye-B&W-F2.7-FOV90-Painted-CableBended	Black Painted, Cable (15cm, 1m, 2m, 3m)	Mono	No	Chip + Lens + Cable	N/A
NanEye-RGB-F2.7-FOV90-Painted-CableBended	Black Painted, Cable (15cm, 1m, 2m, 3m)	RGB Bayer	No	Chip + Lens + Cable	N/A
NanEye-B&W-F4.0-FOV90-Painted-CableBended	Black Painted, Cable (15cm, 1m, 2m, 3m)	Mono	No	Chip + Lens + Cable	N/A
NanEye-RGB-F4.0-FOV90-Painted-CableBended	Black Painted, Cable (15cm, 1m, 2m, 3m)	RGB Bayer	No	Chip + Lens + Cable	N/A
NanEye-B&W-F6.0-FOV90-Painted-CableBended	Black Painted, Cable (15cm, 1m, 2m, 3m)	Mono	No	Chip + Lens + Cable	N/A
NanEye-RGB-F6.0-FOV90-Painted-CableBended	Black Painted, Cable (15cm, 1m, 2m, 3m)	RGB Bayer	No	Chip + Lens + Cable	N/A
NanEye-B&W-F2.8-FOV120-Painted-CableBended	Black Painted, Cable (15cm, 1m, 2m, 3m)	Mono	No	Chip + Lens + Cable	N/A
NanEye-RGB-F2.8-FOV120-Painted-CableBended	Black Painted, Cable (15cm, 1m, 2m, 3m)	RGB Bayer	No	Chip + Lens + Cable	N/A
NanEye-B&W-F2.4-FOV160-Painted-CableBended	Black Painted, Cable (15cm, 1m, 2m, 3m)	Mono	No	Chip + Lens + Cable	N/A
NanEye-RGB-F2.4-FOV160-Painted-CableBended	Black Painted, Cable (15cm, 1m, 2m, 3m)	RGB Bayer	No	Chip + Lens + Cable	N/A



NANEYE HDMI DEMO KIT

EVALUATION BOARDS

NanoHDMI is a fully embedded all in one image processing unit that interfaces the NanEye® micro camera head signals and gives out a 1080p/60 format HDMI video signal which can be directly plugged to a display monitor. No additional PC or image processing is required.

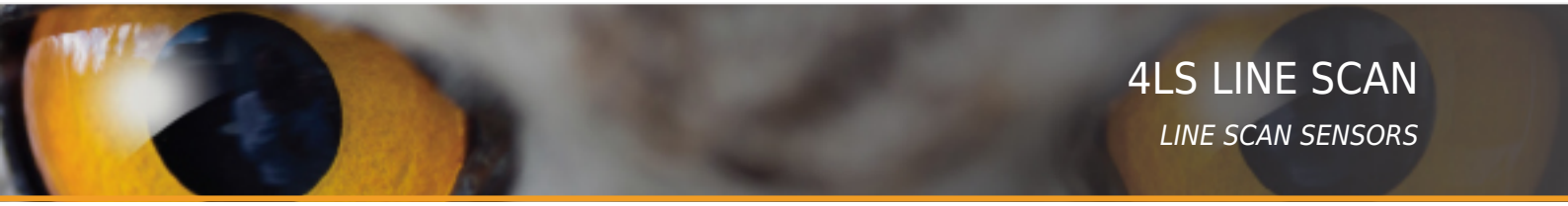
Who should buy NanoHDMI:
NanoHDMI is the ideal solution for all NanEye® sensor customers that do intend to only display an image with a high quality on a screen with a lean and easy to use solution, but which have their own illumination solution and fix the NanEye camera module in their own endoscopic mechanics. Customers who do not have an illumination solution of their own or who do not have mechanics to fix the NanEye® camera head should consider the NanEye_Fiber_Demo_Optic_Kit_HDMI.

Customers who intend to develop their own video processing hardware or who intend to stream unprocessed image data to a PC platform are recommended to refer to one of the other NanEye® development and evaluation boards based on NanoUSB2.2 or NanoUSB3 provided by AWAIBA.

For pricing and lead time please contact cis_orders@ams.com.

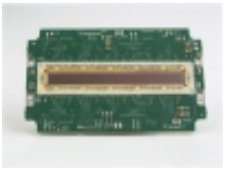
ORDERING INFO - NANEYE HDMI DEMO KIT

Part Number	Version	Chroma	Microlens	Package	Glass
NanoHDMI	HDMI Evaluation Kit	N/A	No	FPGA Board	N/A



4LS LINE SCAN

LINE SCAN SENSORS



The 4LS sensor is a quad linear line scan sensor for colour imaging applications with two pixels types. The data from the 4 lines is provided at the same time for all the outputs. The sensor features a low noise pixel with true CDS and global shutter for interleaved readout during integration. Each line has its own column parallel ADC, which can be configured individually for each of the 4 lines to equalize colour miss match or enable wide dynamic range. The readout is performed over LVDS bit serial taps which can be multiplexed to reduce output tap count. For scanning applications, for instance, the sensor provides up to 160kHz line rate in full resolution and can increase the line rate when using partial readout mode (ROI). The Black and White version of the sensor is ideal for 4:1 digital TDI. The Colour version, which offers Red, Green, Blue, and Clear channels, allows to combine the colour information with NIR information, revealing otherwise hidden details.

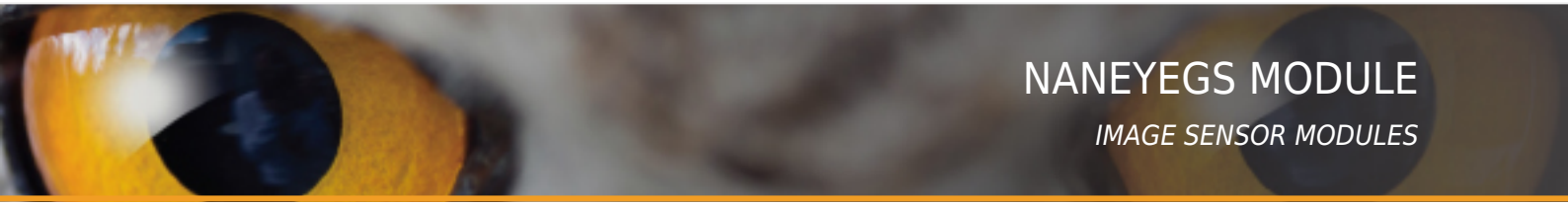
Please note that we offer today only engineering samples, production ramp up is expected towards Q3 2017. For pricing and lead time please contact cis_orders@ams.com.

SPECIFICATIONS

Resolution	2K5, 5K, 7K5, 10K, 15K
Pixel size	5.6 x 5.6
Shutter type	Global shutter
Frame rate	155 kHz
Output interface	12 bit digital LVDS
Sensitivity	61 DN/nJ/cm2 @12bit
Full well charge	20 ke- / 40ke-
Dark noise	7 DN
Dynamic range	62 dB
Extended dynamic range	Yes
Fixed pattern noise	DSNU: 10 [DN] PRNU: 1%
Chroma	Mono and RGB
Supply voltage	3.3 V Analog, 1.8V Digital
Power	1370 mW per 2.5k segment
Operating temperature range	0ºC – 80 ºC
RoHS compliance	Yes
Package	Invar (10K, 15K) Ceramic PGA 7K5 Ceramic BGA (2K5, 5K)
Socket	Andon Electronics (http://www.andonelectronics.com) 4LS 2K5 Ceramic BGA: 12-18-11-102-491-C2719-2L (through hole) 12-18-11-102-500-C2719-2L (surface mount) 4LS 5K Ceramic BGA: 12-24-06-144-491-C3819-2L (through hole) 12-24-06-144-500-C3819-2L (surface mount) 4LS 7K5 Ceramic PGA: 10-36-02A-191-491-C5217-2L (through hole) 10-36-02A-191-500-C5217-2L (surface mount)

ORDERING INFO - 4LS LINE SCAN

Part Number	Version	Chroma	Microlens	Package	Glass
4LS-B&W-15K-Invar	5.6x5.6 um	Mono	No	Invar	2 sided ARC
4LS-RGB-15K-Invar	5.6x5.6 um	RGB Bayer	No	Invar	2 sided ARC



NANEYEGS MODULE

IMAGE SENSOR MODULES

The NanEye GS sensor is a compact package of only 3.4mm side length, a full VGA resolution image sensor with global shutter. Ideal for pulsed illumination applications and ultra compact light weight vision applications of fast processes. The frame rate of up to 100 images per second and the synchronous electronic shutter provide blur free images at high speed, optionally, an adapted miniature optics. The device is directly mounted on the interface board.

For pricing and lead time please contact cis_orders@ams.com.

SPECIFICATIONS

Part status	Production
Resolution	0.41 MP - 640 (H) x 640 (V)
Pixel size	3.6 x 3.6
Optical format	1/5"
Shutter type	Global shutter
Frame rate	100 - 50 - 25 fps
Output interface	10 bit digital LVDS
Sensitivity	12 DN/nJ/cm2
Full well charge	12 ke-
Dynamic range	60 dB
Extended dynamic range	Yes
Fixed pattern noise	DSNU: 4 [DN] PRNU: 2%
Chroma	Mono and RGB
Supply voltage	3.3 V
Power	Nominal supply 3.3 V - 100 mW
Operating temperature range	0° - 60°C
RoHS compliance	Yes
Package	Chip + PCB + Lens + Connector + Cable

ORDERING INFO - NANEYEGS MODULE

Part Number	Version	Chroma	Microlens	Package	Glass
NanEyeGS-B&W-NoLens	Adapter Board with Omnetics Connector	Mono	No	Chip + PCB + Connector	N/A
NanEyeGS-RGB-NoLens	Adapter Board with Omnetics Connector	RGB Bayer	No	Chip + PCB + Connector	N/A
NanEyeGS-B&W-F4-FOV30	Adapter Board with Omnetics Connector	Mono	No	Chip + PCB + Lens + Connector	N/A
NanEyeGS-RGB-F4-FOV30	Adapter Board with Omnetics Connector	RGB Bayer	No	Chip + PCB + Lens + Connector	N/A
NanEyeGS-B&W-F4-FOV30-Cable	Adapter Board with Omnetics Connector	Mono	No	Chip + PCB + Lens + Connector + 20cm Cable	N/A
NanEyeGS-RGB-F4-FOV30-Cable	Adapter Board with Omnetics Connector	RGB Bayer	No	Chip + PCB + Lens + Connector + 20cm Cable	N/A

NANEYE FIBER DEMO OPTIC KIT HDMI

EVALUATION BOARDS

NanEye Fiber Light Demo Kit HDMI is a fully embedded all in one image processing unit that interfaces the NanEye® micro camera head signals and gives out a 1080p/60 format HDMI video signal which can be directly plugged to a display monitor. No additional PC or image processing is required.

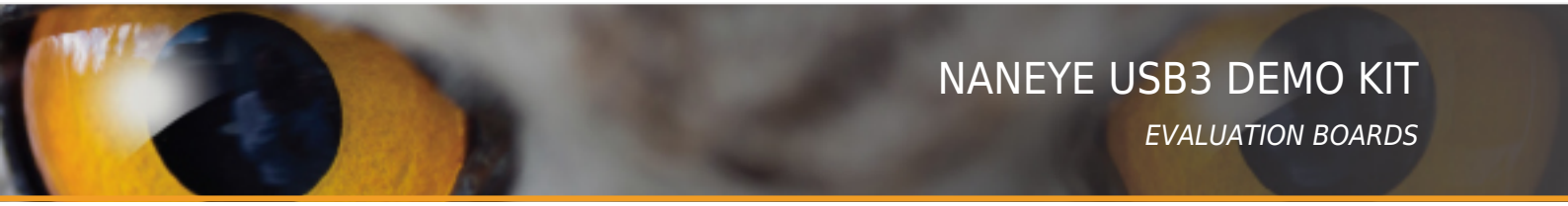
Who should buy NanEye Fiber Light Demo Kit HDMI:
NanoHDMI is the ideal solution for all NanEye® sensor customers that do intend to only display an image with a high quality on a screen with a lean and easy to use solution and wish an all in one evaluation kit providing illumination. Customers who have an illumination solution of their own and can accommodate the NanEye® camera head into custom mechanics and illumination should consider the NanoHDMI kit.

Customers who intend to develop their own video processing hardware or who intend to stream unprocessed image data to a PC platform are recommended to refer to one of the other NanEye® development and evaluation boards based on NanoUSB2.2 or NanoUSB3 provided by AWAIBA.

For pricing and lead time please contact cis_orders@ams.com.

ORDERING INFO - NANEYE FIBER DEMO OPTIC KIT HDMI

Part Number	Version	Chroma	Microlens	Package	Glass
NanEye-B&W-F2.7-FOV90-Fiber-HDMI	HDMI Evaluation Kit with Fiber illumination	Mono	No	Chip + Lens + Cable (up to 2m) + Light	N/A
NanEye-RGB-F2.7-FOV90-Fiber-HDMI	HDMI Evaluation Kit with Fiber illumination	RGB Bayer	No	Chip + Lens + Cable (up to 2m) + Light	N/A
NanEye-B&W-F4.0-FOV90-Fiber-HDMI	HDMI Evaluation Kit with Fiber illumination	Mono	No	Chip + Lens + Cable (up to 2m) + Light	N/A
NanEye-RGB-F4.0-FOV90-Fiber-HDMI	HDMI Evaluation Kit with Fiber illumination	RGB Bayer	No	Chip + Lens + Cable (up to 2m) + Light	N/A
NanEye-B&W-F6.0-FOV90-Fiber-HDMI	HDMI Evaluation Kit with Fiber illumination	Mono	No	Chip + Lens + Cable (up to 2m) + Light	N/A
NanEye-RGB-F6.0-FOV90-Fiber-HDMI	HDMI Evaluation Kit with Fiber illumination	RGB Bayer	No	Chip + Lens + Cable (up to 2m) + Light	N/A
NanEye-B&W-F2.8-FOV120-Fiber-HDMI	HDMI Evaluation Kit with Fiber illumination	Mono	No	Chip + Lens + Cable (up to 2m) + Light	N/A
NanEye-RGB-F2.8-FOV120-Fiber-HDMI	HDMI Evaluation Kit with Fiber illumination	RGB Bayer	No	Chip + Lens + Cable (up to 2m) + Light	N/A
NanEye-B&W-F2.4-FOV160-Fiber-HDMI	HDMI Evaluation Kit with Fiber illumination	Mono	No	Chip + Lens + Cable (up to 2m) + Light	N/A
NanEye-RGB-F2.4-FOV160-Fiber-HDMI	HDMI Evaluation Kit with Fiber illumination	RGB Bayer	No	Chip + Lens + Cable (up to 2m) + Light	N/A



NANEYE USB3 DEMO KIT

EVALUATION BOARDS

This evaluation system features a highly configurable hardware which enables an easy setup of Awaiba's NanEye Module family for a quick sensor evaluation.

Image data is transferred over a high speed USB3. Any PC that supports at least a USB3 directly acquire data from Naneye Module. The system controls the sensors operation using an FPGA to define the state machine timings, it acquires data synchronously and multiplexes that data up to 4 NanEye Module sensors.

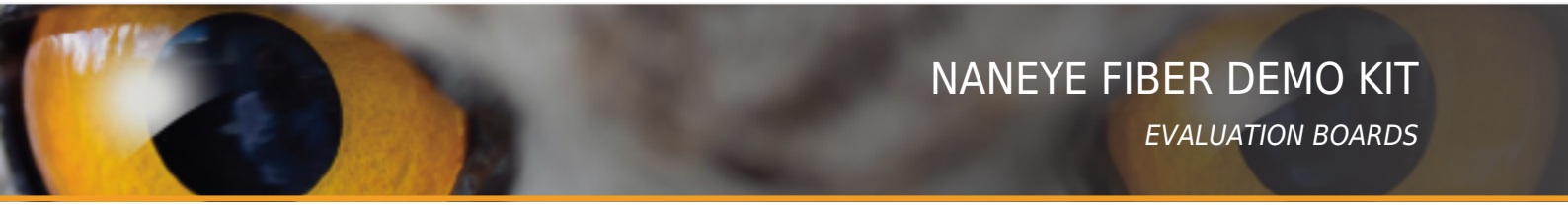
For pricing and lead time please contact cis_orders@ams.com.

SPECIFICATIONS

Frame rate	60 FPS
Supply voltage	USB Bus Power (5.0V)

ORDERING INFO - NANEYE USB3 DEMO KIT

Part Number	Version	Chroma	Microlens	Package	Glass
NanoUSB3-NanEye	USB3 Evaluation Kit	N/A	No	Adapter Board + FPGA Board	N/A



NANEYE FIBER DEMO KIT

EVALUATION BOARDS

The Evaluation set consists of the NanEye base station which receives the NanEye sensors LVDS bit serial data stream and translates it to a USBII protocol that will interface over a standard USBII connection to a PC. The supplied viewer software controls the NanEye camera, and displays the video images. The fiber light source provides illumination over a 1mm diameter POF fiber to the tip of the camera.

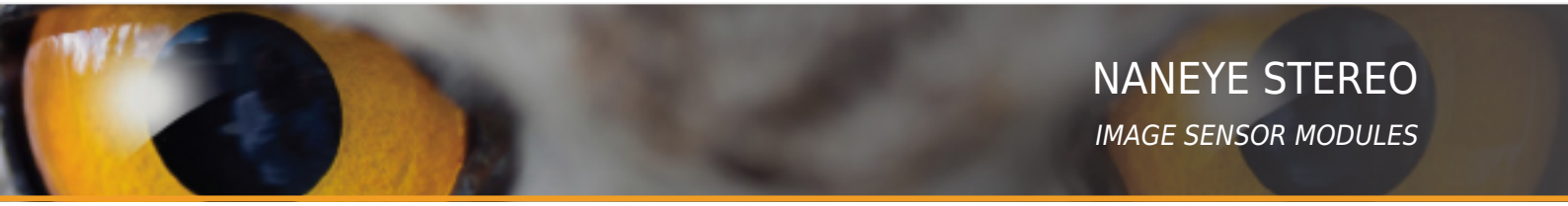
For pricing and lead time please contact cis_orders@ams.com.

SPECIFICATIONS

Power	via USB 5V

ORDERING INFO - NANEYE FIBER DEMO KIT

Part Number	Version	Chroma	Microlens	Package	Glass
NanEye-B&W-F2.7-FOV90-Fiber	USB2 Evaluation Kit with Fiber illumination	Mono	No	Chip + Lens + Cable (up to 2m) + Light + FPGA Board	N/A
NanEye-RGB-F2.7-FOV90-Fiber	USB2 Evaluation Kit with Fiber illumination	RGB Bayer	No	Chip + Lens + Cable (up to 2m) + Light + FPGA Board	N/A
NanEye-B&W-F4.0-FOV90-Fiber	USB2 Evaluation Kit with Fiber illumination	Mono	No	Chip + Lens + Cable (up to 2m) + Light + FPGA Board	N/A
NanEye-RGB-F4.0-FOV90-Fiber	USB2 Evaluation Kit with Fiber illumination	RGB Bayer	No	Chip + Lens + Cable (up to 2m) + Light + FPGA Board	N/A
NanEye-B&W-F6.0-FOV90-Fiber	USB2 Evaluation Kit with Fiber illumination	Mono	No	Chip + Lens + Cable (up to 2m) + Light + FPGA Board	N/A
NanEye-RGB-F6.0-FOV90-Fiber	USB2 Evaluation Kit with Fiber illumination	RGB Bayer	No	Chip + Lens + Cable (up to 2m) + Light + FPGA Board	N/A
NanEye-B&W-F2.8-FOV120-Fiber	USB2 Evaluation Kit with Fiber illumination	Mono	No	Chip + Lens + Cable (up to 2m) + Light + FPGA Board	N/A
NanEye-RGB-F2.8-FOV120-Fiber	USB2 Evaluation Kit with Fiber illumination	RGB Bayer	No	Chip + Lens + Cable (up to 2m) + Light + FPGA Board	N/A
NanEye-B&W-F2.4-FOV160-Fiber	USB2 Evaluation Kit with Fiber illumination	Mono	No	Chip + Lens + Cable (up to 2m) + Light + FPGA Board	N/A
NanEye-RGB-F2.4-FOV160-Fiber	USB2 Evaluation Kit with Fiber illumination	RGB Bayer	No	Chip + Lens + Cable (up to 2m) + Light + FPGA Board	N/A
NanEye-Stereo-B&W-F2.7-FOV90-Fiber	USB2 Evaluation Kit with Fiber illumination	Mono	No	2x(Chip + Lens + FPGA Board) + Cable (up to 2m) + Light	N/A
NanEye-Stereo-RGB-F2.7-FOV90-Fiber	USB2 Evaluation Kit with Fiber illumination	RGB Bayer	No	2x(Chip + Lens + FPGA Board) + Cable (up to 2m) + Light	N/A



NANEYE STEREO

IMAGE SENSOR MODULES

NanEye Stereo offers the smallest physical dimensions of a digital 3D, a true system on chip camera head with fully self timed readout sequencing, AD conversion to 10 bit and bit serial data transmission over LVDS. AWAIBA's proprietary data interface technology permits cable length's up to 3m without any additional components at the distal end. Due to the low energy dissipation on the interface no complicated shielding is required to meet EMC norms. With it's 2X250 x 250 pixels at 3um pitch the sensors provide clear and sharp images with outstanding MTF in a very compact size. A frame rate of 44FPS permit synchronization to any type of display. The NanEye sensor provides delay free, smooth video operation resulting in a safe operation and a clear diagnosis. The sensors are connected to minimal diameter cabling solutions. Footprint of just 2.2x1mm and height of 1.6mm (with integrated optics), due to Wafer Level packaging high precision of the 2 camera heads. Calibration and rectification is not mandatory, a variety of lens specifications are available with a order self-contained "block", bio-compatible, with a plane Borofloat 33 glass.

It is also possible under request the following options: No Black Paint, No Cable and No Bended Cable.

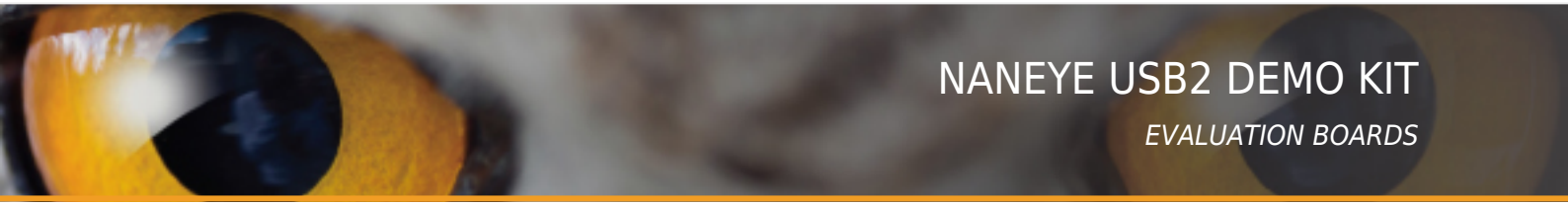
For pricing and lead time please contact cis_orders@ams.com.

SPECIFICATIONS

Resolution	125KP – 500(H) x 250(V)
Pixel size	3 x 3
Shutter type	Electronic rolling shutter
Frame rate	44
Output interface	10 bit digital LVDS
Sensitivity	11.5 DN/nJ/cm2 at maximum gain
Full well charge	15 ke-
Dynamic range	58 dB
SNR max	41
Fixed pattern noise	DSNU: 2.8 [DN] PRNU: 4.8%
Chroma	Mono and RGB
Supply voltage	1.8V - 2.4V
Power	4.2 mW at nominal supply 2.1V
Operating temperature range	0ºC - 60ºC
RoHS compliance	Yes
Package	2x(Chip + Lens + Cable)

ORDERING INFO - NANEYE STEREO

Part Number	Version	Chroma	Microlens	Package	Glass
NanEye-Stereo-B&W-F2.7-FOV90-Painted-CableBended	Black Painted, Cable (2m)	Mono	No	2x(Chip + Lens + Cable)	N/A
NanEye-Stereo-RGB-F2.7-FOV90-Painted-CableBended	Black Painted, Cable (2m)	RGB Bayer	No	2x(Chip + Lens + Cable)	N/A



NANEYE USB2 DEMO KIT

EVALUATION BOARDS

The base station is the hardware between the camera and the PC and it does the deserialisation of the data stream that comes from the camera. The Windows based Module Viewer is a software tool that is able to capture images from the camera via USB2 and makes image corrections such as offset, gain correction, demosaic color reconstruction, etc.

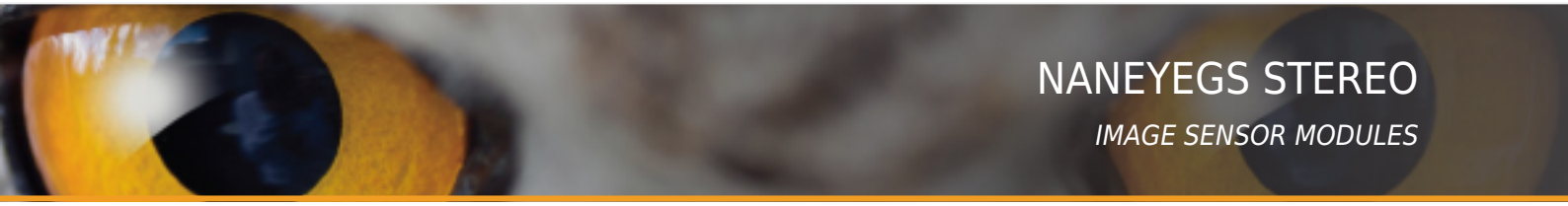
For pricing and lead time please contact cis_orders@ams.com.

SPECIFICATIONS

Frame rate	44 FPS
Supply voltage	USB Bus Power (5.0V)

ORDERING INFO - NANEYE USB2 DEMO KIT

Part Number	Version	Chroma	Microlens	Package	Glass
NanoUSB2.2	USB2 Evaluation Kit for NanEye	N/A	No	FPGA Board	N/A



NANEYEGS STEREO

IMAGE SENSOR MODULES

NanEye GS Stereo offers one of the smallest physical dimensions of a digital 3D, a complete system on chip camera and lens, AD conversion to 10 bit and bit serial data transmission over LVDS. With it's 2X640 x 640 pixels at 3.6um pitch the sensors provide clear and sharp images with outstanding MTF in a very compact size. A frame rate of 100FPS permit synchronization to any type of display. The NanEye GS sensor provides delay free, smooth video operation resulting in a safe operation and a clear diagnosis.

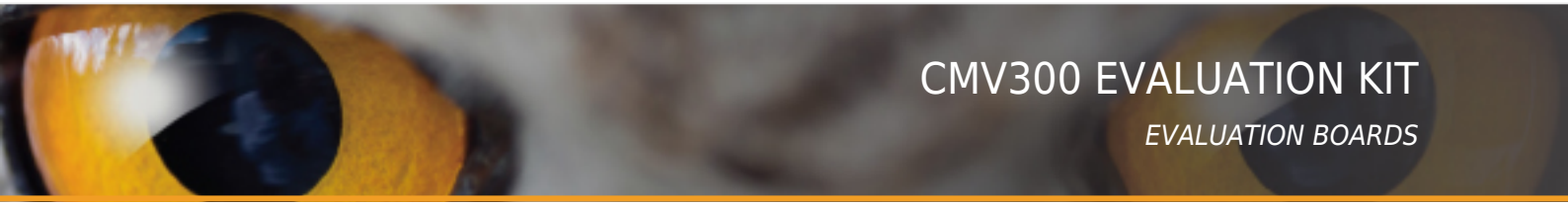
For pricing and lead time please contact cis_orders@ams.com.

SPECIFICATIONS

Resolution	2X0.41 MP - 2X640 (H) x 640 (V)
Pixel size	3.6 x 3.6
Shutter type	Global shutter
Frame rate	100 - 50 - 25 FPS
Output interface	10 bit digital LVDS
Sensitivity	12 DN/nJ/cm2
Full well charge	16 ke-
Dynamic range	60 dB
Extended dynamic range	Yes
Fixed pattern noise	DSNU: 4 [DN] PRNU: <2%
Chroma	Mono and RGB
Supply voltage	3.3 V
Power	100 mW at nominal supply 3.3 V
Operating temperature range	0ºC - 60ºC
RoHS compliance	Yes
Package	2x(Chip + PCB + Lens + Connector + Cable)

ORDERING INFO - NANEYEGS STEREO

Part Number	Version	Chroma	Microlens	Package	Glass
NanEyeGS-Stereo-B&W-F4-FOV30-Cable	Adapter Board with Omnetics Connector	Mono	No	2x(Chip + PCB + Lens + Connector + 20cm Cable)	N/A
NanEyeGS-Stereo-RGB-F4-FOV30-Cable	Adapter Board with Omnetics Connector	RGB Bayer	No	2x(Chip + PCB + Lens + Connector + 20cm Cable)	N/A



CMV300 EVALUATION KIT

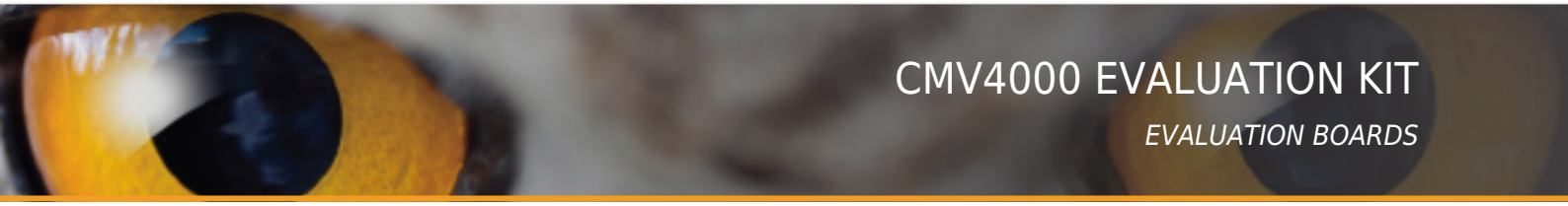
EVALUATION BOARDS

The CMV300 eval kit can be used for testing and verifying the operation and image quality of the CMV300 image sensor. The following components are present when the CMV300 test system is delivered. CMV300 aluminium case with PCB + CMV300 sensor, lens c-mount spacers (5mm and 10mm), 2 x CameraLink cables MDR – SDR (2m), Camera tripod, NI PCI1433 frame grabber card (inside PC), Lenovo ThinkCentre mini tower model + software + keyboard + mouse, CD with documentation (including schematics and VHDL) and software. The systems allows the users to evaluate all aspects of the CMV300 with full access to the sensor registers. Single or multiple image grabbing and saving is possible in multiple formats. Color processing is not supported by this evaluation system. The system is offered as a rental system or can be purchased. In case a system is purchased a sensor must be purchased seperately. For pricing, lead time and order information, please contact info@cmosis.com.

CMV2000 EVALUATION KIT

EVALUATION BOARDS

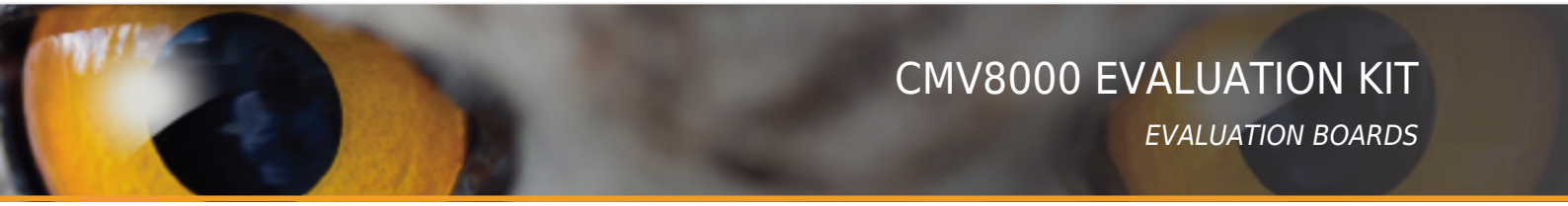
The CMV2000 eval kit can be used for testing and verifying the operation and image quality of the CMV2000 image sensor. The following components are present when the CMV2000 test system is delivered. CMV2000/4000 board with lens holder, Black metal casing with tripod holder, 2 CameraLink cables (2m), NI PCI1433 frame grabber card (inside PC), Lenovo ThinkCentre mini tower model + custom software, CD with documentation (including schematics and VHDL code) and software. The systems allows the users to evaluate all aspects of the CMV2000 with full access to the sensor registers. Single or multiple image grabbing and saving is possible in multiple formats. Color processing is not supported by this evaluation system. The system is offered as a rental system or can be purchased. In case a system is purchased a sensor must be purchased seperately. For pricing, lead time and order information, please contact info@cmosis.com.



CMV4000 EVALUATION KIT

EVALUATION BOARDS

The CMV4000 eval kit can be used for testing and verifying the operation and image quality of the CMV4000 image sensor. The following components are present when the CMV4000 test system is delivered. CMV2000/4000 board with lens holder, Black metal casing with tripod holder, 2 CameraLink cables (2m), NI PCI1433 frame grabber card (inside PC), Lenovo ThinkCentre mini tower model + custom software, CD with documentation (including schematics and VHDL code) and software. The systems allows the users to evaluate all aspects of the CMV4000 with full access to the sensor registers. Single or multiple image grabbing and saving is possible in multiple formats. Color processing is not supported by this evaluation system. The system is offered as a rental system or can be purchased. In case a system is purchased a sensor must be purchased seperately. For pricing, lead time and order information, please contact info@cmosis.com.



CMV8000 EVALUATION KIT

EVALUATION BOARDS

The CMV8000 eval kit can be used for testing and verifying the operation and image quality of the CMV8000 image sensor. The following components are present when the CMV8000 test system is delivered. CMV8000 based camera with USB 2.0 interface with lens holder, power cable and adapter, C-mount lens holder, USB cable, USB stick with documentation (including schematics and VHDL code) and software. The system allows the user to evaluate all aspects of the CMV8000 with full access to the sensor registers. Single or multiple image grabbing and saving is possible in multiple formats. Color processing is not supported by this evaluation system. The system is offered as a rental system or can be purchased. In case a system is purchased a sensor must be purchased seperately. For pricing, lead time and order information, please contact info@cmosis.com.

CMV12000 EVALUATION KIT

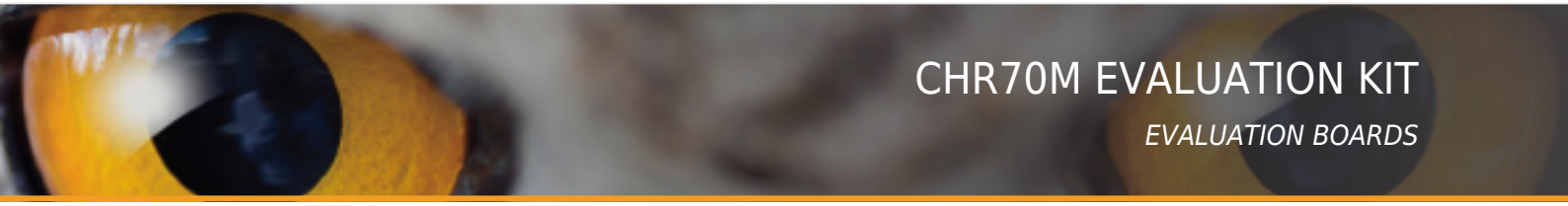
EVALUATION BOARDS

The CMV12000 eval kit can be used for testing and verifying the operation and image quality of the CMV12000 image sensor. The following components are present when the CMV12000 test system is delivered. CMV12000 board with lens holder and banana-plug power cable, Nikon F-mount lens AF Nikkor 50mm f/1.8D, Acrylic bottom and top plate with rubber feet, 2 CameraLink cables (2m), NI PCI1433 frame grabber card (inside PC), Lenovo ThinkCentre mini tower model + demo software, CD with documentation (including schematics and VHDL code) and software. The system allows the user to evaluate all aspects of the CMV12000 with full access to the sensor registers. Single or multiple image grabbing and saving is possible in multiple formats. Color processing is not supported by this evaluation system. The system is offered as a rental system or can be purchased. In case a system is purchased a sensor must be purchased seperately. For pricing, lead time and order information, please contact info@cmosis.com.

CMV20000 EVALUATION KIT

EVALUATION BOARDS

The CMV20000 eval kit can be used for testing and verifying the operation and image quality of the CMV20000 image sensor. The following components are present when the CMV20000 test system is delivered. CMV20000 board with lens holder, Nikon F-Mount lens AF Nikkor 50mm f/1.8D, Acrylic bottom and top plate, 2 CameraLink cables (2m), NI PCI1433 frame grabber card (inside PC), Lenovo ThinkCentre mini tower model + demo software, CD with documentation (including schematics and VHDL code) and software. The system allows the user to evaluate all aspects of the CMV20000 with full access to the sensor registers. Single or multiple image grabbing and saving is possible in multiple formats. Color processing is not supported by this evaluation system. The system is offered as a rental system or can be purchased. In case a system is purchased a sensor must be purchased seperately. For pricing, lead time and order information, please contact info@cmosis.com.



CHR70M EVALUATION KIT

EVALUATION BOARDS

The CHR70M eval kit can be used for testing and verifying the operation and image quality of the CHR70M image sensor. The following components are present when the CHR70M test system is delivered. CHR70M board with lens holder, metal casing, power cable, Nikon Lens Nikkor AF 50mm f/1.8D, 2 CameraLink cables (2m), NI PCI1433 frame grabber card (inside PC), Lenovo ThinkCentre mini tower model + software, CD with documentation (including schematics and VHDL code) and software. The system allows the user to evaluate all aspects of the CHR70M with full access to the sensor registers. Single or multiple image grabbing and saving is possible in multiple formats. Color processing is not supported by this evaluation system. The system is offered as a rental system or can be purchased. In case a system is purchased a sensor must be purchased seperately. For pricing, lead time and order information, please contact info@cmosis.com.

CUSTOM PRODUCTS

CUSTOM SOLUTIONS

CMOSIS provides innovative turnkey image sensor solutions based on in-house design, characterization and qualification facilities for image sensor research, development and volume production. With our strong technology portfolio we optimize your image sensor solution to fit your exact needs and offer state-of-the art performance.

Why choosing a custom solution?

- Create a unique product:
  - Differentiating compared to existing solution and competition
  - Outperforming off the shelf solutions
  - Perfect match with your overall system needs
- Long term availability:
- Control of supply chain

Our key technology offerings:

- Global shutter pixels
- High speed read out and data conversion (array and line scan)
- High Resolution
- Large area sensors (up to wafer-scale)
- Low-noise, HDR pixels for low light imaging and professional imaging applications
- Backside Illumination (BSI) for (E)UV and visible range
- TDI imaging
- Miniature camera modules for endoscopic applications
- Ceramic and COB packaging options (PGA, BGA, CSP, …)
- Custom glass lid coatings, filters
- Extended environmental testing including industrial, space and automotive qualifications

Sensor development takes place in several phases, with milestones and review meetings in between. A typical development flow consists of:

- Specification review and architectural study
- IC layout and verification
- Design of custom packages and cover glass
- Device prototyping
- Device characterization and qualification
- Camera design-in support
- Volume production

The development time and costs depend on the image sensor complexity. During development, the customer is in direct contact with the development team.

If you like to discuss a custom CMOS image sensor project with us please contact us by phone of by e-mail at info@cmosis.com.

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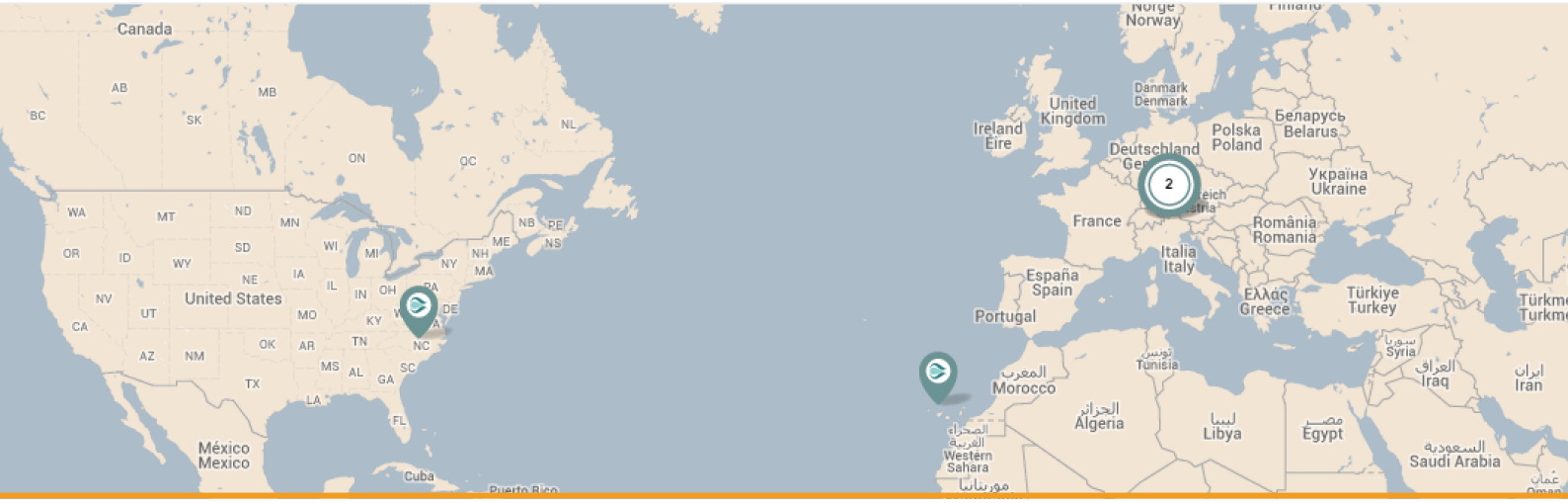

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