AWAIBA

a CMOSIS company

product catalogue

INDEX

www.awaiba.com
info@awaiba.com

Designed by Márcio Gouveia | facebook.com/marciogouveiadesign

AWAIBA
a CMOSIS company

INTRO

ABOUT AWAIBA

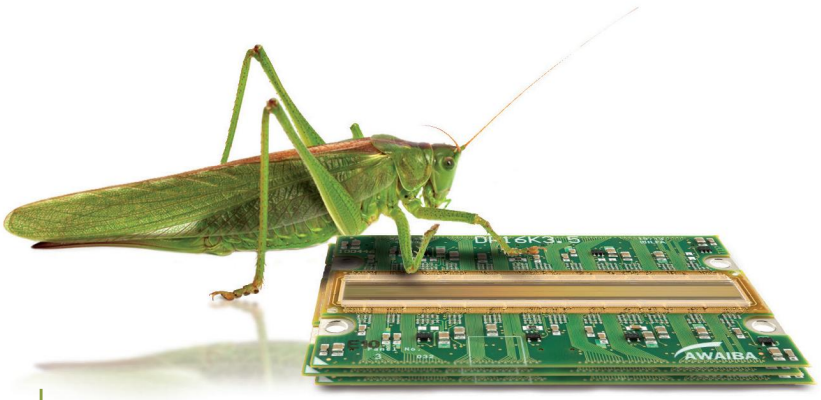
AWAIBA is part of the CMOSIS International Holding, which focus on high performance and specialized CMOS image sensor products. Awaiba's headquarters are in Yverdon Switzerland, with subsidiaries in Nürnberg, Germany and Funchal, Portugal. Since AWAIBA's incorporation in 2004, AWAIBA has continuously grown, with a strong focus on its customer's needs, product quality and innovation. AWAIBA's team of highly skilled professionals follow the joint goal of realizing new applications with AWAIBA's customers and of providing the technologies needed for adding more value to vision, and ultimately, to improve the lives of the end users of AWAIBA´s products.

AWAIBA offers standard off the shelf products in the field of high-speed, high resolution line scanning for quality inspection and scientific applications, as well as on minimal form factor image sensor and camera modules for medical endoscopy. In both application fields, AWAIBA is proud to be the technology leader and to continuously provide new, innovative and unprecedented solutions to the most demanding imaging applications.

As well as the standard products, AWAIBA also offers customer specific image sensor development and the production, thereof, to its customers. Customer specific products are indicated when a customer needs a unique feature in the image sensor, which is not commonly available on the free market or within AWAIBA's standard products, but which is necessary in order to allow the application. Furthermore, custom specific developed sensors may protect the customers from product piracy and copying, an increasingly important threat in the highly competitive imaging markets. AWAIBA provides a one stop shop solution for custom designed image sensors, test qualification and the mass production thereof. Even having an ASIC product, AWAIBA's customers do not need to worry about the semiconductor manufacturing chain but will be able to buy a final tested and qualified product.

AWAIBA operates in a fabless business model which means that AWAIBA can chose the best suited semiconductor foundry for each project. AWAIBA offers a wide range of CMOS image sensors, optimized processes and technology nodes currently down to 90nm feature size. Besides the image sensor process, AWAIBA works with world leading technologies in wafer level packaging and wafer level optics integration.

LINE SCAN SENSORS

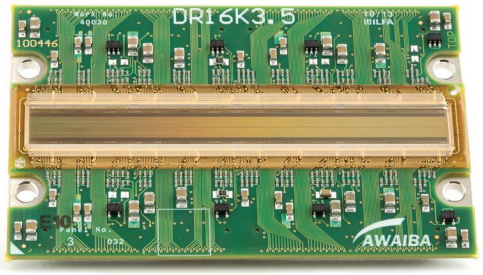


DRAGSTER

1.1 DRAGSTER FAMILY PRODUCT

Designing high-speed high resolution line-scan sensors was always at the core of AWAIBA's development activities. Repeatedly, AWAIBA has set a benchmark in the resolution, speed and sensitivity of its custom line scan sensor design. With the Dragster series of digital line scan sensors, AWAIBA offers the most complete family of line-scan sensors available in the market.

All sensors share the same electrical interface and are 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 due to their simple, all digital interface.



Dragster Scanner

MAIN SPECIFICATIONS

Resolution	2K to 24 K	Operating Temperature	0ºC - 50ºC
Pixel Depth	13 bit	Responsivity nominal gain	77 DN/nJ/cm2 @12bit
Pixel Size	7 x 7 um or 3.5 x 3.5 um	Full Well Capacity	46
Fill Factor	100 %	Dynamic Range	68 dB
Max Frame Rate	80 kScan/s	DSNU / PRNU Rms	4 DN / 0.7 %
Data Output	Tap Parallel LVCMOS TTL	Temporal Noise Dark Rms	2 DN
Chroma	Black&White or RGB color	Packages	LCC or Invar
Power Consumption	400 mW / 2k pixels	Conformity	RoHS

ORDERING INFORMATION (how to order)

Example: DR -2x 2k -7 -RGB -LCC -No glass

DR - [2 X] - [2 K] - [7] - [RGB] - [LCC] - [No glass]

Number of lines
1 (leave empty)
2

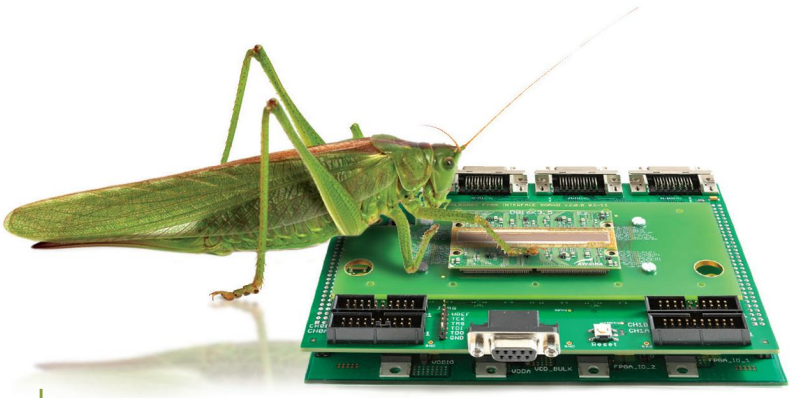
Resolution
2
4
6
8
12
16
24

Pixel size
3.5
7

Colour
B&W (leave empty)
RGB

Package
INVAR (leave empty)
LCC

Glass options
2 sided ARC (leave empty)
No glass

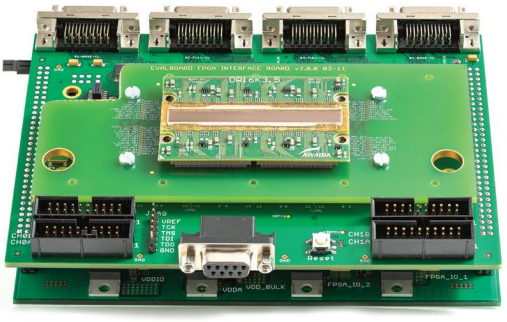


LINE SCAN **EVALUATION SYSTEMS**

DRAGSTER

1.1.1 DRAGSTER EVALUATION BOARD

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 sensor operation using an FPGA to define the state machine timings. It acquires data synchronously and multiplexes that data up to 2 Camera-Link Full interfaces.
Over an RS232 serial interface, the user can have access to the state machine configuration and all sensor registers. However, it's not possible to read back those sensor registers or state machine's integration time and line period. Please refer to the serial communication section for further details of the serial communication protocol.



Dragster Evaluation Board

MAIN SPECIFICATIONS

PC Interface Protocol	4X Camera Link
Programmable Unit	FPGA - XILINX Spartan 3
Power Supply	12 V
Dimensions (mm)	165 x 120 x 40
Sensors	1x Dragster

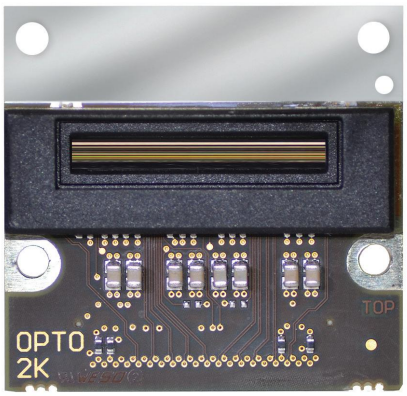
Product Part Number	Eval-Board-Dragster-2xCL

LINE SCAN **SENSORS**

ORION

1.2 ORION FAMILY PRODUCT

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 from the photo-diode, the conversion capacitance can be configured over SPI interface. The larger conversion capacitance, resulting in a full well capacity of 300ke provides outstandingly high SNR. The smaller conversion capacitance, resulting in a full well capacity of 30ke- provides 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.
To enhance dynamic range, multiple non destructive readouts are possible.



Orion Scanner

MAIN SPECIFICATIONS

Resolution	1K to 2K	Operating Temperature	0ºC - 50ºC
Pixel Depth	13 bit	Responsivity nominal gain	211 DN/nJ/cm2 @12bit
Pixel Size	10 x 10 um or 10 x 200	Full Well Capacity	30 to 300 Ke-
Fill Factor	100 %	Dynamic Range	69 dB
Max Frame Rate	70 kScan/s	DSNU / PRNU Rms	2 DN / 2,4 %
Data Output	Digital LVDS bit serial	Temporal Noise Dark Rms	2 DN
Chroma	Black&White	Packages	Invar / BGA
Power Consumption	400 mW	Conformity	RoHS

ORDERING INFORMATION (how to order)

Example: ORION-2k-BGA-NOGLASS

ORION – [2] K – [BGA] – [No glass]

Resolution
1
2
4

Package
INVAR (leave empty)
BGA

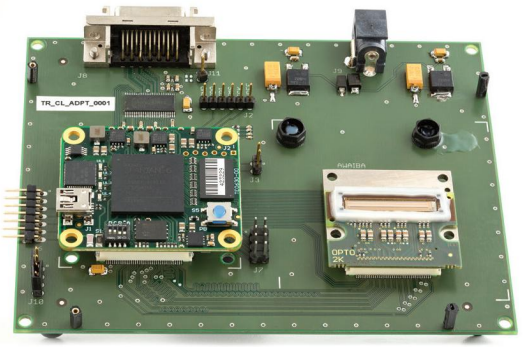
Glass options
2 sided ARC (leave empty)
No glass

LINE SCAN **EVALUATION SYSTEMS**

ORION

1.2.1 ORION EVALUATION BOARD

This evaluation system features a highly configurable hardware which enables an easy setup of Awaiba's Orion line-scan family for a sensor evaluation and provides full control over all sensor registers and readout timings. Image data is transferred to a frame grabber over CameraLink interface. Any frame grabber that supports at least a camera link base configuration can directly acquire data from any ORION version. Over a USB2 interface the user can have access to the state machine configuration and all sensor registers.



Orion Evaluation Board

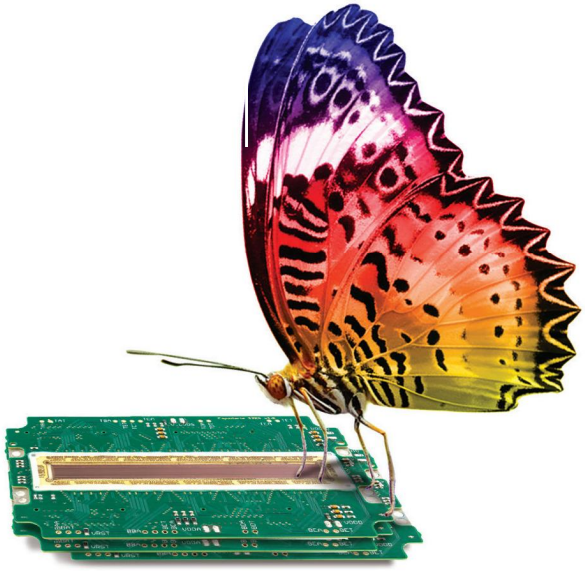
MAIN SPECIFICATIONS

PC Interface Protocol	1X Camera Link
Programmable Unit	FPGA - XILINX Spartan 6
Power Supply	USB2 5V
Dimensions (mm)	40 x 47 x 23
Sensors	1x ORION

Product Part Number	Eval-Orion-trz-cl

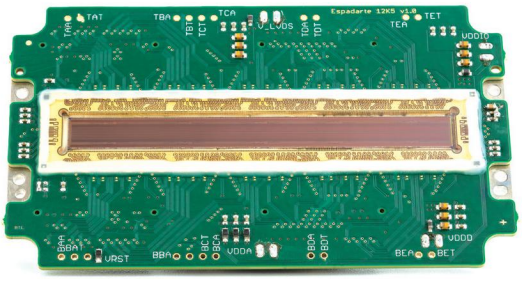
LINE SCAN **SENSORS**

4LS



1.3 4LS FAMILY PRODUCT

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 slower scanning speed applications. 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 TDA. The Colour version which offers Red Green Blue and Clear channels allows to combine the colour information with NIR information, revealing otherwise hidden details.



4LS sensor

MAIN SPECIFICATIONS

Resolution	2.5k; 5k; 7.5k; 10k; 15k	Operating Temperature	0ºC - 50ºC
Pixel Depth	12 bit	Responsivity	10,DN/nJ/cm2 @12bit
Pixel Size	5.6 x 5.6 um	Full Well Capacity	56ke-
Fill Factor	89.00%	Dynamic Range	62 dB
Data Output	LVDS	DSNU / PRNU Rms	16 DN / 1 %
Chroma	B&W / RGB+clear	Temporal Noise Dark Rms	2.5 DN
Power Consumption	1370 mW / per 2.5k segment	Packages	Invar module / BGA
		Conformity	RoHS

ORDERING INFORMATION (how to order)

Example: 4LS-15k-7-RGBC-BGA-No glass

4LS – [15] K – [5.6] – [RGBC] – [BGA] – [No glass]

Resolution
2.5
5
7.5
10
15

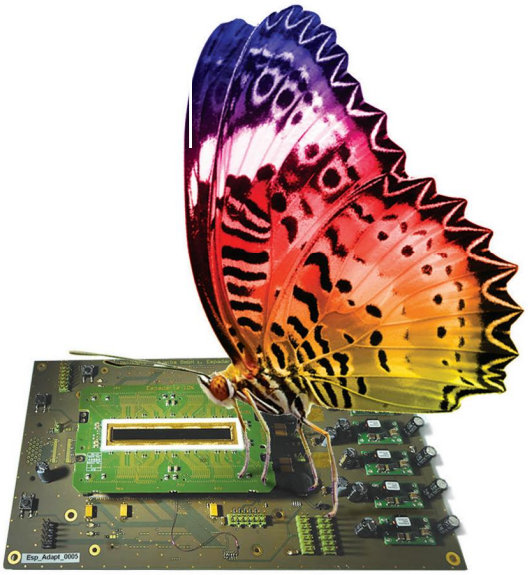
Pixel size
5.6

Colour
B&W (leave empty)
RGBC
RGB-IR

Package
INVAR (leave empty)
BGA

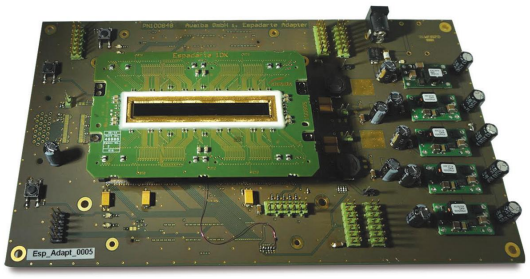
Glass options
2 sided ARC glass (leave empty)
No glass

LINE SCAN **EVALUATION SYSTEMS**



1.3.1 4LS EVALUATION BOARD

The evaluation system features a highly configurable hardware which enables an easy setup of 4LS linescan family for a quick sensor evaluation.
Image data is transferred through USB3. The system controls sensor operation using an FPGA to define the state machine timings, it acquires data synchronously and multiplexes that data up to the USB3 interface.



4LS EVALUATION BOARD

MAIN SPECIFICATIONS

PC Interface Protocol	USB3
Programmable Unit	FPGA - XILINX Spartan 6
Power Supply	5 V
Dimensions (mm)	165 x 120 x 40
Sensors	1x 4LS

Product Part Number	Eval-4LS-2xEFM02-usb3

AREA SCAN **SENSORS**

NANEYE®

2.1 NANEYE FAMILY PRODUCT

The **NanEye 2D and NanEye Stereo** sensors provide 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 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's most compact digital camera.

MAIN SPECIFICATIONS

Resolution	62.5KP - 250(H) x 250(V)	Responsivity	8 DN/nJ/cm2
Pixel Depth	10 bit	Full Well Capacity	10ke-
Pixel Size	3 x 3 um2	Dynamic Range	42 dB
Shutter Type	Rolling Shutter	FPN / PRNU	< 0.5% / < 1 % (software corrected)
Frame Rate	44 FPS	Temporal Noise Dark Rms	1.2 DN
Data Output	10 bit digital LVDS	Footprint including lens	1.0 x 1.0 x 1.7 mm
Chroma	RGB / BW	Lens Options Focal Number	F#4 F#2.7 F#6 F# 2.8
Power Consumption	Nominal supply 2.1V - 4.2 mW	Lens Field of View	90deg. / 120deg
Operating Temperature	0C° - 60°C	Conformity	RoHS

ORDERING INFORMATION

Example: NanEye2D_B&W_FOV90_F2.7 _1m_NoPaint_bended

NanEye2D – B&W – FOV90 – F2.7 – BGA – 1m – NoPaint – Bended

Name
NanEye2D
NanEye_STEREO

Colour
B&W
RGB

Lens field of view
No_Lens (leave empty)
90
120

F-Number
2.7
2.8
4.0
6.0

Package
1x4 if void
BGA

Cable length
15cm
1m
2m
3m
No Cable

Sidewall Paint
No_paint
Black-Painted (leave empty)

Cable bend
Bended
No_bend

AREA SCAN **EVALUATION SYSTEMS**

NANEYE®

2.1.1 NANOUSB2

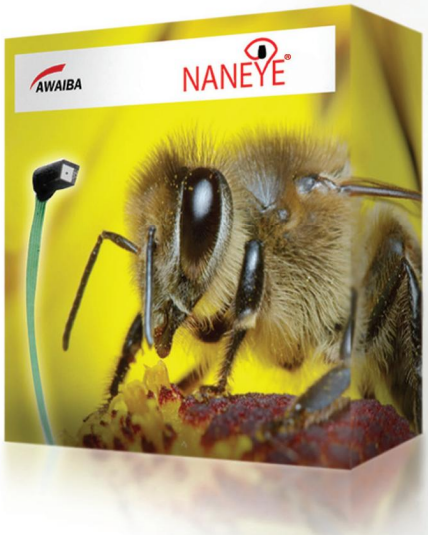
The base station is the hardware between the camera and the PC and does the deserialisation of the bit serial LVDS data stream coming from the NanEye sensors and translates it to a USBII protocol that will interface over a standard USBII connection to a PC. The supplied viewer software controls the NanEye camera, and displays the video images. The software gives full control over all sensor settings and allows to test different image correction and enhancement algorithms, such as corrections for offset and gain error, colour reconstruction, etc.

Naneye Evaluation System

MAIN SPECIFICATIONS

PC Interface Protocol	USB2
Programmable Unit	FPGA - XILINX Spartan 3E
Power Supply	USB2 5V
Dimensions (mm)	40 x 8x 5
Sensors	1x NanEye

Product Part Number	NanoUSB2.2



AREA SCAN **EVALUATION SYSTEMS**

NANEYE®

2.1.2 NANEYE FIBER LIGHT SOURCE

The evaluation unit with combined fibre light source provides the same functionality as the NanoUSB2 evaluation unit, however it integrates an LED powered white light fibre coupled illumination source. The source can be controlled manually or over the USB interface. For fast and easy evaluation the NanEye sensor is assembled together with a POF light guide in a miniature tip and can be handled over a 2m long lumen. This kit is ideal to perform fast concept validations and feasibility set-ups without the need to worry about illumination and electronics integration.

Naneye fiber light

MAIN SPECIFICATIONS

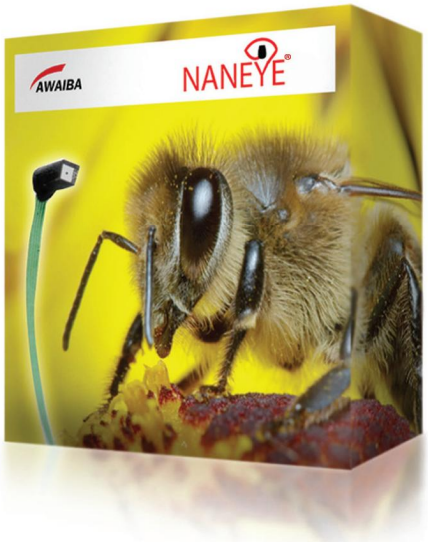
PC Interface Protocol	USB2
Programmable Unit	FPGA - XILINX Spartan 3E
Power Supply	USB2 5V
Dimensions (mm)	40 x 8x 5
Sensors	1x NanEye

ORDERING INFORMATION

Example: NanoUSB_B&W_FOV90_Lens2.7_USB3

NanoFiber- B&W - FOV90 - Lens2.7 - USB3

Colour	Lens field of view	F-Number	USB
B&W	90	2.7	USB2
RGB	120	2.8	USB3
		4.0	
		6.0	



AREA SCAN **EVALUATION SYSTEMS**

NANEYE®

2.1.3 NANO USB3

The nanoUSB3 evaluation board performs the same as the NanoUSB2, however using a USB3 type interface and permitting the synchronized operation of up to 4 cameras, which makes it ideal to use together with NanEye Stereo, or arrays of NanEye_2D cameras.

Nano USB3

MAIN SPECIFICATIONS

PC Interface Protocol	USB3
Programmable Unit	FPGA - XILINX Spartan 6
Power Supply	USB3 5V
Dimensions (mm)	80 x 40 x 5
Sensors	1 - 4x NnEye_2D : 2x NanEye_Stereo : 2x NanEye GS : 1x NanEye GS Stereo

Product Part Number	NanoUSB3

AREA SCAN **SENSORS**

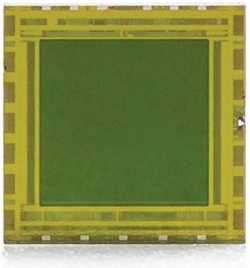
NANEYE® GS

2.2 NANEYE GS FAMILY PRODUCT

NanEye_GS and NanEye_GS_Stereo consists of 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 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 evaluation purpose small size lens modules for single sensor or Stereo Vision configurations are available.

Naneye GS stereo



Naneye GS

MAIN SPECIFICATIONS

Resolution	410KP - 640(H) x 640(V)	Operating Temperature	0° - 60°C
Pixel Depth	10 bit	Responsivity	12 DN/nJ/cm2
Pixel Size	3.6 x 3.6 um2	Full Well Capacity	12ke-
Shutter Type	Global Shutter	Dynamic Range	42 dB
Frame Rate	100 - 50 - 25 FPS	DSNU / PRNU	4 DN / < 2 %
Data Output	10 bit digital LVDS	Total QE	40 %
Chroma	RGB / BW	Footprint	3.4 x 3.4 x 0.5 mm
Power Consumption	50 mW	Conformity	RoHS

ORDERING INFORMATION

Example: NanEye_GS_RGB_Omnetics_Lens30_20cmCable

NanEye_GS - RGB - Omnetics - Lens30 - 20cm Cable

Name
NanEye_GS
NanEye_GS_STEREO

Colour
B&W (leave empty)
RGB

Adapter Board
No adapter (leave empty)
Omnetics
Molex

Lens FOV
No lens (leave empty)
Lens30
Lens70
Lens120

Cable
No Cable (leave empty)
20cm Cable

AREA SCAN **EVALUATION SYSTEMS**

NANEYE® GS

2.2.1 IPOKR CAMERA BY IDULE

This easy to use camera product allows the evaluation of the NanEye_GS sensor in a "plug and play" camera configuration and the acquisition of quick and hassle free outstanding B&W or colour images from the miniaturized camera head. It is ideal for a customer wanting to explore the potential of the small size sensor without directly interfacing to the sensors and its configuration registers.

Naneye Evaluation System

MAIN SPECIFICATIONS

PC Interface Protocol	USB3
Programmable Unit	FPGA - XILINX Spartan 6
Power Supply	USB3
Dimensions (mm)	40 x 8x 5
Sensors	1x NanEye GS

Product Part Number	NanEyeGS_USB3_Camera_ ID04MB-IP-U_RGB / NanEyeGS_USB3_Camera_ ID04MB-IP-U_B&W

NANOUSB3 BOARD

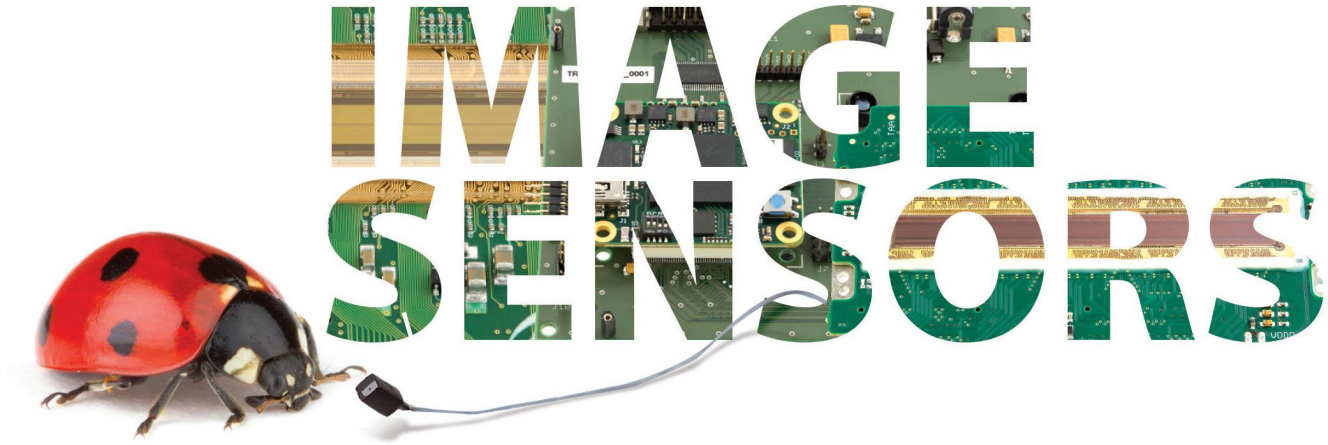
For the customer wishing to explore all sensor registers and functional Modes the NanOUSB3 interface board can be used with up to two NanEye_GS sensors operating in parallel. This evaluation kit gives direct access to all sensor registers and sensor operational modes.

Nano USB3

MAIN SPECIFICATIONS

PC Interface Protocol	USB3
Programmable Unit	FPGA - XILINX Spartan 6
Power Supply	5V
Dimensions (mm)	40 x 8x 5
Sensors	1x NanEye GS Stereo 1 - 2x NanEye_GS

Product Part Number	NanoUSB3



AWAIBA
a CMOSIS company

ADDRESSES

PORTUGAL
AWAIBA Lda
Madeira Tecnopolo
9020-105 Funchal, Madeira
+351 291 723 124

GERMANY
AWAIBA GmbH
Rollnerstrasse 110a
90408 Nürnberg
+49 (0) 91121 521 780
+49 (0) 91121 521 789

SWITZERLAND
AWAIBA HOLDING SA
Rue Galilee 7
1400 Yverdon-Les-Bains
+41 (0)24 510 38 00

info@awaiba.com

http://www.awaiba.com