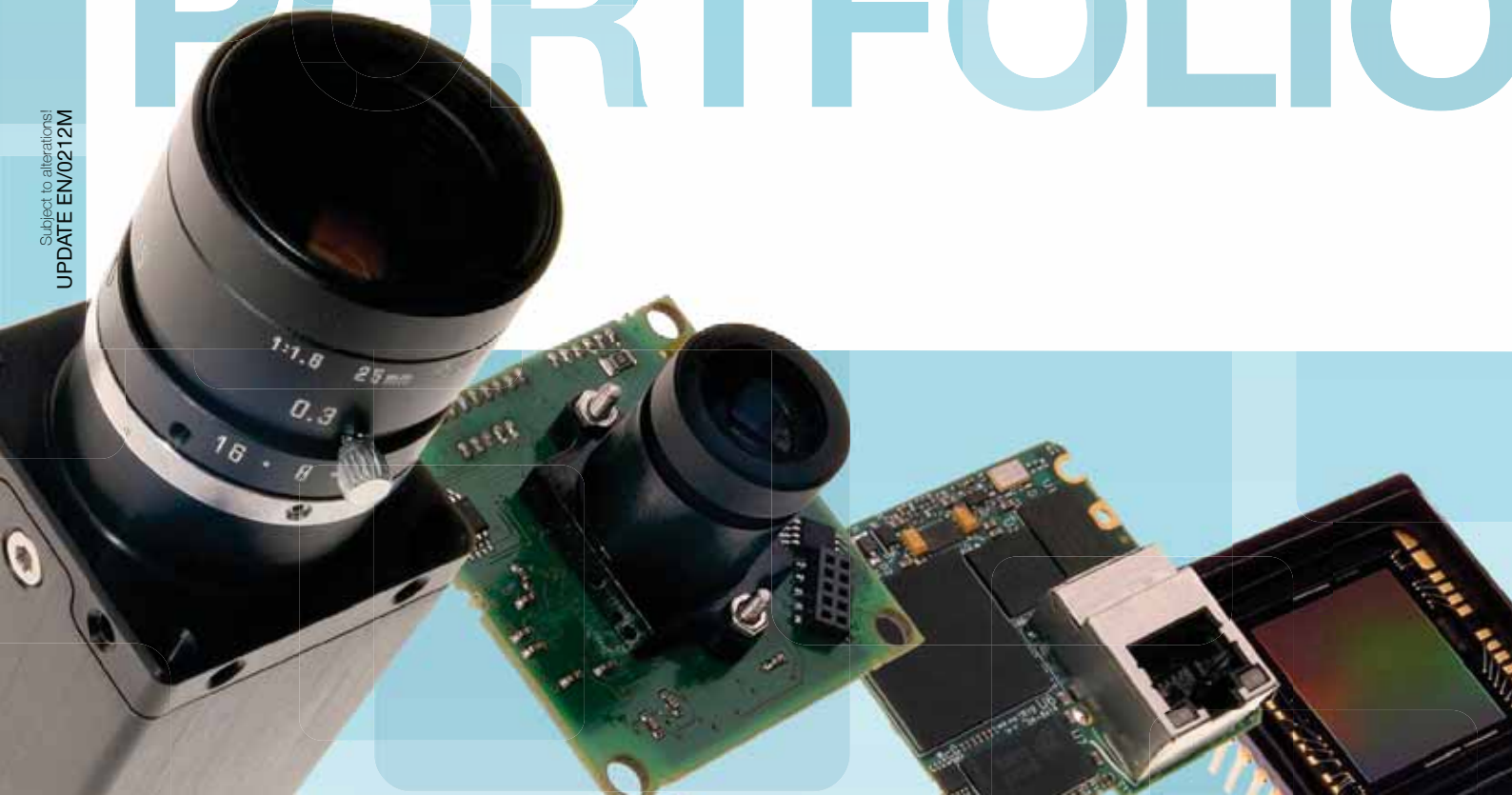


FRAMOS

IMAGING PRODUCT PORTFOLIO

image sensors · industrial cameras · image acquisition · accessories · software & tools



FRAMOS Group

Your partner for Imaging.

Hello and welcome to FRAMOS,

for the past 30 years we have been active in the field of image processing, starting as specialists in image sensors. FRAMOS has developed into a system partner for imaging and today we cover the entire spectrum of image processing components including sensors, cameras, lighting, cables, and lenses.

As a strong partner in Europe we work directly with our main brands, focusing on qualified engineering support for our customers. Our range of services starts from small modification to full scale developments at the Hardware and Software level.

FRAMOS is a Pan-European company. Our branches in Germany, UK, France and Italy offer technical support, training and logistics services to your doorstep. So, please contact your local representative to discuss your current projects and challenges – we are looking forward to helping you.

The product portfolio you are holding in your hands gives you a short overview of our product range and services. Please use this as a starting point for further discussions and do not hesitate to call/email/fax us any requests you may have. I am confident that our team at FRAMOS will find the right solution for you.

Have fun reading.

Sincerely yours,
Dr. Andreas Franz
CEO
FRAMOS



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Image Sensors	page 4
Interfaces	page 10
Industrial Cameras	page 12
GigE Converter	page 22
Frame Grabber	page 24
Lenses, Cables, Lighting	page 26
Software & Tools	page 40
Engineering	page 45



Image Sensors

CCD & CMOS

FRAMOS supplies a comprehensive range of CCD and CMOS sensors. Our portfolio includes monochrome and colour sensors, many different sensor sizes and frame rates. For CMOS sensors we can provide High Speed Sensors with framerates up to 2500fps. You can choose between Rolling, Global or Half Global Shutter. With resolutions from VGA to 14 mega pixel and various technologies including Interlaced, Progressive Scan and other methods. We have close relationships to our suppliers in order to provide you fast and comprehensive support for all your questions and challenges in implementing the sensor, and we are able to provide detailed datasheets and application manuals. Our experienced engineering team will be pleased to assist you in finding the ideal sensor for your application.

We can also offer you extensive support in

- Sensor Coating

For specific applications which need to detect regions outside the visible wavelength area, e.g. in the UV or X-Ray area, we can offer fluorescent coatings for your imager

- Sensor Calibration

Our knowledge in image sensors and optics allows us to precisely calibrate your sensor specifically for the optics used. Leveraging the know how of our specialised partners we are able to optimise your system for image acquisition and processing, eliminating unwanted effects directly inside the camera

- Cover Glass Removal

For image applications such as laser beam profiling you will need to remove the cover glass of the image sensor. Please use our cover glass removal service for a number of CCD and CMOS sensors

If you need detailed support with your camera development, we can offer you excellent consulting and technical assistance:

sales@framოს.eu or support@framოს.eu

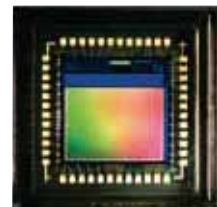
SONY

- High quality CCD + CMOS sensors
- VGA up to 8 mega pixel
- Outstanding low light performance



Aptina IMAGING

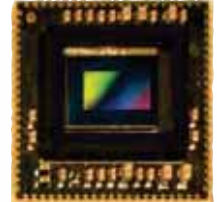
- High-end CMOS sensors
- VGA up to 14 mega pixel
- High dynamic range up to 120 dB



viimagic

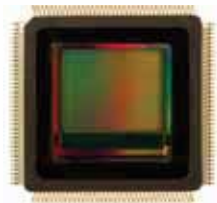
capture the world in HD

- Full HD CMOS sensor
- 90 fps at full resolution
- High dynamic mode (120dB)



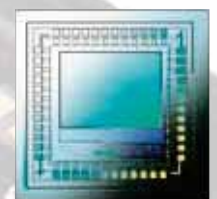
photon focus

- Monochrome & color CMOS image sensors
- Perfect fit for embedded HDR NIR applications



Customer Specific Sensors

We also offer you specific sensor development with support of our partners. Please ask!



SONY Image Sensors

Sony provides an extensive range of CCD and CMOS sensors suitable for applications such as industrial, security or medical imaging. Sony is well known for the highest quality levels and know-how in CCD and CMOS production and now has the biggest market share on CCD sensors worldwide. FRAMOS is working with Sony already since 1982

and has become the biggest partner for sensors in the European market. FRAMOS offers sockets and peripheral ICs for various sensors. We can provide you with technical information and support for development projects. As a result of our large stock and warehouse capacity we can offer you fast delivery.

SONY Area CCD sensors - Interlaced

Product	Sensor Size	Effective Pixel	Pixel Size	TV System	Package	Pins	Color / Mono	Specials *
ICX226AK	1/4"	510 x 492	7.15µm x 5.55µm	NTSC	Plastic DIP	14	Color	
ICX227AK	1/4"	500 x 582	7.3µm x 4.7µm	PAL	Plastic DIP	14	Color	
ICX228AK	1/4"	768 x 494	4.75µm x 5.55µm	NTSC	Plastic DIP	14	Color	
ICX228AL	1/4"	768 x 494	4.75µm x 5.55µm	EIA	Plastic DIP	14	Mono	Super HAD
ICX229AK	1/4"	752 x 582	4.85µm x 4.65µm	PAL	Plastic DIP	14	Color	
ICX229AL	1/4"	752 x 582	4.85µm x 4.65µm	CCIR	Plastic DIP	14	Mono	Super HAD
ICX238AKE	1/6"	768 x 494	3.200µm x 3.725µm	NTSC	Ceramic SON (LCC)	12	Color	
ICX239AKE	1/6"	752 x 582	3.275µm x 3.150µm	PAL	Ceramic SON (LCC)	12	Color	
ICX254AL	1/3"	510 x 492	9.6µm x 7.5µm	EIA	Plastic DIP	16	Mono	EXview
ICX255AL	1/3"	500 x 582	9.8µm x 6.3µm	CCIR	Plastic DIP	16	Mono	EXview
ICX258AK	1/3"	768 x 494	6.35µm x 7.40µm	NTSC	Plastic DIP	16	Color	EXview
ICX258AL	1/3"	768 x 494	6.35µm x 7.40µm	EIA	Plastic DIP	16	Mono	EXview
ICX259AK	1/3"	752 x 582	6.50µm x 6.25µm	PAL	Plastic DIP	16	Color	EXview
ICX259AL	1/3"	752 x 582	6.50µm x 6.25µm	CCIR	Plastic DIP	16	Mono	EXview
ICX278AK	1/4"	768 x 494	4.75µm x 5.55µm	NTSC	Plastic DIP	14	Color	EXview
ICX278AL	1/4"	768 x 494	4.75µm x 5.55µm	EIA	Plastic DIP	14	Mono	EXview
ICX279AK	1/4"	752 x 582	4.85µm x 4.65µm	PAL	Plastic DIP	14	Color	EXview
ICX279AL	1/4"	752 x 582	4.85µm x 4.65µm	CCIR	Plastic DIP	14	Mono	EXview
ICX408AK	1/3"	768 x 494	6.35µm x 7.40µm	NTSC	Plastic DIP	16	Color	Super HAD
ICX408AL	1/3"	768 x 494	6.35µm x 7.40µm	EIA	Plastic DIP	16	Mono	Super HAD
ICX409AK	1/3"	752 x 582	6.50µm x 6.25µm	PAL	Plastic DIP	16	Color	Super HAD
ICX409AL	1/3"	752 x 582	6.50µm x 6.25µm	CCIR	Plastic DIP	16	Mono	Super HAD
ICX418AKB	1/2"	768 x 494	8.4µm x 9.8µm	NTSC	Cer-DIP	16	Color	
ICX418AKL	1/2"	768 x 494	8.4µm x 9.8µm	NTSC	Cer-DIP	20	Color	
ICX418ALL	1/2"	768 x 494	8.4µm x 9.8µm	EIA	Cer-DIP	20	Mono	
ICX419AKB	1/2"	752 x 582	8.6µm x 8.3µm	PAL	Cer-DIP	16	Color	
ICX419AKL	1/2"	752 x 582	8.6µm x 8.3µm	PAL	Cer-DIP	20	Color	
ICX419ALL	1/2"	752 x 582	8.6µm x 8.3µm	CCIR	Cer-DIP	20	Mono	
ICX422AL	2/3"	768 x 494	11.6µm x 13.5µm	EIA	Cer-DIP	20	Mono	
ICX423AL	2/3"	752 x 582	11.6µm x 11.2µm	CCIR	Cer-DIP	20	Mono	
ICX428AKL	1/2"	768 x 494	8.4µm x 9.8µm	NTSC	Cer-DIP	20	Color	EXview
ICX428ALL	1/2"	768 x 494	8.4µm x 9.8µm	EIA	Cer-DIP	20	Mono	EXview
ICX429AKL	1/2"	752 x 582	8.6µm x 8.3µm	PAL	Cer-DIP	20	Color	EXview
ICX429ALL	1/2"	752 x 582	8.6µm x 8.3µm	CCIR	Cer-DIP	20	Mono	EXview
ICX632BKA	1/3"	510 x 492	9.6µm x 7.5µm	NTSC	Plastic DIP	16	Color	Super HAD II
ICX633BKA	1/3"	500 x 582	9.8µm x 6.3µm	PAL	Plastic DIP	16	Color	Super HAD II
ICX638BKA	1/3"	811 x 508	6.35µm x 7.40µm	NTSC	Plastic DIP	16	Color	Super HAD II
ICX639BKA	1/3"	795 x 596	6.50µm x 6.25µm	PAL	Plastic DIP	16	Color	Super HAD II
ICX642BKA	1/4"	510 x 492	7.15µm x 5.55µm	NTSC	Plastic DIP	14	Color	Super HAD II
ICX643BKA	1/4"	500 x 582	7.3µm x 4.7µm	PAL	Plastic DIP	14	Color	Super HAD II
ICX648BKA	1/4"	768 x 494	4.75µm x 5.55µm	NTSC	Plastic DIP	14	Color	Super HAD II
ICX649BKA	1/4"	752 x 582	4.85µm x 4.65µm	PAL	Plastic DIP	14	Color	Super HAD II
ICX658AKA	1/3"	768 x 494	6.35µm x 7.40µm	NTSC	Plastic DIP	16	Color	EXview
ICX658ALA	1/3"	768 x 494	6.35µm x 7.40µm	EIA	Plastic DIP	16	Mono	EXview
ICX659AKA	1/3"	752 x 582	6.50µm x 6.25µm	PAL	Plastic DIP	16	Color	EXview
ICX659ALA	1/3"	752 x 582	6.50µm x 6.25µm	CCIR	Plastic DIP	16	Mono	EXview

*= Super HAD CCD is a registered trademark of Sony Corporation. The Super HAD CCD is a version of Sony's high performance CCD HAD (Hole-Accumulation Diode) sensor with sharply improved sensitivity by the incorporation of a new semiconductor technology developed by Sony Corporation.

EXview HAD CCD is a registered trademark of Sony Corporation. EXview HAD CCD is a CCD that drastically improves light efficiency by including near infrared light region as a basic structure of HAD (Hole-Accumulation Diode) sensor.

Super HAD CCD II is a registered trademark of Sony Corporation. Super HAD CCD II is an enhancement of Super HAD CC

Further sensor specifications and prices on request!

Image Sensors

CCD & CMOS

SONY Area CCD sensors - Progressive Scan

Product	Sensor Size	Effective Pixel	Pixel Size	Frame Rate	Package	Pins	Color /Mono	Specials
ICX098BL	1/4"	659 x 494	5.6µm x 5.6µm	30 fps	Plastic DIP	14	Mono	
ICX098BQ	1/4"	659 x 494	5.6µm x 5.6µm	30 fps	Plastic DIP	14	Color	
ICX205AK	1/2"	1392 x 1040	4.65µm x 4.65µm	30 fps	Cer-DIP	20	Color	
ICX205AL	1/2"	1392 x 1040	4.65µm x 4.65µm	30 fps	Cer-DIP	20	Mono	
ICX252AQ	1/1.8"	2088 x 1550	3.45µm x 3.45µm	30 fps	Plastic DIP	20	Color	
ICX285AL	2/3"	1392 x 1040	6.45µm x 6.45µm	15 fps	Ceramic DIP	20	Mono	EXview
ICX285AQ	2/3"	1392 x 1040	6.45µm x 6.45µm	15 fps	Ceramic DIP	20	Color	EXview
ICX414AL	1/2"	659 x 494	9.9µm x 9.9µm	60 fps	Cer-DIP	22	Mono	
ICX414AQ	1/2"	659 x 494	9.9µm x 9.9µm	60 fps	Cer-DIP	22	Color	
ICX415AL	1/2"	782 x 582	8.3µm x 8.3µm	50 fps	Cer-DIP	22	Mono	
ICX415AQ	1/2"	782 x 582	8.3µm x 8.3µm	50 fps	Cer-DIP	22	Color	
ICX424AL	1/3"	659 x 494	7.4µm x 7.4µm	60 fps	Plastic DIP	16	Mono	
ICX424AQ	1/3"	659 x 494	7.4µm x 7.4µm	60 fps	Plastic DIP	16	Color	
ICX445AKA	1/3"	1296 x 966	3.75µm x 3.75µm	22.5 fps	Plastic DIP	24	Color (YeCyMgG)	EXview
ICX445AQA	1/3"	1296 x 966	3.75µm x 3.75µm	22.5 fps	Plastic DIP	24	Color	EXview
ICX445ALA	1/3"	1296 x 966	3.75µm x 3.75µm	22.5 fps	Plastic DIP	24	Mono	EXview
ICX614AKA	1/4"	659 x 494	5.6µm x 5.6µm	60fps	Plastic DIP	14	Color (YeCyMgG)	Super HAD
ICX614AQA	1/4"	660 x 494	5.6µm x 5.6µm	60fps	Plastic DIP	14	Color	Super HAD
ICX618AKA	1/4"	661 x 494	5.6µm x 5.6µm	60fps	Plastic DIP	14	Color (YeCyMgG)	EXview
ICX618AQA	1/4"	662 x 494	5.6µm x 5.6µm	60fps	Plastic DIP	14	Color	EXview
ICX618ALA	1/4"	663 x 494	5.6µm x 5.6µm	60fps	Plastic DIP	14	Mono	EXview
ICX625AQA	2/3"	2456 x 2058	3.45µm x 3.45µm	15 fps	Plastic DIP	28	Color	EXview, 2channel-readout
ICX625ALA	2/3"	2456 x 2058	3.45µm x 3.45µm	15 fps	Plastic DIP	28	Mono	EXview, 2channel-readout
ICX655AQA	2/3"	2456 x 2058	3.45µm x 3.45µm	9 fps	Plastic DIP	28	Color	EXview, 1channel-readout
ICX655ALA	2/3"	2456 x 2058	3.45µm x 3.45µm	9 fps	Plastic DIP	28	Mono	EXview, 1channel-readout

* = at full resolution

SONY Line CCD sensors

Product	Effective Pixel	Pixel Size	Maximum Data Rate	Sensitivity	Package	Pins	Color /Mono	Designed for
ILX511B	2048	14µm x 200µm	2 MHz	200 V/(lx·s)	Cer-DIP	22	Mono	barcode POS hand scanner / optical measuring
ILX551B	2048	14µm x 14µm	5 MHz	40 V/(lx·s)	Cer-DIP	22	Mono	facsimile, image scanner and OCR (B4 200dpi)
ILX553B	5150	7µm x 7µm	16 MHz	14.8 V/(lx·s)	Plastic DIP	22	Mono	DPPC, multifunction printers (A4, 600dpi)
ILX554B	2048	14µm x 56µm	2 MHz	240 V/(lx·s)	Cer-DIP	22	Mono	barcode POS hand scanner / optical measuring
ILX555K*	10680 x 3	3.5µm x 3.5µm	5 MHz	R1.5 V/(lx·s) G1.5 V/(lx·s) B1.3 V/(lx·s)	Plastic DIP	22	Color (RGB)	color image scanner (A4 at 1200dpi)
ILX751B	2048	14µm x 14µm	5 MHz	40 V/(lx·s)	Cer-DIP	22	Mono	facsimile, image scanner and OCR
ILX563A	3000	7µm x 100µm	2MHz	220 V/(lx·s)	SON	22	Mono	barcode POS hand scanner / optical measuring

* = on request

SONY Area CMOS sensors

Product	Sensor Size	Effective Pixel	Pixel Size	Frame Rate (at full resolution)	Shutter Type	Package	Color /Mono
IMX035LLR	1329 x 1049	1/3"	3.63µm x 3.63µm	10bit: 120fps / 12bit: 60fps	Rolling	152pin LGA	Mono
IMX035LQR	1329 x 1049	1/3"	3.63µm x 3.63µm	10bit: 120fps / 12bit: 60fps	Rolling	152pin LGA	RGB
IMX035LQZ	1329 x 1049	1/3"	3.63µm x 3.63µm	10bit: 120fps / 12bit: 60fps	Rolling	42pin LCC	RGB
IMX036LLR	2096 x1561	1/2.8"	2.5µm x 2.5µm	10bit: 60fps / 12bit: 15fps	Rolling / Global Reset Release	152pin LGA	Mono
IMX036LQR	2096 x1561	1/2.8"	2.5µm x 2.5µm	10bit: 60fps / 12bit: 15fps	Rolling / Global Reset Release	152pin LGA	RGB

Further sensor specifications and prices on request!

Image Sensors

CCD & CMOS



FRAMOS supplies a comprehensive range of high-quality CMOS Image Sensors from the leading manufacturer Aptina. Aptina's image sensors are available as stand-alone devices or complete camera-system-on-chip* devices with resolutions from VGA to multi-megapixel, with various pixel sizes and framerates.

Low cost, low power consumption and easy design-in makes these devices to ideal solutions for wide array of imaging applications. To

speed up your development time we can also offer you Aptina demo and head boards for all sensor types. The demo kit is a camera board enabling easy testing and characterisation of Aptina sensors. Each kit consists of a sensor headboard with lens, a USB2.0 interface board and includes USB cable, a tripod and software to test the performance and programming capabilities of the sensor.

Product	Resolution	Sensor Size	Pixel Size	Framerate (at full resolution)	Shutter Type	Output	Package	Color/Mono
MT9V011	640 x 480	1/4"	5.6µm x 5.6µm	30 fps	Rolling	10bit-parallel	IBGA	RGB
MT9V111	640 x 480	1/4"	5.6µm x 5.6µm	30 fps	Rolling	8bit-parallel	IBGA	RGB
MT9V114	648 x 488	1/13"	1.75µm	30 fps	Rolling	8bit-parallel	CSP	RGB
MT9V114 WLC	640 x 480	1/13"	1.75µm	30 fps	Rolling	10bit-parallel	25-BALL	RGB
MT9V117	640 x 480	1/6"	3.6µm x 3.6µm	60 fps	Rolling	8-10bit-parallel	CSP	RGB
MT9V124	640 x 480	1/13"	1.75µm x 1.75µm	30 fps	Rolling	8bit-serial LVDS	CSP	RGB
MT9V124 WLC	640 x 480	1/13"	1.75µm x 1.75µm	30 fps	Rolling	LVDS 12-bit packet (with 8-bit data)	25-BALL	RGB
MT9V126	680 x 512	1/4"	5.6µm x 5.6µm	25-30 fps	Rolling	10bit-parallel, NTSC/PAL	IBGA	RGB
MT9V127	680 x 512	1/4"	5.6µm x 5.6µm	25-30 fps	Rolling	10bit-parallel, NTSC/PAL	IBGA	RGB
MT9V128	680 x 512	1/4"	5.6µm x 5.6µm	25-30 fps	Rolling	10bit-parallel, NTSC/PAL	IBGA	RGB
MT9V129	680 x 512	1/4"	5.6µm x 5.6µm	25-30 fps	Rolling	10bit-parallel, NTSC/PAL	IBGA	RGB
MT9V022	752 x 480	1/3"	6.0µm x 6.0µm	60 fps	Global	10bit-serial and parallel	IBGA	RGB or Mono
MT9V024	752 x 480	1/3"	6.0µm x 6.0µm	60 fps	Global	10bit-serial and parallel	IBGA	RGB or Mono
MT9V032	752 x 480	1/3"	6.0µm x 6.0µm	60 fps	Global	10bit-serial and parallel	CLCC	RGB or Mono
MT9V034	752 x 480	1/3"	6.0µm x 6.0µm	60 fps	Global	10bit-serial and parallel	CLCC	RGB or Mono
MT9V131	640 x 480	1/4"	5.6µm x 5.6µm	30 fps	Rolling	10bit-parallel	CLCC	RGB
MT9V136	680 x 512	1/4"	5.6µm x 5.6µm	25-30 fps	Rolling	8/10-bit parallel, NTSC/PAL	CLCC	RGB
MT9V137	680 x 512	1/4"	5.6µm x 5.6µm	30 fps	Rolling	10bit-serial and parallel, NTSC/PAL	CLCC	RGB
MT9V138	680 x 512	1/4"	5.6µm x 5.6µm	25-30fps	Rolling	8bit/10bit-parallel, NTSC/PAL	CLCC	RGB
MT9V139	680 x 512	1/4"	5.6µm x 5.6µm	25-30 fps	Rolling	10bit-parallel, NTSC/PAL	CSP	RGB
MT9M001	1280 x 1024	1/2"	5.2µm x 5.2µm	30 fps	Rolling	10bit-serial	CLCC	Mono
MT9M032	1440 x 1080	1/4.5"	2.2µm x 2.2µm	30 fps	Rolling & Half Global	12bit	CLCC	RGB or Mono
MT9M031	1280 x 960	1/3"	3.75µm x 3.75µm	45 fps	Global	12bit/14bit-parallel	CLCC	RGB or Mono
MT9M021	1280 x 960	1/3"	3.75µm x 3.75µm	45 fps	Global	12bit-parallel	IBGA	RGB or Mono
MT9M034	1280 x 960	1/3"	3.75µm x 3.75µm	45 fps	Rolling	12bit-parallel or 12bit/14bit/20bit-serial	ILCC	RGB or Mono
MT9M024	1280 x 960	1/3"	3.75µm x 3.75µm	45 fps	Rolling	12bit-parallel or 12bit/14bit/20bit-serial	IBGA	RGB or Mono
MT9M131	1280 x 1024	1/3"	3.6µm x 3.6µm	15 fps	Rolling	10bit-parallel	CLCC	RGB
MT9M114	1296 x 976	1/6"	1.9µm x 1.9µm	24 fps	Rolling	10bit-serial and parallel	CSP	RGB
MT9M413	1280 x 1024	19.67mm	12.0µm x 12.0µm	500 fps	Global	10bit-digital	PGA	Mono
MT9D131	1600 x 1200	1/3.2"	2.8µm x 2.8µm	15 fps	Rolling & Half Global	10bit-serial	CLCC	RGB
MT9T031	2048 x 1536	1/2"	3.2µm x 3.2µm	12 fps	Rolling & Half Global	10bit-parallel	CLCC	RGB
MT9M440	2352 x 1728	20.43mm	7.0µm x 7.0µm	200 fps	Rolling	10bit-parallel	PGA	Mono
MT9P004	2592 x 1944	1/3.2"	1.75µm x 1.75µm	15 fps	Rolling & Half Global	12bit-serial/parallel	CSP	RGB
MT9P031	2592 x 1944	1/2.5"	2.2µm x 2.2µm	14 fps	Rolling & Half Global	12bit-parallel	ILCC	RGB or Mono
MT9P401	2592 x 1944	1/2.5"	2.2µm x 2.2µm	15-60 fps	Rolling & Half Global	12bit-parallel	ILCC	RGB
MT9J003	3856 x 2764	1/2.35"	1.67µm x 1.67µm	15 fps	Rolling & Half Global	12bit-serial/parallel	ILCC	RGB or Mono
MT9F002	4608 x 3288	1/2.3"	1.4µm x 1.4µm	13.7 fps	Rolling & Half Global	12bit-serial/parallel	ILCC	RGB
MT9H004	4928 x 3280	1.77"	4.78µm x 4.78µm	10.5 fps	Rolling	14bit	CLCC	RGB
AR0331	2048 x 1536	1/3"	2.2µm Apix™	30 fps	Rolling	12bit-serial/parallel	ILCC	RGB

WLC = waferlevel camera module

Image Sensors

CCD & CMOS

HDTV CMOS Sensors

capture the world in HD

Viimagic CMOS sensors are characterised by a dynamic range of over 120dB in nonlinear high dynamic range mode together with high performance and low energy requirements.

The monochrome sensor with 5µm x 5µm pixel size and 2/3-inch-format (integrated color filters optional) achieves high quality images in full HD 1080p (1920px x 1080px), with up to 90 full fps.

HDTV CMOS Sensoren

capture the world in HD

Product	Resolution	Sensor Size	Pixel Sizegröße	Frame-rate*	Shutter Type	Output	Color/Mono	Package	Package Size
9211A	1968 H x 1108 V	2/3"	5µm x 5µm	90 fps	Rolling	2 x 12-bit Digital	Mono	LCC-84	29,21mm x 29,21mm
9212A	1968 H x 1108 V	2/3"	5µm x 5µm	90 fps	Rolling	2 x 12-bit Digital	RGB	LCC-84	29,21mm x 29,21mm
9215A	1968 H x 1108 V	2/3"	5µm x 5µm	90 fps	Rolling	2 x 12-bit Digital	Mono	µPGA-141 ceramic	25mm x 20 mm
9216A	1968 H x 1108 V	2/3"	5µm x 5µm	90 fps	Rolling	2 x 12-bit Digital	RGB	µPGA-141 ceramic	25mm x 20 mm
9221A	2068 H x 1100 V	2/3"	5µm x 5µm	240 fps	Global	up to 4x4 LVDS	Mono	BGA	
9222A	2068 H x 1100 V	2/3"	5µm x 5µm	240 fps	Global	up to 4x4 LVDS	RGB	BGA	
9225A	2068 H x 1100 V	2/3"	5µm x 5µm	240 fps	Global	up to 4x4 LVDS	Mono	µPGA-185 ceramic	25mm x 23 mm
9226A	2068 H x 1100 V	2/3"	5µm x 5µm	240 fps	Global	up to 4x4 LVDS	RGB	µPGA-185 ceramic	25mm x 23 mm

* = at full resolution

CMOS Image Sensors

Photonfocus was founded in 2001 as a spin-off from CSEM, the Swiss Centre for Electronics and Micro technology, and is located in Lachen, Switzerland.

Photonfocus mission is to supply the industry with advanced, high performance CMOS image sensors and CMOS cameras conforming

to industry quality requirements and certifications. Operating in a very competitive environment it is crucial to possess and maintain the know-how and capability to design proprietary image sensors and provide high performance camera solutions based on these sensors and third party components.

CMOS Bildsensoren

Product	Resolution	Sensor	Pixel Size Size	Frame-größe	Shutter rate*	Output Type	Color/	Package Mono	Package Size
A1312-40	1312x1082	1"	8x8µm	27	Global	1	Mono	144 CQFP	(I) or (IE) also available *
A1312C-40	1312x1082	1"	8x8µm	27	Global	1	Color	144 CQFP	
A1312-160	1312x1082	1"	8x8µm	108	Global	4	Mono	144 CQFP	(I) or (IE) also available *
A1312C-160	1312x1082	1"	8x8µm	108	Global	4	Color	144 CQFP	
A2080-160	2080x2080	23.5mm	8x8µm	35	Global	4	Mono	244 CQFP	(IE) also available *
A2080C-160	2080x2080	23.5mm	8x8µm	35	Global	4	Color	244 CQFP	
A2080-640	2080x2080	23.5mm	8x8µm	140	Global	16	Mono	244 CQFP	(IE) also available *
A2080C-640	2080x2080	23.5mm	8x8µm	140	Global	16	Color	244 CQFP	

* = at full resolution

** = Near Infrared (I) and Near Infrared Enhanced (IE) versions are also available

CMOS Evaluation Boards

Aptina provides special demo boards to shorten development cycles. These USB 2.0 kits are available for almost every type of sensor and consist of a sensor headboard, USB 2.0 interface board, lens, USB cable, tripod adapter and the respective driver software. This arrangement allows quick evaluation and characterisation of the sensors.

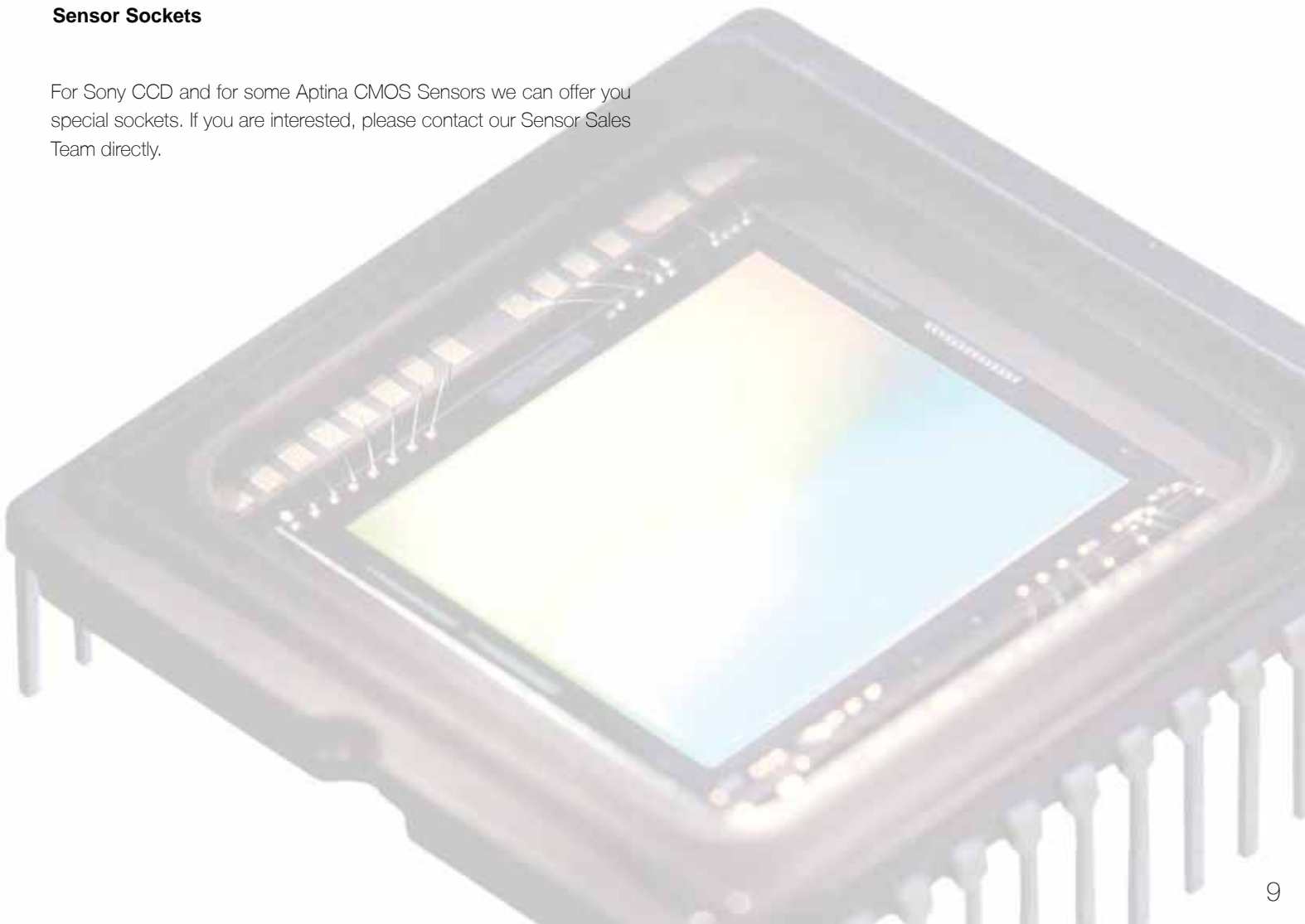
Standardised plug-in connectors allow you to use multiple headboards with one interface board whilst saving development costs. The populated PCBs are always delivered with the respective sensor and lens.

CCD Components

We can offer you various ICs ranging from pulse generators to D/A or A/D-converters. Our team of engineers will be happy to provide you with information and documentation to assist you in your development work.

Sensor Sockets

For Sony CCD and for some Aptina CMOS Sensors we can offer you special sockets. If you are interested, please contact our Sensor Sales Team directly.



Interfaces

FRAMOS provides an extensive range of Gigabit Ethernet (GigE) interface solutions from Pleora Technologies Inc. for the image processing sector. The GigE Vision and GenCam compliant products allow high-performance GigE connectivity to be added to almost any camera or system quickly, cost-effectively and with future needs in mind. The network elements deliver a feature-rich solutions platform that can be tailored to a wide range of individual customer requirements. With its rich portfolio of interface solutions the Pleora range allows customers to tailor solutions to their individual needs, from definition to deployment, with full integration support.

For any further information please contact our team:
sales@framos.eu or support@framos.eu



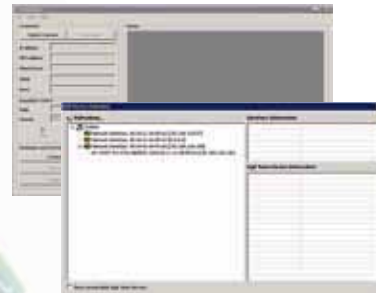
Boards*

- Real time, low latency, high-throughput video transfer
- Adaptable to meet individual customer needs
- Continuous standards and performance enhancements through field upgrades



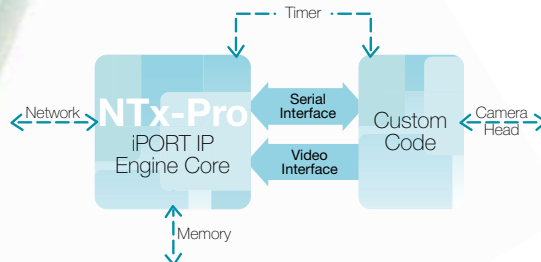
Software / Drivers*

- eBUS driver suite available for highest performance requirements while minimizing CPU usage
- Compliant with both GigE Vision and GenCam standards
- Powerful SDK allows rapid application development




IP offering


- Board reference design
- IP core
- Design review services





* = These products are not available in France and UK.

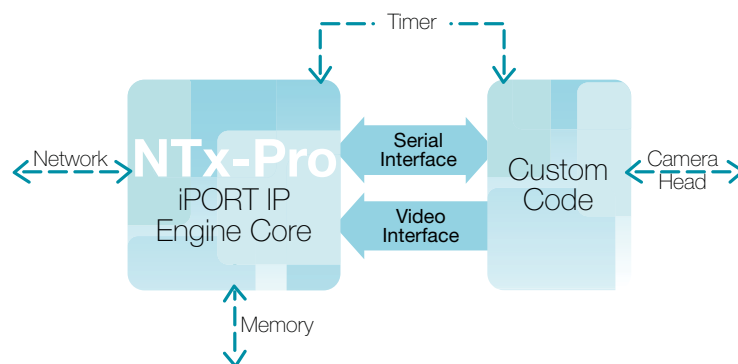


 Boards	
Product	Description
iPORT™ NTx-Mini IP Engine	Adds full GigE Vision connectivity to digital video data sources · Optimized for in camera design with a small form factor (42mm x 42mm), low power consumption and design flexibility · Supports PLC and external control with the standard deserialized Camera Link™ data interface · For a possible application see page 23 „Headboards“
iPORT™ NTx-Pro IP Engine	Adds full GigE Vision connectivity to digital video data sources · Includes a powerful and flexible FPGA, which, in combination with its on-board 2 MB of SRAM and up to 32 MB of frame buffer memory · Enables a wide range of on-board processing options · Supports PLC for external control and a standard deserialized Camera Link™ video interface
iPORT™ PT1000ST IP Engine	Adds full GigE Vision connectivity to digital video data sources, including raw digital data streams, CameraLink®, and CMOS image sensors · Supports PLC for external control and a standard deserialized Camera Link™ video interface
iPORT™ FB1000ST IP Engine	Adds full GigE Vision connectivity to digital video data sources, including raw digital data streams, CameraLink®, and CMOS image sensors · Supports PLC for external control and a standard deserialized Camera Link™ video interface · For use with fiber cabling
iPORT™ PT1000VB IP Engine	Adds full GigE Vision connectivity to digital video data sources · Supports PLC for external control and a standard deserialized Camera Link™ video interface

 10 GigE Boards available soon!	
Product	Description
10 GigE Boards	Please check our website for product specifications and updates on availability

 Software / Driver	
Product	Description
SDK and eBUS Driver Licensing	eBUS-PureGEV™ package combines Pleora's high-performance eBUS™ drivers and eBUS-PureGEV SDK (software development kit) in one easy-to-install software suite · Each element in the suite fully compatible with the GigE Vision® and Gen<i>i</i>-Cam™ standards

 IP Packages	
Product	Description
IP Packages	The iPORT NTx-Pro IP (intellectual property) package includes all the tools and development support a system designer needs to customize Pleora's high-performance video networking technology for specific requirements



Further board, reference design & core specifications and prices on request!

Industrial Cameras

FRAMOS offers a comprehensive and extensive portfolio of cameras from various manufacturers including cameras suitable for industrial, machine vision, security and astronomical applications. With our technical experience and close collaboration with manufacturing partners, we can guarantee excellent support and product advice covering the complete field of image processing. Our highly qualified support department will help you in finding the perfect camera for your application. FRAMOS offers you a one-stop solution for all your imaging requirements. We help you to find suitable accessories for your camera and offer a wide range of lenses, frame grabbers, lighting, software, cables and housings.

Do you need an OEM solution?

Customer specific solutions are our strength. The FRAMOS engineering team can provide cameras tailored to your exact specifications. Together with our manufacturing and specialist partners we can offer you OEM cameras specific to your requirements including additional services such as custom lenses, custom housing, software and custom lighting.

The following pages will give you an overview on the various camera technologies and accessories we can provide. For any further information please contact our team: sales@framos.eu or support@framos.eu.



- USB2.0, GigE & Ethernet
- VGA up to 16 mega pixel
- CCD & CMOS sensors



- GigE, FireWire, CameraLink & analogue
- VGA up to 12 mega pixel
- CCD & CMOS sensors



- GigE & CameraLink
- VGA up to 16 mega pixel
- CCD sensors



- Analogue
- 330 up to 520 TVL
- CCD sensors



- GigE, Gen<i>i>Cam
- VGA up to 10 mega pixel
- CCD & CMOS sensors



- USB 2.0 analogue
- VGA up to 1.3 mega pixel
- CCD & CMOS sensors



- USB 2.0 analogue
- VGA up to 10 mega pixel
- CMOS sensors



* = These products are not available in France.



Industrial, Scientific, Security and Astronomy Imaging

Lumenera Corporation is a leading developer and manufacturer of digital cameras for industrial and security markets. Located in Ottawa, Canada, Lumenera provides an extensive range of cameras with unique combinations of speed, resolution and sensitivity to satisfy the

demands of today's imaging applications. Combine Lumenera cameras with FRAMOS' complete assortment of imaging accessories such as lenses, special cables, software and lighting for best results.

Lumenera Ethernet / Security Series

Model	Resolution	Framerate (at full res.)	Sensor Type	Sensor Size	Pixel Size	Sensitivity (at F 1.0)	Color / Mono	Day / Night Option	Lens Mount	Interface
Li045	720 x 480	30 fps	CMOS	1/3"	7.0µm x 7.0µm	0.5lux	Color/Mono	Yes	CS	Ethernet
Le045B	720 x 480	30 fps	CMOS	1/3"	7.0µm x 7.0µm	0.5lux	Color/Mono	Yes	CS	Ethernet
Le075P	640 x 480	60 fps	CCD	1/3"	7.4µm x 7.4µm	0.1lux	Color or Mono	Yes	CS	Ethernet, PoE
Le165P	1376 x 1032	15 fps	CCD	2/3"	6.45µm x 6.45µm	< 0.01lux	Color or Mono	Yes	CS	Ethernet, PoE
Le175CA	1280 x 1024	30 fps	CMOS	1/2"	5.2µm x 5.2µm	0.5lux	Color or Mono	Yes	CS	Ethernet
Le375P	2048 x 1536	10 fps	CMOS	1/2"	3.2µm x 3.2µm	1.5lux	Colour only	Yes	CS	Ethernet, PoE
Le575P	2560 x 1920	6 fps	CMOS	1/2.5"	2.2µm x 2.2µm	2.0lux	Colour only	Yes	CS	Ethernet, PoE

Lumenera USB & GigE / Industrial

Model	Resolution	Framerate (at full res.)	Sensor Type	Sensor Size	Pixel Size	Shutter Type	Bit Depth	Color / Mono	Lens Mount	Interface
Lu070/Lu075	640 x 480	60 fps	CCD	1/3"	7.4µm x 7.4µm	Global	8 or 12	Color or Mono	C or CS	USB2.0
Lw070/Lw075	640 x 480	60 fps	CCD	1/3"	7.4µm x 7.4µm	Global	8 or 12	Color or Mono	C or CS	USB2.0
Lm070/Lm075	640 x 480	60 fps	CCD	1/3"	7.4µm x 7.4µm	Global	8 or 12	Color or Mono	C or CS	USB2.0
Lm080/Lm085	752 x 480	60 fps	CMOS	1/3"	6.0µm x 6.0µm	Global	8 or 10	Color or Mono	C or CS	USB2.0
Lu100/Lu105	1280 x 1024	15 fps	CMOS	1/2"	5.2µm x 5.2µm	Rolling & Half Global	8 or 10	Color or Mono	C or CS	USB2.0
Lu101	1280 x 1024	15 fps	CMOS	1/2"	5.2µm x 5.2µm	Rolling & Half Global	8 or 10	Color or Mono	C or CS	USB2.0
Lw110/Lw115	1280 x 1024	30 fps	CMOS	1/3"	3.63µm x 3.63µm	Rolling	8 or 12	Color	C or CS	USB2.0
Lu120B/Lu125B	1280 x 1024	15 fps	CMOS	2/3"	6.7µm x 6.7µm	Rolling & Global	8 or 10	Color or Mono	C or CS	USB2.0
Lu130/Lu135	1392 x 1040	15 fps	CCD	1/2"	4.65µm x 4.65µm	Global	8 or 12	Color or Mono	C or CS	USB2.0
Lw130/Lw135	1392 x 1040	15 fps	CCD	1/2"	4.65µm x 4.65µm	Global	8 or 12	Color or Mono	C or CS	USB2.0
Lm130/Lm135	1392 x 1040	15 fps	CCD	1/2"	4.65µm x 4.65µm	Global	8 or 12	Color or Mono	C or CS	USB2.0
Lu160/Lu165	1392 x 1040	15 fps	CCD	2/3"	6.45µm x 6.45µm	Global	8 or 12	Color or Mono	C or CS	USB2.0
Lw160/Lw165	1392 x 1040	15 fps	CCD	2/3"	6.45µm x 6.45µm	Global	8 or 12	Color or Mono	C or CS	USB2.0
Lm160/Lm165	1392 x 1040	15 fps	CCD	2/3"	6.45µm x 6.45µm	Global	8 or 12	Color or Mono	C or CS	USB2.0
Lu170/Lu175	1280 x 1024	30 fps	CMOS	1/2"	5.2µm x 5.2µm	Rolling	8 or 10	Mono	C or CS	USB2.0
Lu171M	1280 x 1024	30 fps	CMOS	1/2"	5.2µm x 5.2µm	Rolling	8 or 10	Mono	C or CS	USB2.0
Lu200B/Lu205B	1600 x 1200	10 fps	CMOS	1/2"	4.2µm x 4.2µm	Rolling	8 or 10	Color	C or CS	USB2.0
Lw230/Lw235	1616 x 1216	12 fps	CCD	1/1.8"	4.4µm x 4.4µm	Global	8 or 12	Color or Mono	C or CS	USB2.0
Lw290/Lw295	1920 x 1080	20 fps	CMOS	2/3"	5.0µm x 5.0µm	Rolling	8 or 10	Color	C or CS	USB2.0
Lu370/Lu375	2048 x 1536	12 fps	CMOS	1/2"	3.2µm x 3.2µm	Rolling	8 or 10	Color	C or CS	USB2.0
Lu371	2048 x 1536	12 fps	CMOS	1/2"	3.2µm x 3.2µm	Rolling	8 or 10	Color	C or CS	USB2.0
Lw570/Lw575	2592 x 1944	7 fps	CMOS	1/2.5"	2.2µm x 2.2µm	Rolling	8 or 10	Color or Mono	C or CS	USB2.0
Lw620/Lw625	3000 x 2208	5 fps	CMOS	>2/3"	3.5µm x 3.5µm	Rolling & Half Global	8 or 10	Color or Mono	C or CS	USB2.0
Lw11059B	4008 x 2672	3.5 fps	CCD	35mm	9.0µm x 9.0µm	Global	8 or 12	Color or Mono	Canon	USB2.0
Lw11058B	4008 x 2672	3.5 fps	CCD	35mm	9.0µm x 9.0µm	Global	8 or 12	Color or Mono	F(Nikon)	USB2.0
Lw11057B	4008 x 2672	3.5 fps	CCD	35mm	9.0µm x 9.0µm	Global	8 or 12	Color or Mono	K (Pentax)	USB2.0
Lw16059	4872 x 3248	2 fps	CCD	35mm	7.4µm x 7.4µm	Global	8 or 12	Color or Mono	Canon	USB2.0
Lg235	1616 x 1216	25 fps	CCD	1/1.8"	4.4µm x 4.4µm	Global	8 or 12	Color or Mono	C	GigE
Lg11059	4008 x 2672	5 fps	CCD	35mm	9.0µm x 9.0µm	Global	8 or 12	Color or Mono	Canon	GigE

Industrial Cameras



USB / Scientific

Model	Resolution	Framerate (at full res.)	Sensor Type	Sensor Size	Pixel Size	Read Noise	Bit Depth	Color / Mono	Lens Mount	Interface
Infinity1-1	1280 x 1024	15 fps	CMOS	1/2"	5.2µm x 5.2µm	20e-	8 or 10	Mono	C	USB2.0
Infinity1-2B	1600 x 1200	20 fps	CMOS	1/2"	4.2µm x 4.2µm	20e-	8 or 10	Color or Mono	C or CS	USB2.0
Infinity1-3	2048 x 1536	6 fps	CMOS	1/2"	3.2µm x 3.2µm	20e-	8 or 10	Color	C	USB2.0
Infinity1-5	2592 x 1944	5 fps	CMOS	1/2"	2.2µm x 2.2µm	20e-	8 or 10	Color	C	USB2.0
Infinity2-1	1392 x 1040	15 fps	CCD	1/2"	4.65µm x 4.65µm	12e-	8 or 12	Color or Mono	C	USB2.0
Infinity2-2	1616 x 1216	12 fps	CCD	1/1.8"	4.4µm x 4.4µm	12e-	8 or 12	Color or Mono	C	USB2.0
Infinity2-3	2080 x 1536	5 fps	CCD	1/1.8"	3.45µm x 3.45µm	12e-	8 or 12	Color	C	USB2.0
Infinity2-5	2448 x 2048	9 fps	CCD	2/3"	3.45µm x 3.45µm	10e-	8 or 14	Color or Mono	C	USB2.0
Infinity Lite	1440 x 1080	10 fps	CMOS	1/2.5"	4.2µm x 4.2µm	53e-	8	Color	C	USB2.0
Infinity3-1(gekühlt)	1392 x 1040	15 fps	CCD	2/3"	6.45µm x 6.45µm	8e-	8 or 12	Color or Mono	C	USB2.0
Infinity3-1(ungekühlt)	1392 x 1040	15 fps	CCD	2/3"	6.45µm x 6.45µm	8e-	8 or 12	Color or Mono	C	USB2.0
Infinity4-11	4008 x 2672	3,5 fps	CCD	35mm	9.0µm x 9.0µm	12e-	8 or 12	Color or Mono	F(Nikon)	USB2.0
Infinity HD	1920 x 1080	60 fps	CMOS	1/3"	2.7µm x 2.7µm	8.7e-	8	Color	C	USB2.0



USB / Astronomy

Model	Resolution	Framerate (at full res.)	Sensor Type	Sensor Size	Pixel Size	Signal to Noise Ratio (SNR)	Bit Depth	Color / Mono	Lens Mount	Interface
SKYnyx2-0	640 x 480	60 fps	CCD	1/3"	7.4µm x 7.4µm	58 dB	8 or 12	Color or Mono	T	USB2.0
SKYnyx2-1	1392 x 1040	15 fps	CCD	1/2"	4.65µm x 4.65µm	66 dB	8 or 12	Color or Mono	T	USB2.0
SKYnyx2-2	1616 x 1232	12 fps	CCD	1/1.8"	4.4µm x 4.4µm	60 dB	8 or 12	Color or Mono	T	USB2.0



Machine Vision and Medical Imaging

Toshiba Teli, one of the world's largest manufacturer of machine vision cameras, is highly experienced in the manufacturing of high quality CCD and CMOS cameras. The Toshiba Teli camera series provides a variety of digital interfaces such as Gigabit Ethernet, Firewire a and b and CameraLink, as well as a wide assortment of analogue cameras. Toshiba Teli focuses on optimal products by

meeting customers' needs for a wide range of image sensing equipment. The FRAMOS portfolio includes a complete range of imaging accessories for Teli cameras such as lenses, cables, software, frame grabbers and lighting. We also offer hardware and software modifications, as well as custom housings, and development of camera modules specific to your requirements.



CleverDragon Series

Model	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	Pixel Size	Shutter Type	Color / Mono	Lens Mount	Interface
CSCV90BC3	659 x 494	90 fps	CCD	1/3"	7.4µm x 7.4µm	Global	Color	C	PoCL
CSCX30BC3	1034 x 779	30 fps	CCD	1/3"	4.65µm x 4.65µm	Global	Color	C	PoCL
CSCS20BC3	1392 x 1040	20 fps	CCD	1/2"	4.65µm x 4.65µm	Global	Color	C	PoCL
CSCU15BC18	1628 x 1236	15 fps	CCD	1/1.8"	4.4µm x 4.4µm	Global	Color	C	PoCL
CSCU30CC18 / BC18	1628 x 1236	30 fps	CCD	1/1.8"	4.4µm x 4.4µm	Global	Color or Mono	C	PoCL
CSCQS9CC23	2456 x 2058	9.39 fps	CCD	2/3"	3.45µm x 3.45µm	Global	Color	C	CameraLink
CSCQS15CC23 / BC23	2456 x 2058	15 fps	CCD	2/3"	3.45µm x 3.45µm	Global	Color or Mono	C	CameraLink
CSC12M25BMP19-01B	4096 x 3072	25 fps	CMOS	1.9"	6.0µm x 6.0µm	Global	Mono	TFL-II	CameraLink
CSC12M25CMP19	4096 x 3072	25 fps	CMOS	1.9"	6.0µm x 6.0µm	Global	Color	TFL-II	CameraLink
CSCVL90BC3D	659 x 494	90fps	CCD	1/3"	7.4µm x 7.4µm	Global	Mono	M10.5	PoCL-lite

Further camera specifications and prices on request!



Teli GiantDragon Series

Model	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	Pixel Size	Shutter Type	Color / Mono	Lens Mount	Interface
CSGV90CC3 / BC3	640 x 480	90 fps	CCD	1/3"	7.4µm x 7.4µm	Global	Color or Mono	C	GigE
CSGX36CC3	1024 x 768	36 fps	CCD	1/3"	4.65µm x 4.65µm	Global	Color	C	GigE
CSGS20CC2 / BC2	1392 x 1040	20 fps	CCD	1/2"	4.65µm x 4.65µm	Global	Color or Mono	C	GigE
CSGS15BC23	1392 x 1040	15 fps	CCD	2/3"	6.45µm x 6.45µm	Global	Mono	C	GigE
CSGU15CC18 / BC18	1600 x 1200	15 fps	CCD	1/1.8"	4.4µm x 4.4µm	Global	Color or Mono	C	GigE

Teli FireWire Series

Model	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	Pixel Size	Shutter Type	Color / Mono	Lens Mount	Interface
CS8581QBF	640 x 480	130 fps	CCD	1/3"	7.4µm x 7.4µm	Global	Mono	M10.5	IEEE 1394.b
CSB4000F-20	2008 x 2044	7.14 fps	CMOS	1.1"	6.0µm x 6.0µm	Global	Mono	C	IEEE 1394.a

Teli CameraLink Series

Model	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	Pixel Size	Shutter Type	Color / Mono	Lens Mount	Interface
CS6910CL	1280 x 960	30 fps	CCD	1/4.2"	3.8µm x 3.8µm	Global	Color	C	CameraLink
CS6940CL	1628 x 1236	15 fps	CCD	1/1.8"	4.4µm x 4.4µm	Global	Color	C	CameraLink
CSB4000CL-10A	2008 x 2047	7.29 fps	CMOS	1.1"	6.0µm x 6.0µm	Global	Mono	C	CameraLink

Teli Analogue Series

Model	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	Pixel Size	Readout Technology	Color / Mono	Lens Mount	Output
CS8620Ci	752 x 582	25 fps	CCD	1/2"	8.6µm x 8.3µm	Interlaced	Mono	C	VS (CCIR)
CS8630Ci	752 x 582	25 fps	CCD	1/3"	6.5µm x 6.25µm	Interlaced	Mono	C	VS (CCIR)
CS5260BDP	752 x 582	25 fps	CCD	1/2"	8.6µm x 8.3µm	Interlaced	Color	C	VBS (PAL) Y/C
CS8560D	660 x 494	60 fps	CCD	1/3"	7.4µm x 7.4µm	Progressive Scan	Mono	C	Special format (non-conforming to CCIR)
CS8570D	660 x 494	60 fps	CCD	1/2"	9.9µm x 7.4µm	Progressive Scan	Mono	C	Special format (non-conforming to CCIR)
CS8541DY	659 x 494	60 fps	CCD	1/3"	7.4µm x 7.4µm	Progressive Scan	Mono	M10.5	Special format (non-conforming to CCIR)
CS8420Ci	752 x 582	25 fps	CCD	1/2"	8.6µm x 8.3µm	Interlaced	Mono	C	VS (CCIR)
CS8550Di	659 x 494	60 fps	CCD	1/3"	7.4µm x 7.4µm	Progressive Scan	Mono	C	Special format (non-conforming to CCIR)
CS8620HCi	752 x 582	25 fps	CCD	1/2"	8.6µm x 8.3µm	Interlaced	Mono	C	VS (CCIR)
CS9201P	768 x 494	60 fps	CCD	1/2"	8.60µm x 8.30µm	Interlaced	color	M15.5	VBS(PAL), Y/C
CS9301P	768 x 494	60 fps	CCD	1/3"	6.50µm x 6.25µm	Interlaced	color	M10.5	VBS(PAL), Y/C
CS9401P	768 x 494	60 fps	CCD	1/4"	4.85µm x 4.65µm	Interlaced	color	M10.5	VBS(PAL), Y/C

Teli HD Camera

Model	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	Pixel Size	Shutter Type	Color / Mono	Lens Mount	Interface
CSDS60CM3	1329 x 1049	60 fps	CMOS	1/3"	3.63µm x 3.63µm	progressive	color	C	DVI-D
CSDW2M60CM28	2096 x 1561	60 fps	CMOS	1/2.8"	2.5µm x 2.5µm	progressive	color	C	DVI-D

Teli Recording Device

Model	LCD	LCD Size	Scan method	Input Signal	Recording Media	Power Supply	Dimensions	Weight
VR570	5.6type TFT Color LCD	113.3mm(H) x 84.7(V)	NTSC/PAL	PIN connector Input x1 Output x1	SD card 1, 2 GB SDHC card 4, 8, 16, 32GB	DC 12V +/-5% Max. 900mA	170(W)x120(H) x40(D)mm	Approx. 570gr

Further camera specifications and prices on request!

Industrial Cameras



SVS-VISTEK, with headquarters in Seefeld near Munich, Germany, develops, manufactures and distributes professional machine vision com-

ponents and systems. Since 2001 SVS-Vistek supplies industrial CCD cameras in accordance with the latest technologies available.

SVS-VISTEK CameraLink Series

Model	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	Pixel Size	Shutter Type	Color / Mono	Lens Mount	Interface
svs340	640 x 480	400 fps	CCD	1/3"	7.4µm x 7.4µm	Global	Color or Mono	C	CameraLink
svs424	640 x 480	116 fps	CCD	1/3"	7.4µm x 7.4µm	Global	Color or Mono	C	CameraLink
svs204	1024 x 768	50 fps	CCD	1/3"	4.65µm x 4.65µm	Global	Color or Mono	C	CameraLink
svs1050	1000 x 1000	90 fps	CCD	2/3"	5.5µm x 5.5µm	Global	Color or Mono	C	CameraLink
svs285	1360 x 1024	33 fps	CCD	2/3"	6.45µm x 6.45µm	Global	Color or Mono	C	CameraLink
svs2050	1600 x 1200	53 fps	CCD	14.8mm	5.5µm x 5.5µm	Global	Color or Mono	C	CameraLink
svs2150	1920 x 1080	51 fps	CCD	2/3"	5.5µm x 5.5µm	Global	Color or Mono	C	CameraLink
svs274	1600 x 1200	25 fps	CCD	1/1.8"	4.4µm x 4.4µm	Global	Color or Mono	C	CameraLink
svs4022	2048 x 2048	25 fps	CCD	21.5mm	7.4µm x 7.4µm	Global	Color or Mono	M42, C or F	CameraLink
svs4050	2336 x 1752	25 fps	CCD	1"	5.5µm x 5.5µm	Global	Color or Mono	M42, C or F	CameraLink
svs625	2448 x 2048	20 fps	CCD	2/3"	3.45µm x 3.45µm	Global	Color or Mono	C	CameraLink
svs8050	3320 x 2496	12 fps	CCD	22.6mm	5.5µm x 5.5µm	Global	Color or Mono	M42, C or F	CameraLink
svs11002	4008 x 2672	7.5 fps	CCD	43.3mm	9.9µm x 9.9µm	Global	Color or Mono	M58 or F	CameraLink
svs16000	4872 x 3248	4.8 fps	CCD	43.3mm	7.4µm x 7.4µm	Global	Color or Mono	M58 or F	CameraLink

SVS-VISTEK GigE Series

Model	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	Pixel Size	Shutter Type	Color / Mono	Lens Mount	Interface
eco618	640 x 480	150 fps	CCD	1/4"	5.6µm x 5.6µm	Global	Mono	C or CS	GigE/PoE*
eco424	640 x 480	124 fps	CCD	1/3"	7.4µm x 7.4µm	Global	Color or Mono	C or CS	GigE/PoE*
eco414	640 x 480	125 fps	CCD	1/2"	9.9µm x 9.9µm	Global	Color or Mono	C or CS	GigE/PoE*
eco415	782 x 582	86 fps	CCD	1/2"	8.3µm x 8.3µm	Global	Color or Mono	C or CS	GigE/PoE*
eco204	1024 x 768	47 fps	CCD	1/3"	4.65µm x 4.65µm	Global	Color or Mono	C or CS	GigE/PoE*
eco445	1280 x 960	20 fps	CCD	1/3"	3.75µm x 3.75µm	Global	Color or Mono	C or CS	GigE/PoE*
eco267	1360 x 1024	25 fps	CCD	1/2"	4.65µm x 4.65µm	Global	Color or Mono	C or CS	GigE/PoE*
eco285	1360 x 1024	20 fps	CCD	2/3"	6.45µm x 6.45µm	Global	Color or Mono	C	GigE/PoE*
eco274	1600 x 1200	20 fps	CCD	1/1.8"	4.4µm x 4.4µm	Global	Color or Mono	C or CS	GigE/PoE*
eco655	2448 x 2048	8 fps	CCD	2/3"	3.45µm x 3.45µm	Global	Color or Mono	C or CS	GigE/PoE*
slc1050	1024 x 1024	51 fps	CCD	7.96mm dia.	5.5µm x 5.5µm	Global	Color or Mono	C, 90° housed	GigE
slc2050	1600 x 1200	31 fps	CCD	2/3"	5.5µm x 5.5µm	Global	Color or Mono	C, 90° housed	GigE
slc2150	1920 x 1080	31 fps	CCD	2/3"	5.5µm x 5.5µm	Global	Color or Mono	C, 90° housed	GigE
svs340	640 x 480	264 fps	CCD	1/3"	7.7µm x 7.4µm	Global	Color or Mono	C	GigE
svs1050	1000 x 1000	51 fps	CCD	2/3"	5.5µm x 5.5µm	Global	Color or Mono	C	GigE
svs285	1360 x 1024	33 fps	CCD	2/3"	6.45µm x 6.45µm	Global	Color or Mono	C	GigE
svs2050	1600 x 1200	31 fps	CCD	14.8mm	5.5µm x 5.5µm	Global	Color or Mono	C	GigE
svs2150	1920 x 1080	31 fps	CCD	2/3"	5.5µm x 5.5µm	Global	Color or Mono	C	GigE
svs274	1600 x 1200	26 fps	CCD	1/1.8"	4.4µm x 4.4µm	Global	Color or Mono	C	GigE
svs4022	2048 x 2048	19 fps	CCD	21.5mm	7.4µm x 7.4µm	Global	Color or Mono	M42, C or F	GigE
svs4050	2336 x 1752	15 fps	CCD	1"	5.5µm x 5.5µm	Global	Color or Mono	M42, C or F	GigE
svs625	2448 x 2048	15 fps	CCD	2/3"	3.45µm x 3.45µm	Global	Color or Mono	C	GigE
svs8050	3320 x 2496	20 fps	CCD	22.6mm	5.5µm x 5.5µm	Global	Color or Mono	M42 or F	GigE
svs11002	4008 x 2672	6.2 fps	CCD	43.3mm	9µm x 9µm	Global	Color or Mono	M58 or F	GigE
svs16000	4872 x 3248	4 fps	CCD	43.3mm	7.4µm x 7.4µm	Global	Color or Mono	M58 or F	GigE
svs29050	6576 x 4384	5 fps	CCD	43.47	5.5µm x 5.5µm	Global	Color or Mono	M58 or F	GigE

* = Also available as IP67 version

Further camera specifications and prices on request!



Business Class GigE Vision Cameras at Economy Prices

With Smartek's camera series, you have all the advantages to master demanding machine vision applications. The fully GigE Vision compliant hardware and driver interface combined with a compact housing at 35x35mm footprint allows for seamless integration in existing systems. Smartek offers superior image quality with minimal noise and comprehensive feature set combined with a fine selection of 4 Aptina CMOS,

10 Sony CCD & 3 Kodak CCD image sensors. Top-of-class trigger latency of ~2µs allows optimal synchronization of camera arrays with strobe illumination. Throughout the design, utilization of industrial standards (Cmount, Hirose-plug, RJ45-plug for CAT5e or CAT6 cables) enables significant reduction of the total costs of your machine vision system – without any compromise in quality!

smartek machine vision		Giganetix Series									
Model	Resolution (at full res.)	Framerate	Sensor Type	Sensor Size	Pixel Size	Shutter Type	Analogue Gain	Exposure time	Power Consumption	ADC	
GC1281M	1280 x 1024	30 fps	CMOS	1/2"	5.2µm x 5.2µm	Rolling	0 - 23.5 dB	32µs - 0.5s	2.0W	8 bit	
GC2041C	2048 x 1536	12 fps	Aptina CMOS	1/2"	3.2µm x 3.2µm	Rolling	0 - 23.5 dB	53µs - 10s	2.0W	8 bit	
GC2591M	2592 x 1944	14 fps	Aptina CMOS	1/2.5"	2.2µm x 2.2µm	Rolling	0 - 23.5 dB	36µs - 10s	2.1W	8 bit	
GC2591C	2592 x 1944	14 fps	Aptina CMOS	1/2.5"	2.2µm x 2.2µm	Rolling	0 - 23.5 dB	36µs - 10s	2.1W	8 bit	
GC3851M	3856 x 2764	7 fps	Aptina CMOS	1/2.3"	1.67µm x 1.67µm	Rolling	0 - 23.5 dB	36µs - 10s	2.1W	8 bit	
GC3851C	3856 x 2764	7 fps	Aptina CMOS	1/2.3"	1.67µm x 1.67µm	Rolling	0 - 23.5 dB	36µs - 10s	2.1W	8 bit	
GC651M	659 x 494	120 fps	Sony CCD	1/4"	5.6µm x 5.6µm	Global	0 - 40 dB	10µs - 10s	2.3W	8 bit	
GC651C	659 x 494	120 fps	Sony CCD	1/4"	5.6µm x 5.6µm	Global	0 - 40 dB	10µs - 10s	2.3W	8 bit	
GC652M	659 x 494	90 fps	Sony CCD	1/3"	7.4µm x 7.4µm	Global	0 - 40 dB	10µs - 10s	2.2W	8 bit	
GC652C	659 x 494	90 fps	Sony CCD	1/3"	7.4µm x 7.4µm	Global	0 - 40 dB	10µs - 10s	2.2W	8 bit	
GC653M	659 x 494	90 fps	Sony CCD	1/2"	9.9µm x 9.9µm	Global	0 - 40 dB	10µs - 10s	2.3W	8 bit	
GC653C	659 x 494	90 fps	Sony CCD	1/2"	9.9µm x 9.9µm	Global	0 - 40 dB	10µs - 10s	2.3W	8 bit	
GC781M	782 x 582	64 fps	Sony CCD	1/2"	8.3µm x 8.3µm	Global	0 - 40 dB	10µs - 10s	2.3W	8 bit	
GC781C	782 x 582	64 fps	Sony CCD	1/2"	8.3µm x 8.3µm	Global	0 - 40 dB	10µs - 10s	2.3W	8 bit	
GC1021M	1024 x 1024	61 fps	Kodak CCD	1/2"	5.5µm x 5.5µm	Global	0 - 40 dB	10µs - 10s	3.4W	8 bit	
GC1021C	1024 x 1024	61 fps	Kodak CCD	1/2"	5.5µm x 5.5µm	Global	0 - 40 dB	10µs - 10s	3.4W	8 bit	
GC1031M	1034 x 779	30 fps	Sony CCD	1/3"	4.65µm x 4.65µm	Global	0 - 40 dB	10µs - 10s	2.2W	8 bit	
GC1031C	1034 x 779	30 fps	Sony CCD	1/3"	4.65µm x 4.65µm	Global	0 - 40 dB	10µs - 10s	2.2W	8 bit	
GC1291M	1296 x 996	30 fps	Sony CCD	1/3"	3.75µm x 3.75µm	Global	0 - 40 dB	10µs - 10s	2.5W	8 bit	
GC1291C	1296 x 996	30 fps	Sony CCD	1/3"	3.75µm x 3.75µm	Global	0 - 40 dB	10µs - 10s	2.5W	8 bit	
GC1391M	1392 x 1040	20 fps	Sony CCD	1/2"	4.65µm x 4.65µm	Global	0 - 40 dB	10µs - 10s	2.4W	8 bit	
GC1391C	1392 x 1040	20 fps	Sony CCD	1/2"	4.65µm x 4.65µm	Global	0 - 40 dB	10µs - 10s	2.4W	8 bit	
GC1392M	1392 x 1040	30 fps	Sony CCD	2/3"	6.45µm x 6.45µm	Global	0 - 40 dB	10µs - 10s	2.8W	8 bit	
GC1392C	1392 x 1040	30 fps	Sony CCD	2/3"	6.45µm x 6.45µm	Global	0 - 40 dB	10µs - 10s	2.8W	8 bit	
GC1601M	1600 x 1200	35 fps	Kodak CCD	2/3"	5.5µm x 5.5µm	Global	0 - 40 dB	10µs - 10s	3.5W	8 bit	
GC1601C	1600 x 1200	35 fps	Kodak CCD	2/3"	5.5µm x 5.5µm	Global	0 - 40 dB	10µs - 10s	3.5W	8 bit	
GC1621M	1628 x 1236	25 fps	Sony CCD	1/1.8"	4.4µm x 4.4µm	Global	0 - 40 dB	10µs - 10s	2.7W	8 bit	
GC1621C	1628 x 1236	25 fps	Sony CCD	1/1.8"	4.4µm x 4.4µm	Global	0 - 40 dB	10µs - 10s	2.7W	8 bit	
GC1921M	1920 x 1080	33 fps	Kodak CCD	2/3"	5.5µm x 5.5µm	Global	0 - 40 dB	10µs - 10s	3.6W	8 bit	
GC1921C	1920 x 1080	33 fps	Kodak CCD	2/3"	5.5µm x 5.5µm	Global	0 - 40 dB	10µs - 10s	3.6W	8 bit	
GC2441M	2445 x 2050	15 fps	Sony CCD	2/3"	3.45µm x 3.45µm	Global	0 - 40 dB	10µs - 10s	3.6W	8 bit	
GC2441C	2445 x 2050	15 fps	Sony CCD	2/3"	3.45µm x 3.45µm	Global	0 - 40 dB	10µs - 10s	3.6W	8 bit	

Industrial Cameras

PACIFIC CORPORATION Board Level and Housed Cameras

Pacific is the largest video board camera manufacturer in Japan, specialising in low to high resolution board-level cameras with BAS, FBAS and Y/C video outputs. Pacific offers a wide range of cameras for industrial and security applications. Features of the camera range are:

small dimensions, low power consumption and excellent low light performance. Several cameras feature a DSP (Digital Signal Processor) that allows the PC control of camera functions such as auto white balance, digital zoom, gain, etc.

PACIFIC CORPORATION Analogue Board Cameras

Model	Resolution	Sensor Type	Optical Format	Shutter Type	Color / Mono	Output	Lens Mount	Power Supply	Specials
PC-1005	500 x 582	CCD	1/4"	Global	Color	VBS	D	DC 5V	PC control, Low Voltage
PC-2005	752 x 582	CCD	1/4"	Global	Color	VBS	D	DC 5V	PC control, Low Voltage
PC-285A	500 x 582	CCD	1/3"	Global	Color	VBS	D	DC 12V	RS232C/485 controllable
PC-685A	752 x 585	CCD	1/3"	Global	Color	VBS	D	DC 12V	Mirror Mode, OSD Setup
VPC-885	500 x 582	CCD	1/3"	Global	Color	VBS, YC (S-Video)	D	DC 12V	Digital 4x Zoom
VPC-895	752 x 582	CCD	1/3"	Global	Color	VBS, YC (S-Video)	D	DC 12V	Digital 4x Zoom
PC-175	500 x 582	CCD	1/3"	Global	Mono	VBS	D	DC 12V	Video or DC Iris, ext. Sync.
PC-375A	752 x 582	CCD	1/3"	Global	Mono	VBS	D	DC 12V	Video or DC Iris, ext. Sync.
PK-015	500 x 582	CCD	1/4"	Global	Mono	VBS	D	DC 5 - 14V	CCIR TV
PK-035	752 x 582	CCD	1/4"	Global	Mono	VBS	D	DC 5 - 14V	CCIR TV
PK-155	500 x 582	CCD	1/4"	Global	Color	VBS	D	DC 5 - 14V	
PK-175	752 x 582	CCD	1/4"	Global	Color	VBS	Fixed (mini)	DC 12V	
PK-245	500 x 582	CCD	1/3"	Global	Color	VBS	D	DC 12V	
PK-365	752 x 582	CCD	1/3"	Global	Color	VBS	D	DC 12V	auto iris, vari-focal lens
PA-295DN	752 x 582	CCD	1/3"	Global	Color	VBS	D	DC 12V	auto day/night, WDR
PPC-HD10	1280 x 720	CMOS	1/3"	Global	Color	HD component	D	DC 9-15V	720p, 16:9

PACIFIC CORPORATION Analogue Housed Cameras

Model	Resolution	Sensor Type	Optical Format	Shutter Type	Color / Mono	Output	Lens Mount	Power Supply	Specials
MCSC-905	768 x 494	CCD	1/4"	Global	Color	CVBS	CS	DC 12V	Video Iris
(M)CSC-295DN	752 x 582	CCD	1/3"	Global	Mono	VBS	CS	DC 12V	auto day/night, WDR
CSB-175	500 x 582	CCD	1/3"	Global	Mono	VBS	CS	DC 12V	DC Iris
CSB-375	752 x 582	CCD	1/3"	Global	Mono	VBS	CS	DC 12V	DC Iris
CSC-885	500 x 582	CCD	1/3"	Global	Color	CVBS	CS	DC 10.5-15V	RS232 controllable
CSC-895	752 x 582	CCD	1/3"	Global	Color	CVBS	CS	DC 10.5-15V	RS232 controllable

PACIFIC CORPORATION Block Cameras

Model	Resolution	Sensor Type	Optical Format	Shutter Type	Color / Mono	Output	Lens Mount	Power Supply	Specials
PHD-01x	1920 x 1080	CMOS	1/3"	Global	Color	1.5G/3G Serial, DVI	n.a.	DC 6.5-12V	60 fps, housed, WDR
PHD-03x	1920 x 1080	CMOS	1/2.5"	Global	Color	1.5G/3G Serial, DVI	n.a.	DC 6.5-12V	30fps, Board level, WDR

Further camera specifications and prices on request!



Board Level and Housed Cameras

Videology develops imaging products based on the most recent CCD and CMOS image sensors, DSP and CPLD components. Imager resolutions range from VGA to 1.3 megapixel. Videology has developed a

family of USB 2.0 and Ethernet based cameras and board products offering full SDKs for custom integration.

VIDELOGY USB Series

Model	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	Pixel Size	Shutter Type	Color / Mono	Lens Mount	Interface
21K14XUSB	500 x 582	30 fps	CCD	1/4"	4.7µm x 4.7µm	Interlaced	Color	M-12 or CS-Mount	USB2.0
21K13XUSB	765 x 582	30 fps	CCD	1/4"	4.85µm x 4.85µm	Interlaced	Mono	M-12 or CS-Mount	USB2.0
21K15XUSB	765 x 582	30 fps	CCD	1/4"	3.8µm x 3.8µm	Interlaced	Color	M-12 or CS-Mount	USB2.0
24C1.3XUSB	1280 x 1024	7 fps	CMOS	1/3"	3.6µm x 3.6µm	Rolling	Color	M-12 or CS-Mount	USB2.0
24B1.3XUSB-C	1280 x 1024	24 fps	CMOS	1/2"	5.2µm x 5.2µm	Rolling	Mono	M-12 or CS-Mount	USB2.0

VIDELOGY Digital Series

Model	Resolution	Sensor Type	Optical Format	Power Supply	Shutter Type	Color / Mono	Lens Mount	Output	Specials
21K14XDIG	510 x 494	CCD	1/4"	DC 5V	Interlaced	Color	M12 pinhole, M12 or CS	CVBS, YUV	Mirror Mode
21K13XDIG	768 x 492	CCD	1/4"	DC 5V	Interlaced	Mono	M12 pinhole, M12 or CS	YUV	Mirror Mode, IFC controllable
21K15XDIG	768 x 494	CCD	1/4"	DC 5V	Interlaced	Color	M12 pinhole, M12 or CS	CVBS, YUV	Mirror Mode, SW controllable
24C1.3XDIG	1280 x 1024	CMOS	1/3"	DC 5V	Rolling	Color	M12 pinhole, M12 or CS	YUV	Mirror Mode, SW and IFC controllable
21D389	752 x 582	CCD	1/3"	DC 12V	Interlaced	Mono	M12 pinhole, M12 or CS	CVBS, YUV	Mirror Mode, IFC controllable
24B752XA	752 x 582	CMOS	1/3"	DC 5V	Global	Mono	M12 pinhole, M12 or CS	CVBS, YUV, LVDS	IFC controllable, 110dB

VIDELOGY Analogue Series

Model	Resolution	Sensor Type	Optical Format	Power Supply	Shutter Type	Color / Mono	Lens Mount	Output	Specials
21D739	752 x 585	CCD	1/3"	DC 12V	Interlaced	Color		CVBS	housed
21D739B	752 x 585	CCD	1/3"	DC	Interlaced	Color	C or CS		
21B44M	640 x 480	CMOS	1/4"	DC 5V	Rolling	Color	M12 pinhole	CVBS	housed, IFC controllable
21B44	640 x 480	CMOS	1/4"	DC 5V	Rolling	Color		CVBS	IFC controllable
21B45M	640 x 480	CMOS	1/4"	DC 5V	Rolling	Color	M12 pinhole	CVBS	housed
21D679	752 x 582	CCD	1/3"	DC 12V	Interlaced	Mono	C or CS	CVBS	housed
21D689	768 x 582	CCD	1/3"	DC 12V	Interlaced	Mono	C or CS	CVBS	housed, NIR Sensitive
21K14X	500 x 582	CCD	1/4"	DC 5V	Interlaced	Color	M12 pinhole, M12 or CS	CVBS	Mirror Mode, IFC controllable
21K14XYC	500 x 582	CCD	1/4"	DC 5V	Interlaced	Color	M12 pinhole, M12 or CS	CVBS, YC (S-Video)	Mirror Mode, IFC controllable
21K15X	768 x 492	CCD	1/4"	DC 5V	Interlaced	Color	M12 pinhole, M12 or CS	CVBS	Mirror Mode, IFC controllable
21K15XYC	765 x 582	CCD	1/4"	DC 5V	Interlaced	Color	M12 pinhole, M12 or CS	CVBS, YC (S-Video)	Mirror Mode, IFC controllable
21Z404-22x	768 x 494	CCD	1/4"	DC 12V	Interlaced	Color	Integrated Lens	CVBS, YC (S-Video)	Auto Focus & 22 Optical Zoom
21D10X	768 x 492	CCD	1/3"	DC 12V	Interlaced	Color	M12 pinhole, M12 or CS	CVBS	DC Auto Iris
21D10XB	768 x 492	CCD	1/3"	DC 12V	Interlaced	Color	M12 pinhole, M12 or CS	CVBS	DC Iris, Balanced Video Cat5/6
21D20X	752 x 582	CCD	1/3"	DC 12V	Interlaced	Color	M12 pinhole, M12 or CS	CVBS	Software Control
21D20XB	752 x 582	CCD	1/3"	DC 12V	Interlaced	Color	M12 or CS-Mount	CVBS	SW Control, Balanced Video Cat5/6
21RD8	512 x 585	CCD	1/3"	DC 12V	Interlaced	Color		CVBS	Low Power, Round Dual Board
21K13X	752 x 582	CCD	1/4"	DC 5V	Interlaced	Mono	M12 pinhole, M12 or CS	CVBS	Mirror Mode, IFC controllable
21D35X	752 x 582	CCD	1/3"	DC 12V	Interlaced	Mono	M12 pinhole, M12 or CS	CVBS	Balanced Video for Cat5/6
31D35XO	752 x 582	CCD	1/3"	DC 12V	Interlaced	Mono	M12 pinhole, M12 or CS	CVBS	Aerospace grade
31D35XOB	752 x 582	CCD	1/3"	DC 12V	Interlaced	Mono	M12 pinhole, M12 or CS	CVBS	
21D479	752 x 582	CCD	1/3"	DC 12V	Interlaced	Color	M12 or CS	YC (S-Video), RGCB, YUV 8-bit	H&V lock
21D779	752 x 585	CCD	1/3"	DC 12V	Interlaced	Color	CS	CVBS, YC (S-Video)	housed

Further camera specifications and prices on request!

Industrial Cameras

visiosens VF Camera Plattform

Focused on customers' needs, Visiosens offers a wide range of innovative industrial USB cameras with imager resolutions from WVGA up to 10 MPixel, especially designed for price sensitive applications. Standard board outline combined with additional features such as LED controller and various I/O functionalities as well as multiple lens mount

solutions allow easy integration into the customer's application. A comprehensive SDK is available for both, Microsoft and Linux and ensures easy software integration. The following table shows a selection of available models. Variants with further CMOS and CCD sensors are already under development. Please refer to our team: sales@framos.eu

Model	Resolution	Framerate USB2.0	Framerate USB3.0	Sensor	Sensor Type	Sensor Size	Pixel Size	Shutter Type	Exposure time	ADC Depth
V024	752 x 480 / 0.4 MP	60 fps	60 fps	Aptina MT9V024	CMOS	1/3"	6.0µm x 6.0µm	Global	60µs – 500ms	8, 10 bit
M031	1280 x 960 / 1.2 MP	15 fps	45 fps	Aptina MT9M031	CMOS	1/3"	3.75µm x 3.75µm	Global	60µs – 500ms	8, 10 bit
M034	1280 x 960 / 1.2 MP	15 fps	45 fps	Aptina MT9M034	CMOS	1/3"	3.75µm x 3.75µm	Rolling	60µs – 500ms	8, 10 bit
P031	2592 x 1944 / 5.0 MP	4 fps	14 fps	Aptina MT9P031	CMOS	1/2.5"	2.2µm x 2.2µm	Rolling	10µs – 100ms	8, 10 bit
J003	3664 x 2748 / 10.1 MP	3.5 fps	7.5 fps	Aptina MT9J003	CMOS	1/2.3"	1.67µm x 1.67µm	Rolling	60µs – 500ms	8, 10 bit
X445	1280 x 960 / 1.2 MP	15 fps	22 fps	Sony ICX445	CCD	1/3"	3.75µm x 3.75µm	Global	tbd	8-14 bit

Software

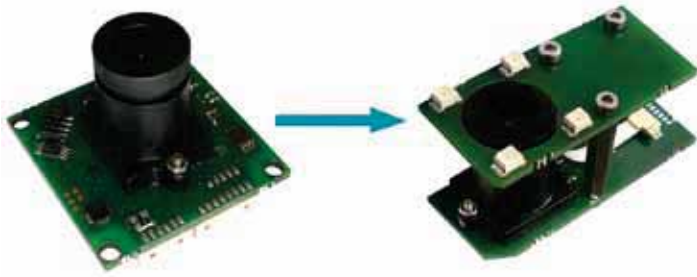
- Driver for Windows XP® (32/64-bit) & Vista® (32/64-bit), Windows CE®, Windows 7® (32/64-bit), Linux®
- Documentation
- DLL including all relevant functions based on Microsoft® .NET-Framework, Linux® Mono-Framework
- Access to all Camera Parameters
- Viewer-Software
- Implementation Examples
- LabView8® Implementation Example



visiosens Camera Development

Additional features required? No problem! Based on the modular architecture of standard products, Visiosens offers a wide range of OEM hardware and software solutions for price sensitive applications. Customisation of dimensions, implementation of additional hardware

or Software functionalities is a key competence as well as realising complete custom designs in close collaboration with you as the customer.



Headboards for GigE-Cameras

The headboards for Aptina CMOS imagers are compatible with Pleora's NTX Mini Interface and Processing Board and provide easy realisation of OEM-GigE-Cameras based on standard components.



Camera Model	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	Pixel Size	Shutter Type	Color / Mono	Lens Mount	Interface
VFU-V024	752 x 480	60 fps	CMOS	1/3"	6.0µm x 6.0µm	Global	Color or Mono	M12-, CS-, C-Mount	USB2.0
VFU-M031	1280 x 960	15 fps	CMOS	1/3"	3.75µm x 3.75µm	Global	Color or Mono	M12-, CS-, C-Mount	USB2.0
VFU-M033	1280 x 960	15 fps	CMOS	1/3"	3.75µm x 3.75µm	Rolling	Color or Mono	M12-, CS-, C-Mount	USB2.0
VFU-P031	2592 x 1944	4 fps	CMOS	1/2.5"	2.2µm x 2.2µm	Rolling	Color or Mono	M12-, CS-, C-Mount	USB2.0
VFU-J003	3660 x 2748	3.5 fps	CMOS	1/2.3"	1.67µm x 1.67µm	Rolling	Color or Mono	M12-, CS-, C-Mount	USB2.0

GigE Converters

Pleora Technologies Inc. is in the forefront of technological development of Gigabit Ethernet (GigE) solutions for the image processing sector. The Canadian company Pleora is the pioneer of GigE Vision and has a wealth of experience with this technology.

Pleora offers the world leading iPORT™ series to convert different input signals (CameraLink, LVDS and analogue) to Gigabit Ethernet easily and reliably. These user-friendly camera capture boxes allow image and video data to be transmitted over long distances and also permit scaleable processing and flexible networking. Pleora also offers the groundbreaking vDisplay™ series that are comprised of compact, purpose-built hardware that provides high-resolution video streams on GigE networks to be displayed directly on monitors, in real time, without the need for a PC.

Pleora's latest coup, the iPORT SB-Pro, seamlessly transforms the renowned Sony FCB Block-Cameras into GigE-Vision compliant network cameras. The interface protocol provides access to the rich function set of Sony FCBs and overcome the quality and cost issues of analogue video acquisition.

For any further information please contact our team:
sales@framoss.eu or support@framoss.eu



iPORT™ IP Converters*

- Real time streaming over a GigE LAN
- Scalable processing and flexible networking
- Transmission over long distance



vDisplay™ Converters*

- Plug-and-play receiver for real time streaming over GigE
- Directly on monitor without PC
- Shrinks size, cost, and power consumption



iPORT™ SB-Pro IP Engine for **SONY** FCB Cameras *

- Transforms a block camera from Sony into a GigE Vision® and Gen<i>Cam compliant camera
- High-performance, up to 1080i at 30fps
- Sony® VISCA™ camera control via Gen<i>Cam interface



* = These products are not available in France and UK.



iPORT™ Converters

For streaming of imaging data or video in real time over standard GigE links or LANs, Pleora offers the iPORT™ IP engines family. The iPORT IP engines use purpose-built hardware and deliver unmatched throughput, field-proven reliability and the industry's richest feature set in a small foot-print, low-power package. The user-friendly camera

capture boxes allow image and video data to be transmitted over long distances and also permit scalable processing and flexible networking. The iPORT™ IP engine boxes come together with device driver and a complete SDK. The iPORT™ OEM products allow high-performance GigE connectivity to be added to almost any camera, system or monitor quickly and cost-effectively.

Pleora Technologies iPORT™ Converter Boxes	
Product	Description
iPORT™ PT1000-CL IP Engine	GigE Vision-compliant; delivers high-performance, ultra-efficient GigE connections between Base-configuration CameraLink® cameras & PCs
iPORT™ PT2000-CLM IP Engine	delivers high-performance, ultra-efficient GigE connections between Medium configuration Camera-Link® cameras & standard PCs; follows the proprietary Pleora protocol
iPORT™ FB1000-CL IP Engine	delivers high-performance, fiber-based GigE connections between Base configuration CameraLink® cameras & PCs
iPORT™ PT1000-LV IP Engine	delivers high-performance, ultra-efficient GigE connections between TIA/EIA 644 LVDS cameras & PCs

Pleora Technologies vDisplay™ Converters	
Product	Description
vDisplay™ HDMI-Pro IP Engine	Converts streaming IP video to standard HDMI/DVI (High-Definition Multimedia Interface/Digital Visual Interface) formats for real-time display on off-the-shelf monitors · Auto-senses the display capabilities of the attached monitor and adjusts the image formats and resolution of the incoming video stream to match the monitor's refresh rate and resolution · available as a compact OEM board set or a small enclosed unit · integrates seamlessly with all other elements in Pleora's solution set for high-performance networked video connectivity, including its world-leading iPORT™ IP engines, eBUS™ drivers and the eBUS-PureGEV™ SDK

Pleora Technologies iPORT™ SB-Pro IP Engine for SONY FCB Cameras	
Product	Description
iPORT™ SB-Pro IP Engine	Transforms camera blocks from Sony into GigE Vision® compliant cameras with Pleora's iPORT™ SB-Pro IP engines · Compact and simple to integrate · Transmits high-definition video with low, predictable latency · Complete with extensive feature control using Gen<i>Cam™ · Ideal for system integrators looking to differentiate their offerings, increase interoperability and introduce networking capabilities · compatible with Sony® FCB-H11 block camera, Sony® FCB-EX1020 and FCB-EX985E block camera, as well as Sony® EH6300 block camera

Pleora Technologies iPORT™ Analog-Pro SD IP Engine	
Product	Description
iPORT™ Analog-Pro SD IP Engine	Converts standard definition analogue video to GigE Vision® protocol · Accepts 1 or 2 channels of composite video (NTSC, PAL, CCIR, RS-170) for simultaneous transmission over a single Gigabit Ethernet link · Note: current product firmware supports single channel only, hardware is provisioned for 2 channels; new firmware supporting 2nd channel available Q2 2011 · GigE Vision & Gen<i>Cam compliant

Further converters and prices on request!

Frame Grabber

Euresys is a major player in the field of machine vision field, offering high-performance products and services for image acquisition and vision-oriented analysis. Euresys offers a complete range of robust and powerful machine vision software tools as well as innovative and high-performance frame grabbers for high-end video surveillance and industrial machine vision applications.

Euresys offers the PicoLO frame grabber series for standard analogue (interlaced) cameras, Grablink Series for CameraLink cameras and Domino Series for non-standard analogue outputs such as Progressive Scan, 3-CCD and RGB cameras.

For any further information please contact our team:
sales@fram.ou.eu or support@fram.ou.eu



PICOLO Series

- PAL/NTSC analogue image acquisition
- Ultra-performant features to empower e.g. security or industrial applications



PICOLO H.264 Series **

- Top-quality video acquisition and H.264 compression cards
- Compatible with standard PAL or NTSC cameras
- 2 or 3 simultaneous & independently configurable output streams / camera



DOMINO Series

- Analogue image acquisition boards with perfect digital quality
- Support of progressive or interlaced, monochrome / RGB analogue cameras
- PCI and PCI Express frame grabbers



GRABLINK Full, DualBase and Base

- Digital Camera Link® image acquisition
- Support of full, medium and base configuration cameras
- On-board processing
- PCI Express x4 and x1



* = These products are not available in France and UK.
** = These products are not available in UK.



PICOLO Series

The Euresys Picolo cards are top-quality video acquisition cards compatible with standard PAL or NTSC cameras. They are dedicated to high-end applications in the fields of video surveillance and security, or entry-level applications

in the field of machine vision such as quality control and production monitoring. These cards faithfully digitise the video signal provided, offering perfect image fidelity to make the most of the data provided by a camera.

EURESYS PICOLO Series	
Product	Description
Picolo	1 real-time to 3 switching video channels
Picolo Junior 4, Picolo Pro 2	1 real-time to 4 switching video channels
Picolo Tymo/Picolo Tetra/Picolo Alert	4 real-time to 16 switching video channels

PICOLO H.264 Series

The Euresys Picolo H.264 cards are top-quality video acquisition and H.264 compression cards compatible with standard PAL or NTSC cameras. They are dedicated to high-end applications in the fields of

video-surveillance and mobile video-surveillance. Each video input simultaneously delivers 2 or 3 independent configurable output streams: 1 raw uncompressed stream and 1 or 2 H.264 compressed streams.

EURESYS PICOLO H.264 Series	
Product	Description
Picolo U4, U8 and U16 H.264	H.264 compression card for 4, 8 and 16 video channels with audio capability
Picolo U4 H.264 PCI-104	Ruggedized capture and H.264 compression card for 4 video inputs with audio capability for mobile video-surveillance applications · Compact PCI-104 compliant form factor

Domino Series

Analogue image acquisition boards with perfect digital quality, the Domino Series is a range of high-end PCI and PCI Express frame grabbers for analogue cameras. They support innovative proprietary technology called D³ Technology™,

providing a perfect digital image with the benefits of a proven analogue environment. D³ Technology™ offers unequalled signal stability and image quality for analogue acquisition. These products are further enhanced by extensive on-board I/O capabilities.

EURESYS DOMINO Series	
Product	Description
Domino Harmony	For 1 single-tap monochrome camera
Domino Melody	For 2 single-tap monochrome or 1 RGB cameras
Domino Symphony	For 4 single-tap monochrome cameras

Grablink Series

Digital CameraLink® image acquisition boards with a range of high-speed PCI, PCI Express frame grabbers for line-scan or area-scan digital

CameraLink® cameras. State-of-the-art cameras are easily connected with off-the-shelf CameraLink® compliant cables.

EURESYS GRABLINK Series	
Product	Description
Grablink Full	Full featured Camera Link frame grabber for 1 Base-, Medium- or Full-configuration (including 10-tap) camera up to 85MHz · On-board processing functions and digital IO lines compatible with numerous sensors and encoders
Grablink DualBase	Full featured Camera Link frame grabber for 2 Base-configuration camera, up to 85MHz · On-board processing functions and digital IO lines compatible with numerous sensors and encoders
Grablink Base	Full featured Camera Link frame grabber for 1 Base-configuration camera up to 85MHz · Features on-board processing functions and digital IO lines compatible with numerous sensors and encoders
Grablink Expert 2	Camera Link frame grabber for 2 Base- or one Medium-configuration cameras up to 60MHz · Features IO lines

Further frame grabbers and prices on request!

Lenses

FRAMOS offers you a full range of machine vision lenses (fixed focal length, varifocal, with fixing screws) as well as lenses for IP security and CCTV applications (motorized zoom, auto iris, IR-lenses, etc). For very special applications we can offer you telecentric, macro and high-quality measuring lenses. In addition to the popular mounts like C-mount, CS-mount and M12 we also provide F-mount (Nikon), K-mount (Pentax) and Canon mount lenses.

In addition to the products shown here, we also offer additional lenses and filters from the following manufacturers.



If you need other accessories not listed here, please feel free to contact our sales team: sales@framos.eu or support@framos.eu

Sunex



- Compact high resolution lenses
- HDR lenses
- Day/night capabilities and many more

FUJINON



- Lenses at highest standards
- Wide product portfolio
- Outstanding price performance ratio





Sunex Digital Imaging Lenses

Sunex specializes in digital imaging lenses, optical components and customized optical solutions from design to manufacturing. As a leading supplier of OEM lens assemblies Sunex provides innovative designs that optimize the performance of CMOS cameras. Highlights of Sunex capabilities include fisheye, SuperFisheye™ and

Tailored Distortion™ optical distortion reduction. Sunex provides best in class performance at competitive prices from their high quality manufacturing facilities in China (ISO9001:2008 and TS16949:2009 certified). Sunex stands for excellence in digital imaging optics.

Sunex Digital Imaging Lenses

Model	Features	Focal Length	Max. Imager Size	Image Circle	FOV (Image Circle)	F#	Barrel Size	Resolution
DSL935	Compact high resolution	9.6mm	1/1.8"	9.1mm	51°	3	M12	5MP
DSL944	Compact high resolution	7.5mm	1/2.7"	7.2mm	55°	2,8	M12, M8	5MP
DSL945	Compact high resolution	5.5mm	1/2"	8.0mm	70°	2,5	M12	10MP
DSL946	HDR High Dynamic Range	5.7mm	1/3.2"	5.6mm	55°	1,6	M12	HD
DSL849	HDR High Dynamic Range	5.9mm	1/3.2"	5.6mm	49°	2	M12	HD
DSL949	Low distortion, wide-angle	3.4mm	1/3.4"	5.4mm	76°	2	M12	
DSL355	Low distortion, wide-angle	4.1mm	1/2.5"	6.5mm	78°	2,8	M12	5MP
DSL219	Ultra-wide and fisheye	1.8mm	1/3"	5.2mm	180°	2	M12	10MP
DSL216	Ultra-wide and fisheye	1.3mm	1/4"	3.6mm	180°	2	M12	3MP
DSL377	Tailored distortion	2.5mm	1/2.3"	7.6mm	134°	2,8	M12	5MP
DSL221	Tailored distortion	1.1mm	1/4"	4.0mm	170°	2	M12	HD
DSL235	Day / night	3.0mm	1/3"	6.0mm	160°	3,2	M8	5MP
DSL213	Day / night	3.0mm	1/3"	6.0mm	170°	2	M12	3MP
DSL936	Day / night	8.5mm	1/2"	8.0mm	52°	2,8	M12	5MP

FUJINON Digital Imaging Lenses

Fujinon is one of the leading pioneers in development of optics. Through continuous research, enormous experience and excellent quality, Fujinon is able to deliver products to the highest standards. Special image processing applications require special lenses. And Fujinon provides appropriate solutions for a wide range of applications. Whether

you need high-resolution optics for 5 mega pixel sensors, a fixed focal length, a zoom or wide-angle lens, a 3CCD or UV optics - each model persuades with the superior quality of Fujinon. Thus Fujinon offers particularly high-resolution optics with minimal distortion for optimal picture quality.

FUJINON Digital Imaging Lenses

Model	Features	Focal Length	Max. Imager Size	Max.relative Aperture	MOD	Mount	Resolution
DF6HA-1B	Compact size, low distortion	6 mm	1/2"	F1.2	0.1 m	C	1.5MP
HF9HA-1B	Compact size, low distortion	9 mm	2/3"	F1.4	0.1 m	C	1.5MP
HF12.5HA-1B	Compact size, low distortion	12.5 mm	2/3"	F1.4	0.1 m	C	1.5MP
HF16HA-1B	Compact size, low distortion	16 mm	2/3"	F1.4	0.1 m	C	1.5MP
HF25HA-1B	Compact size, low distortion	25 mm	2/3"	F1.4	0.15 m	C	1.5MP
HF35HA-1B	Compact size, low distortion	35 mm	2/3"	F1.6	0.25 m	C	1.5MP
HF50HA-1B	Compact size, low distortion	50 mm	2/3"	F2.3	0.5 m	C	1.5MP
HF75HA-1B	Compact size, low distortion	75 mm	2/3"	F2.8	1.1 m	C	1.5MP
HF16SA-1	High resolution, low distortion	16 mm	2/3"	F1.4	0.1 m	C	5MP
HF25SA-1	High resolution, low distortion	25 mm	2/3"	F1.4	0.1 m	C	5MP
CF12.5HA-1	Compact size for 1", low distortion	12.5 mm	1"	F1.4	0.1 m	C	1.5MP
CF50HA-1	Compact size for 1", low distortion	50 mm	1"	F1.8	0.4 m	C	1.5MP
FE185C046	Fish Eye lenses, 185°x185° angle of view, high resolution	1.4 mm	1/2"	F1.4	0.1 m	C	5MP
FE185C057		1.8 mm	2/3"	F1.4	0.1 m		
FE185C086HA-1		2.7 mm	1"	F1.8	0.2 m		
HF35SR4A-1	IR correction, high resolution, best suited for traffic applications	35 mm	2/3"	F2.0	0.75 m	C	5MP
HF50SR4A-1		50 mm		F2.8	1m		

More lenses and prices on request!

Cables

for industrial applications

The FRAMOS portfolio includes a wide range of ready to use cables for industrial applications. Cables are available for all of the established interfaces types, such as: USB, FireWire, GigE, CameraLink and Analogue. In addition to the standard connectors, we can also provide versions with angled and locking connectors.

- Industrial grade tested > 11 million cycles
- Straight, angled, horizontal or vertical screwed
- Customisation available

If you need other accessories not listed here, please feel free to contact our sales team: sales@framus.eu or support@framus.eu

ALYSIUMTECH



- GigE, FireWire, CameraLink, Analogue
- Broad range of plugs
- Custom-fit and failsafe solutions available

NORTHWIRE[®]
INC



- GigE, FireWire, CameraLink, USB, Analogue
- Extremely durable, fit for robot and chain applications



ALYSIUMTECH High performance cabling

Alysium-Tech is our partner for high performance cabling solutions. Strong production and engineering capabilities contributes to high-quality, superior, reliable, and cost-efficient solutions, which extend your competitive advantage. With significant experience in the fields of connectors, cables and cable assemblies, we can ensure highly professional support for

your projects. The reliability of a system starts with the uncompromising reliability of the applied cables. This is why we do not accept any compromise in the quality of cabling products. In the image processing domain this covers primarily but not exclusively FireWire, Gigabit Ethernet (GigE), CameraLink, and Analogue cables.

NORTHWIRE[®] Cables for 11 Million cycle robotic applications

North-American cable manufacturer Northwire specialises in cables for exposure to extreme mechanical stress in their various applications. In operation, robot arms and dragchain cables have to resist continuously

changing torsion and traction forces over several million cycles. Northwire cables are especially designed for such application scenarios and excel in high levels of mechanical flexibility and durability.

GigE cables

Due to the mass application of Gigabit Ethernet in the world of digital data processing, GigE cables can be provided at a very low price point. However, when you need to meet industrial requirements, the durability and mechanical flexibility of your cables decides the reliability of your systems in the field. High-end products from Hitachi Cable, Northwire and a broad range of connectors provides the basis for custom-fit and failsafe solutions in robot, chain and extended range applications.

GigE cables			
Cable type	Standard	Outer Ø	Description
MCDC-(C6)-736C	S-STP (#28), CAT5e	6,4 mm	Moderate High Flex
MCDC-(C6)-782	S-STP (#26), CAT6	7,5 mm	Moderate High Flex
MCDC-(C6)-830A	S-UTP (#24), CAT5e	6,8 mm	Moderate High Flex
MCDC-C6-067A	S-UTP (#25), CAT5e	6,9 mm	Extreme High Flex

GigE plugs	
Plug	Description
RJ45 assembled / moulded	RJ45 plug mounted / moulded
RJ45 Hsl / Vsl	RJ plug, 2 screws horizontal / vertical
RJ45 90° Hsl / Vsl (l/r/u/d)	RJ plug, 1 screw, 90° angled, horizontal / vertical, left/right/up/down
M12 shielded (IP68)	RJ45, M12 cap for protection standard IP68
Plastic IP67 90° moulded (l/r/u/d)	Plastic PushPull cap, 90° angled, for protection standard IP67, left/right/up/down
Metal IP67 90° with 10G Plug	Metal PushPull cap, 90° angled, for protection standard IP67



Cables

FireWire cables

The following FireWire cables are designed exclusively for industrial purposes. We provide extended length assemblies with superior cable and component quality. The cable itself is manufactured by Hitachi Cable and Northwire in an individually optimized and quality driven production process. Improved component design ensures enhanced connection reliability, EMC performance, and durability. A broad range of connectors, from mangled to especially small dimensions, solves every space restriction.

FireWire cables			
Cable type	Standard	Outer Ø	Description
MCD-1394b-583B	1394a&b	7,1 mm	1394a up to 20m, 1394b up to 15m
MCD-1394-658B	1394a	5,7 mm	Standard
MCDC-1394-647A	1394a	7,2 mm	Moderate High Flex
MCDC-1394b-735A	1394b	7,1 mm	Moderate High Flex
MCDC-1394b-743	1394a&b	7,75 mm	Extreme High Flex
MCD-1394b-818	1394b	5,0 mm	Reduced outer diameter
MCD-1394-715	1394a	4,8 mm	Reduced outer diameter
MCD-1394b-716	1394b	11,9 mm	for lengths >20m



FireWire plugs		
Plug	Standard	Description
9P / Psl	1394b	9-Pin plug standard / 2 screws
9Psl (-716)	1394b	9-Pin plug, 2 screws, for long cabling
9Psl 90° (l/r/u/d)	1394b	9-Pin plug, 2 screws, 90° angled, left/right/up/down
9P female	1394b	9-Pin connector
6P / Psl	1394a	6-Pin plug standard / 2 screws
6Psl 90°	1394a	9-Pin plug, 90° angled, left/right/up/down
6Psl 90° (l/r/u/d)	1394a	9-Pin plug, 2 screws, 90° angled, left/right/up/down
4P	1394a	4-Pin plug, mini FireWire plug

CameraLink cables

CameraLink still constitutes a well-established standard in industrial image processing. One of the major pitfalls of this technology is the limitation in cable length. However, the use of high quality materials improves this factor to allow up to 20 meters bridging capability. Again, quality and reliability in combination with flexible assembly of all cord/connector variants is the key to reliability in a demanding image processing system.

CameraLink cables				
Cable type	Standard	Outer Ø	Color	Description
MCD-483	Base #30	6,9 mm	Ivory	10m@66MHz / 9m@160 MHz
MCD-484	Base #28 PoCL	6,9 mm	Ivory	PoCL, 15m@66MHz, 20m@40MHz, fit for chains
MCD-479	Base #28	8,1 mm	Ivory	15m@66MHz / 20m@40MHz
MCD-500	Base #26	9,8 mm	Ivory	15m@66MHz / 20m@40MHz
MCDC-951	Base #30 PoCL	7,3 mm	Grey	PoCL, fit for chains
MCDR-589A	Base #28 Robot	9,3 mm	Grey	fit for robotics, 15m@40MHz
MCD-408	Full #30 PoCL	8,4 mm	Ivory	PoCL
MCD-406A	Full #28 PoCL	9,4 mm	Ivory	PoCL, 10m@80MHz
MCD-405	Full #28	9,4 mm	Black	
MCD-404	Full #28	9,4 mm	Ivory	
MCD-403A	Full #26 PoCL	11,0 mm	Ivory	PoCL
MCD-402	Full #26	11,0 mm	Ivory	15m@80MHz
MCDR-592	Full #28 Robot	9,4 mm	Grey	PoCL, fit for robotics
MCDR-590	Full #28 Robot	10,2 mm	Grey	Fit for robotics



More cables and prices on request!

CameraLink plugs

Plug	Description
26P MDR	26-Pin MDR, moulded
26P MDR 90° (u/d)	26-Pin MDR, moulded, 90° angled, up/down
26P SDR	26-Pin SDR, moulded
26P SDR 90° (u/d)	26-Pin SDR, moulded, 90° angled, up/down
26P MDR	26-Pin MDR, assembled
26P MDR 90° (u/d)	26-Pin MDR, assembled, 90° angled, up/down
26P SDR	26-Pin MDR, assembled
26P SDR 90° (u/d)	26-Pin MDR, assembled, 90° angled, up/down

Analogue cables

This cable series is designed for the transmission of analogue video signals and I/O interfacing with industrial cameras. The cable comes from the renowned Hitachi Cables and fulfills all industrial quality requirements. The connectors originate from Hirose™ and we also offer fully compatible circular connectors with a wide variety of pin counts, pin layouts and sizes. The following table shows a small selection of the standard cables and components.

Analogue cables

Cable type	Outer Ø	Description
MCD-677	6.4 mm	12 leads distinguishable by colours
MCDC-444	6.5 mm	12 leads, chain cable, >1 million cycles
MCD-679	4.9 mm	6 leads distinguishable by colours
MCDC-679	5.8 mm	6 leads, chain cable, >1 million cycles

Analogue plugs

Plug	Pin	Description
60-03-0106	6	90°, assembled
60-01-0106	6	180°, assembled
HR10A-10P-12S	12	180° Hirose, moulded
60-01-1112	12	Compatible to HR10A-10P-12S, gold plated



Lighting

Illumination Technology

The choice of correct lighting components is very important for the reliability of imaging applications. FRAMOS can select for you the best lighting method and illumination technology for your specific application. Our suppliers have several illumination technologies and components available such as incident lighting, back lighting, dark-field lighting, telecentric lighting, directional and diffuse lighting, ring lights.

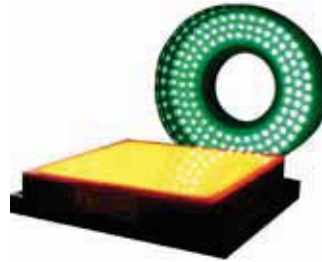
In addition to the products shown here, we also offer lighting components from the following manufacturers:



If you need other accessories not listed here, please feel free to contact our sales team: sales@framoss.eu or support@framoss.eu

FALCON

LED LIGHTING SYSTEMS FOR MACHINE VISION



- Bar, back, and ring lights
- Coaxial, dome and diffuse lights
- UV and IR LED lights
- Customized LED lights

effiLux

Efficient Led Lighting



- Profilometer LED lighting
- LED pattern projectors
- High brightness LED line lights
- LED illuminators

smartek

machine vision



- Highend LED illumination controllers
- Power pulses of up to 16A @ 200V
- Trigger resolution of 1µs and 1mA
- Variable pulse durations of 1µs to 1s



FALYCON Lighting

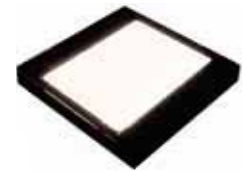
LED LIGHTING SYSTEMS FOR MACHINE VISION

Falcon delivers LED lightings for Machine Vision. For most applications of LED lighting used in industrial image processing, Falcon Lighting is the right choice where quality and variety of available products are concerned.

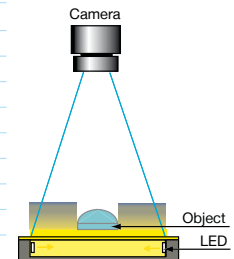
The best quality of LEDs, extended warranties and high standards of housings guarantee security for the most varied of applications. Falcon LED-lighting is easily integrated in any application.

Falcon FLFL – Diffuse Back Lights

Easy to implement, the FLFL creates a silhouette of the work-piece for a very-high-contrast image. Power saving back light system with a thin design and a uniform surface light emission profile, p.e. for inspection of dimension and shape of lead frame or visual inspection of dimension and shape of electronic parts.



Model	Colors	Voltage	Watt	Dimensions	Illumination Area	Height
FLFL-Si60x60	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	7,68/5,76/8,64 W	94 x 94 mm	60 x 60 mm	10 mm
FLFL-Si70x40	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	3,84 W / 2,88 W	80 x 70 mm	70 x 40 mm	9,5 mm
FLFL-Si90x40	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	5,76 W / 3,84 W	100 x 70 mm	90 x 40 mm	9,5 mm
FLFL-Si90x40-7	Red 24 V	24 V	5,76 W	100 x 70 mm	90 x 40 mm	7 mm
FLFL-Si100	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	9,6/11,5 / 14,4 W	133 x 125 mm	100 x 100 mm	10 mm
FLFL-Si160x40	Red 24 V / Green, Blue, White	24 V / 24 V	9,6 W / 12,96 W	193 x 77 mm	160 x 40 mm	10 mm
FLFL-Si150x70	Red 24 V / Green, Blue, White	24 V / 24 V	11,52 W	174 x 100 mm	150 x 70 mm	10 mm
FLFL-Si200	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	19,2/26,8/28,8 W	233 x 225 mm	200 x 200 mm	10 mm
FLFL-Si250	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	20,2 W / 40,3 W		250 x 250 mm	
FLFL-Si360x240	White	24 V	42,7 W		360 x 240 mm	

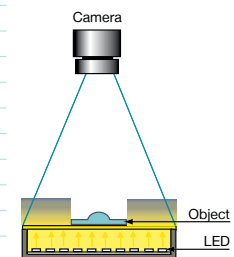


Falcon FLDL-TP – High Brightness Diffuse Back Lights

Slim type lighting with LEDs mounted at the bottom of the light guide to brighten it. LEDs are arranged at high intensity to produce high luminosity. Light from chip LEDs passes through the diffusionplate and illuminates work pieces from behind to create a silhouette; p.e. for IC lead gauging inspection for TSSOP, SOIC, DIP, SC70, SOT and QFP.



Model	Colors	Voltage	Watt	Dimensions	Illumination Area	Height
FLDL-TP-Si27	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	2,40/1,92 / 1,92 W	37x37 mm	25x25 mm	13 mm
FLDL-TP-Si36	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	4,32/5,76 / 2,88 W	47x47 mm	36x36 mm	15 mm
FLDL-TP-Si51	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	8,64 W / 7,20 W	62x62 mm	50x50 mm	15 mm
FLDL-TP-Si85x77	Green, Blue, White	24 V	13,44 W	95x95 mm	85x77 mm	15 mm
FLDL-TP-Si100x80	Green, Blue, White	24 V	15,36 W	110x106 mm	100x80 mm	20 mm
FLDL-TP-Si100	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	21,6/26,9 / 15,36 W	124x112 mm	100x100 mm	24 mm
FLDL-TP-SXi100	Green, Blue, White	24 V	25,92 W	124x112 mm	100x100 mm	24 mm
FLDL-TP-Si200x100	Green, Blue, White	24 V	23,04 W		200x100 mm	25 mm
FLDL-TP-Si200	Green, Blue, White	24 V	46,08 W	216x226 mm	204x204 mm	25 mm
FLDL-TP-Si250x80	White	24 V	24 W			
FLDL-TP-Si250	Red 24 V / White	24 V / 24 V	120 W / 108 W	270x272 mm	260x252 mm	25 mm
FLDL-TP-Si300x100	White	24 V	60 W	322x120 mm	310x102 mm	25 mm
FLDL-TP-Si600x90	Red 24 V	24 V	108 W		600x90 mm	25 mm

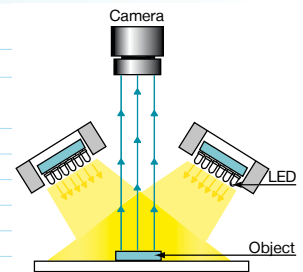


FLDL Bar Lights

Bar-shaped lighting using LEDs mounted on a flat board. High density arrays using high-intensity LEDs create optimum oblique lighting conditions. Reflection control by mounting a diffusion plate. Flexible installation to enable a wide range of applications. Usable as high intensity surface lighting. Using four pieces of bar light guarantees best illumination from all sides.



FALYCON FLDL		LED LIGHTING SYSTEMS FOR MACHINE VISION				
Model	Colors	Voltage	Watt	Dimensions	Illumin. Area	Height
FLDL-i24x10	Red / Green, Blue, White	12 V / 24 V	0,48 W / 0,96 W	38x10 mm	21,5 x7,4 mm	15 mm
FLDL-i24x15	Red/Red 24 V / Green, Blue, White / White	12/24 V / 24 V / 24 V	0,72/0,48 W / 1,44 W / 3,60 W	34x17,5 mm	24x15 mm	20 mm
FLDL-i44x15	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	1,20/1,44 W / 2,40 W	52x17,5 mm	42x15mm	20 mm
FLDL-i56x15	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	1,44 W / 2,88 W	65,5x17,5 mm	56x15mm	20 mm
FLDL-i56x15-SR24	2x Red 24 V	24 V	1,92 W	65,5x17,5 mm	56x15mm	20 mm
FLDL-i74x27	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	4,08/4,32 W / 8,64 W	83x30 mm	75x28 mm	18 mm
FLDL-i86x15	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	2,16/2,40 W / 4,32 W	94,5x17,5 mm	84x15 mm	20 mm
FLDL-i120x15	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	3,36 W / 6,72 W	128x17,5 mm	118x15 mm	20 mm
FLDL-i120x40	Red / Green, Blue, White	12 V / 24 V	12,0 W / 24,0 W	132x50 mm	125x43 mm	18 mm
FLDL-i120x40-SR24	2x Red 24 V	24 V	14,4 W	132x50 mm	125x43 mm	18 mm
FLDL-i130x15	Red / Green, Blue, White	12 V / 24 V	3,36 W / 6,72 W	140x17,5 mm	130x15 mm	20 mm
FLDL-i130x50	Red 24 V / Green, Blue, White	24 V / 24 V	13,2 W / 26,4 W		130x50 mm	20 mm
FLDL-i150x15	Red 24 V / Green, Blue, White	24 V / 24 V	3,84 W / 7,68 W	158x17,5 mm	148x15mm	20 mm
FLDL-i150x27	Red / Green, Blue, White	12 V / 24 V	7,68 W / 15,4 W	148x34 mm	ca. 140x27 mm	20 mm
FLDL-i180x15	Red / Green, Blue, White	12 V / 24 V	4,80 W / 9,60 W	190x17,5 mm	180x15 mm	20 mm
FLDL-i200x27	Red / Green, Blue, White	12 V / 24 V	10,6 W / 21,1 W	200x34 mm	192x27 mm	18 mm
FLDL-i200x50R24-5	Red 24 V	24 V	8,4 W		200x50 mm	20 mm
FLDL-i200x50-WGB-5	Green, Blue, White	24 V	16,8 W		200x50 mm	20 mm
FLDL-i240x35	Red / Green, Blue, White	12 V / 24 V	19,2 W / 38,4 W		240x35 mm	20 mm
FLDL-i300x15-5 IP 65	Red 24 V / White	24 V / 24 V	3,6 W / 7,2 W	325x20 mm	315x15 mm	20 mm
FLDL-i300x20	Red 24 V / White	24 V / 24 V	9,6 W / 19,2 W	320x25 mm	300x20 mm	20 mm
FLDL-i300x35	Red 24 V / Green, Blue, White	24 V / 24 V	23,0 W / 46,1 W		300x35 mm	20 mm
FLDL-i400x30	Red 24 V / White	24 V / 24 V	19,2 W / 38,4 W	420x40 mm	404x30 mm	20 mm
FLDL-i400x30-SR24	2x Red 24 V	24 V	23,04 W	420x40 mm	404x30 mm	20 mm
FLDQ-i100	Red 24 V / Green, Blue, White	24 V / 24 V	5,76 W / 11,5 W		100x100 mm	20 mm

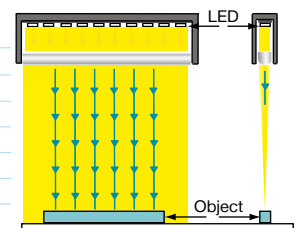


Falcon FLLN – LED Line Lights

High light density LED line light with an adjustable cylindrical lens. A very intense illumination suited for the use with line-scan cameras. The line lights are available in a wide range of widths and wavelengths. A 100 mm working distance is recommended; for e.g. coaxial episcopic lighting, wafers or liquid crystal glass substrate alignment.



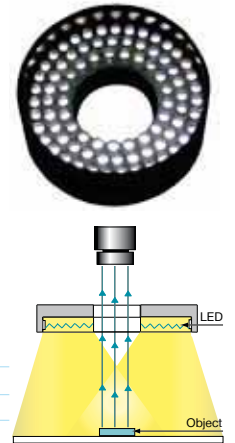
FALYCON FLLN		LED LIGHTING SYSTEMS FOR MACHINE VISION				
Model	Farbe	Lichtlinienbreite	Volt	Watt	Länge Gehäuse	Material Gehäuse
FLLN-i50	Red 24 V / White	5-10 mm	24 V	1,20 W / 2,40 W	80 mm	Aluminium
FLLN-i100	Red 24 V / White	5-10 mm	24 V	2,40 W / 4,80 W	130 mm	Aluminium
FHLN-Si100	White	5-10 mm	24 V	16,80 W	130 mm	Aluminium
FLLN-i150	Red 24 V / White	5-10 mm	24 V	3,60 W / 7,20 W	180 mm	Aluminium
FLLN-i180-R24	Red 24 V / White	5-10 mm	24 V	3,60 W / 7,20 W	210 mm	Aluminium
FLLN-i300-R24	Red 24 V / White	5-10 mm	24 V	6,00 W / 14,4 W	330 mm	Aluminium
FLLN-i600-R24	Red 24 V / White	5-10 mm	24 V	12,0 W / 24,0 W	auf Anfrage	Aluminium
FLLN-i800-R24	Red 24 V / White	5-10 mm	24 V	auf Anfrage	auf Anfrage	Aluminium
FLLN-i1000-R24	Red 24 V / White	5-10 mm	24 V	auf Anfrage	1300 mm	Aluminium





Falcon FLDR – Direct Ring Lights

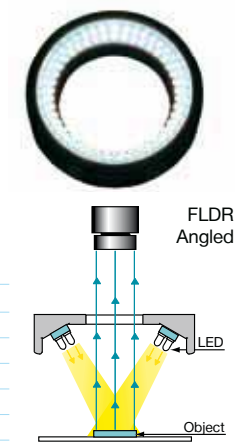
High-luminance LEDs deployed at high density to produce 360-degree illumination. Able to produce fresh, vivid images. High evenness due to illumination from the outer circumference of the ring. Wide area of illumination from the outer diameter. Direct Lighting from LEDs mounted to a flat circuit board illuminates towards the center of the object.



FALYCON		FLDR – Direct Ring Lights					
Model	Colors	Voltage	Watt	Dimensions	Illumination Area	Inner Ø	
FLDR-Si20A	Red 24 V / Green, Blue, White	24 V / 24 V	0,96 W / 0,96 W	Ø 20 mm	Ø 17 mm	Ø 6 mm	
FLDR-Si32A	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	1,92 W / 1,44 W	Ø 37 mm	Ø 32 mm	Ø 18 mm	
FLDR-i50A	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	1,92 W / 3,84 W	Ø 49 mm	Ø 44,6 mm	Ø 23 mm	

Falcon FLDR – Angled Ring Lights

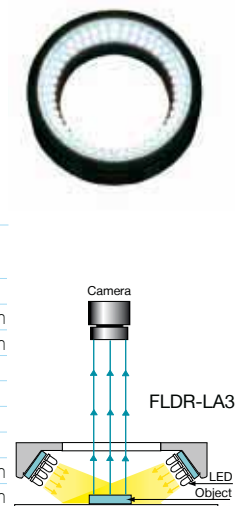
Large angle illumination is perfect for edge and damage detection, embossed printing, etc., on metal surfaces. Providing 360-degree illumination for reflective objects from an angle without producing reflections. Ideal for slightly uneven surfaces and scratches. Optionally, a diffusion plate can be mounted to improve illumination evenness.



FALYCON		FLDR – Angled Ring Lights					
Model	Colors	Voltage	Watt	Dimensions	Illumination Area	Inner Ø	
FLDR-Si32B	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	1,92 W / 1,44 W	Ø 32 mm	Ø 28 mm	Ø 10 mm	
FLDR-i38B	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	2,88 W / 2,88 W	Ø 38 mm	Ø 32 mm	Ø 15 mm	
FLDR-i50B	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	2,16/2,4 / 4,32 W	Ø 49 mm	Ø 47,5 mm	Ø 25 mm	
FLDR-i90B	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	7,92/9,60 / 13,44 W	Ø 93,5 mm	Ø 87,5 mm	Ø 50 mm	
FLDR-Si90AOI	Green, Blue, White / White	12 V / 24 V	7,44 W / 6,24 W	Ø 90 mm	Ø 82 mm	Ø 50 mm	
FLDR-i120B	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	19,20 W / 38,40 W	Ø 122 mm	Ø 112 mm	Ø 63,5 mm	

Falcon FLDR-LA – Low Angle Ring Lights

Low-angle illumination is perfect for edge detection and embossed printing, damage, etc. on metal surfaces. Providing 360-degree illumination for reflective objects from a low angle without producing reflections. Ideal for slightly uneven surfaces and scratches. Optionally, a diffusion plate can be mounted to improve illumination evenness.



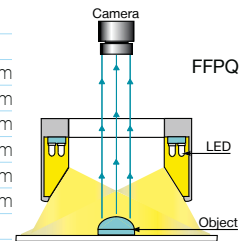
FALYCON		FLDR-LA					
Model	Colors	Voltage	Watt	Dimensions	Illumination Area	Inner Ø	
FLDR-Si75-LA1	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	4,80 W / 3,36 W	Ø 75 mm	Ø 50 mm	Ø 50 mm	
FLDR-Si100-LA1	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	6,72 W / 4,80 W	Ø 102 mm	Ø 65 mm	Ø 65 mm	
FLDR-Si130-LA1	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	10,56 W / 7,20 W	Ø 130 mm	Ø 94 mm	Ø 94 mm	
FLDR-Si180LA1	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	12,48 W / 9,12 W	Ø 180 mm	Ø 150 mm	Ø 150 mm	
FLDR-i220-LA1	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	15,36 W / 11,52 W	Ø 220 mm	Ø 185 mm	Ø 185 mm	
FLDR-i74-LA3	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	3,60/4,32 / 7,20 W	Ø 74 mm	Ø 65 mm	Ø 48 mm	
FLDR-Si74-LA3	Red 24 V	24 V	6,72 W	Ø 74 mm	Ø 65 mm	Ø 48 mm	
FLDR-i100-LA3	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	8,16 W / 16,32 W	Ø 115 mm	Ø 97 mm	Ø 76 mm	
FLDR-i132-LA3	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	10,08 W / 20,16 W	Ø 132 mm	Ø 113 mm	Ø 98 mm	
FLDR-i170-LA3	Red/Red 24 V / Green, Blue, White	12/24 V	13,92 W / 27,84 W	Ø 172 mm	Ø 163 mm	Ø 134 mm	
FLDR-i220-LA3	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	17,28 W / 34,56 W	Ø 220 mm	Ø 205 mm	Ø 180 mm	

Falcon FFPR/FFPQ – Diffused Ring & Square Lights

Low angle, diffused illumination enables characters and defects to be uniformly illuminated with no LED glare. Soft, even and diffused lighting on shiny objects. Best for preventing the halo effect. A 0-10 mm working distance is required; for e.g. inspection of IC character, IC lead inspection within the embossed tape or NG mark inspection.



Model	Colors	Voltage	Watt	Dimensions	Illumination Area	Inner Ø
FFPR-i70	Red 24 V / Green, Blue, White	24 V / 24 V	6,72 W	Ø 70 mm	Ø 64 mm	Ø 73 mm
FFPR-i100	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	4,80 W / 9,60 W	Ø 100 mm	Ø 94,6 mm	Ø 73 mm
FFPR-Si100	Red 24 V	24 V	8,64 W	Ø 100 mm	Ø 94,6 mm	Ø 73 mm
FFPQ-Si31x35	Red / Green, Blue, White	12 V / 24 V	1,44 W / 0,96 W	35 x 31 mm	29 mm	17 x 17 mm
FFPQ-Si32	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	1,92 W / 1,92 W	32 x 32 mm	10 mm	10 x 10 mm
FFPQ-Si50	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	3,84 W / 2,88 W	50 x 50 mm	28 mm	28 x 28 mm
FFPQ-Si75	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	5,76 W / 4,80 W	75 x 75 mm	53 mm	53 x 53 mm
FFPQ-Si100	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	7,68 W / 6,72 W	100 x 100 mm	78 mm	78 x 78 mm
FFPQ-Si120	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	9,60 W / 8,64 W	120 x 120 mm	98 mm	98 x 98 mm
FFPQ-Si150	Red 24 V / Green, Blue, White	24 V / 24 V				

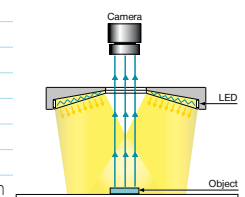


Falcon FLKR-FLFR – Diffuse Front Lights

Easy to implement ring-shaped light with overhead diffuse light eliminates LED glares and shadows for even illumination, preventing halo or specular effect. A 10-50 mm working distance is required. Inspection of p.e. coating, burr, molding, soldering or board parts. Best to use for reflective object surface inspection.



Model	Colors	Voltage	Watt	Dimensions	Illumination Area	Inner Ø
FLKR-Si70	Red 24 V / Green, Blue, White	12/24 V / 24 V	4,80 W / 3,36 W	Ø 74 mm	Ø 69 mm	Ø 20 mm
FLKR-Si85	Red 24 V / White	24 V / 24 V	5,76 W	Ø 85 mm	Ø 83 mm	Ø 8 mm
FLKR-Si100	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	10,56 W / 7,20 W	Ø 125 mm	Ø 96 mm	Ø 60 mm
FLFR-Si70	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	6,72 W / 4,32	Ø 80 mm	Ø 60 mm	Ø 20 mm
FLFR-Si100	Red/Red 24 V / Green, Blue, White	12/24 V	9,60/7,68 W	Ø 110 mm	Ø 90 mm	Ø 33 mm
FLFR-Si200	Red 24 V / Green, Blue, White	24 V / 24 V	15,36 W	Ø 220 mm	Ø 195 mm	Ø 70 mm
FLFR-Si250	Red 24 V / Green, Blue, White	24 V / 24 V	26,88 W / 19,2 W	Ø 270 mm	Ø 246 mm	Ø 90 mm
FLFR-Si350	Red 24 V / White	24 V / 24 V	34,56 W	Ø 350 mm	Ø 332 mm	Ø 115 mm

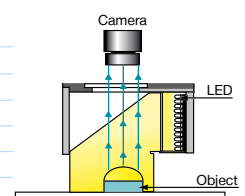


Falcon FLFV Coaxial Lights

Coaxial is a uniform light that runs perpendicular with camera axis across the entire field of view makes on-axis illumination systems. Illumination from the coaxial side of a lens via a partial mirror. A 5-50 mm working distance is possible; for clean room use and e.g. semiconductors, food processing or pharmaceutical machine vision.



Model	Colors	Voltage	Watt	Dimensions	Illumination Area
FLFV-CPi18	Red / Green, Blue, White	12 V / 24 V	0,96 W / 1,92 W	56 x 30 mm	20 x 20 mm
FLFV-Si25N	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	1,92 W / 1,44 W	55 x 35 mm	25 x 25 mm
FLFV-Si50N	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	10,56/8,64 / 7,20 W	85 x 60 mm	50 x 50 mm
FLFV-Si70N	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	8,4/10,6 / 9,6 / 14,4 W	118 x 80 mm	70 x 70mm
FLFV-i100	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	on request	on request	on request
FLFV-Si200	White	24 V	46,10 W	225 x 225 mm	200 x 200 mm



More lighting products and prices on request!

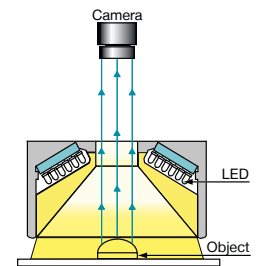


Falcon FLDM & FHDM – Dome Lights

Suitable for character inspection of workpieces with glossy surface and dome-shaped surface. Perfectly suited for glossy or in-pocket inspection. The lighting covers 180 degrees wide angle to make shadow free images when inspecting a component inside a carrier tape pocket. The diffusion allows a uniform light covering.



FALYCON		FLDM & FHDM			
Model	Colors	Voltage	Watt	Ext. Dimensions	Illumination Area
FLDM-i50	Red/Red 24 V / Green, Blue, White	12/24 V / 24 V	3,12/3,36 / 6,24 W	Ø 50 x H 40 mm	Ø 46 mm
FLDM-Si100	Red/Red 24 V / White	12/24 V / 24 V	5,76 W	Ø 130 x H 62 mm	Ø 80 mm
FLDM-Si150	Red 24 V / White	24 V			
FLDM-Si200	Red 24 V / White	24 V			
FLDM-Si250	Red 24 V / White	24 V	28,8 W	Ø 280 x H 133 mm	Ø 220 mm
FHDM-Si100	Red 24 V / White	24 V	32,0 W	Ø 130 x H 62 mm	Ø 80 mm
FHDM-Si150	White	24 V	50,24 W	Ø 180 x H 78 mm	Ø 110 mm
FHDM-Si200	White	24 V	58,80 W	Ø 230 x H 113 mm	Ø 160 mm
FHDM-Si250	White	24 V	88,0 W	Ø 280 x H 133 mm	Ø 220 mm



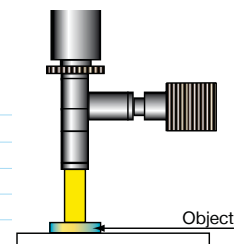
Falcon FHLV – High luminosity LED Spots

Proprietary collector optics and light guides for maximum illuminance. Small and lightweight for easy handling. Stable illumination when used with a dedicated constant current power source. Suitable for coaxial episcopic lighting and spot lighting. Can be mounted on movable modules. Suitable to use in limited space and long working distance. Best for reading bar code/2D code.



FALYCON		FHLV			
Model	Colors	Voltage	Watt	Ext. Dimensions	Illumination Area
FHLV-i27-W-1W-100 lm	Red / Green, Blue, White	12 V	1,1 W / 4,2 W	Ø 27 x 60 mm	Ø 6 mm
FHLV-i27-W-5W-400 lm	Green, Blue, White	12 V	5,0 W	Ø 27 x 60 mm	Ø 6 mm
FLSP-i41	Red 24 V / White	24 V / 24 V	2,4 W / 2,88 W	Ø 41 x 40 mm	Ø 33 mm
FLSP-i60	Red 24 V	24 V	4,8 W	Ø 60 x 40 mm	Ø 50 mm
FHSP-Si60 *	White	24 V	6,6 W	Ø 68 x 60 mm	Ø 48 mm

* Flash mode recommended





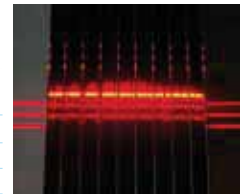
Effilux is an innovative company which designs and manufactures LED lighting systems for industrial vision. The integration of innovative optical technologies enables Effilux to create lighting to meet the specific chal-

lenges of industrial vision and the products increase the precision, the speed and the longevity of quality control systems situated on production lines.

Effi-Lase – Profilometer LED Lighting

For 3D reconstruction by profilometry. Projects thin and very powerful light lines (single, parallel, cross,...). This LED lighting proctor can be applied like a laser line, but will not show reflection speckles.

EffiLux Effi-Lase	
Product	Description
Effi-Lase C-Mount	Adjustable mechanic for C-Mount, adjustable distance according to C-Mount, exclusive of C-mount lense
Effi-Lase LF	Lense projection included, creating line projection effect at 500 mm working distance with 100 µm thickness
Effi-Lase Custom	Effilux designs specific Effi-Lase products, specific optical power, specific mechanics, specific patterns



Effi-Sharp – LED Pattern Projector

For applications of control. Projects full pattern with sharp edges such as square or circular. Can illuminate objects at long working distance, up to 2 m. High optical power, high homogeneity, high scalability and high contrast.

EffiLux Effi-Sharp	
Product	Description
Effi-Sharp NF	Near field projection, 150.000 lux at 100 mm
Effi-Sharp MF	Middle field projection, 10.000 lux at 500 mm
Effi-Sharp FF	Far field projection, 1.000 lux at 2.000 mm
Effi-Sharp FL	Focus light, 100.000 lux at 200 mm



Effi-Line – High Brightness LED Line Lights

For web inspection and optical sorting applications with line scan cameras. Produces a powerful and thin line of light for high speed applications. The lighting can be placed on production chain for flat scrolling control.

EffiLux Effi-Line	
Product	Description
Effi-Line 5-15	Working distance from 50 to 150 mm, 200.000 lux at 150 mm, 500.000 lux at 50 mm
Effi-Line Backlight	Highly focalized line for applications by transparency or for very reflective surfaces



Effi-Wide – LED Illuminator

For large work area in all applications of robotic and defect detection with line scan cameras. Projects uniform and directive light. Avoids any problem of reflections and offers a high level of control.

EffiLux Effi-Wide	
Product	Description
Effi-Wide 100	Length: 150 mm, 100 mm of LEDs, 30.000 lux at 100 mm
Effi-Wide 300	Length: 400 mm, 300 mm of LEDs, 6.000 lux at 300 mm





Smartek Strobe Controllers

The Strobe Controller (SC) series of Smartek is renowned for its switching capacities and precision for industrial machine vision applications. The latest models provide 20A per channel and pulses down to 1µs. All SC provide time trigger resolution of 1µs and a current pulse resolution of 1mA, this helps to extend the lifetime of the LED illumination devices well beyond their standard mode of operation.

Due to ultra-short and high power switching, the illumination intensity achieved can be significantly increased with reduced thermal effects for the LEDs. The Strobe Controllers have an exceptional feature set: up to 6 parallel channels, power out for a cooling fan, and Ethernet access to the controller settings. Our sales and support team is happy to assist you in finding the right solution for your specific application.



Smartek Strobe Controller Series										
Model	Channels	Interface	Max. continous Current (30V)	Max. Pulsed Current (200V)	Current Resolution	Timing	Time Res.	Power Consumed	Power Required	Dimensions WxLxH (mm)
IPSC1	1	Ethernet RS232	2A	20A	1mA	1µs – 1s	1µs	72W	12V / 24V (11-26V)	88x103x39
IPSC2	2	Ethernet RS232	1A	10A	1mA	1µs – 1s	1µs	72W	12V / 24V (11-26V)	88x103x39
IPSC4	4	Ethernet RS232	570mA	8A	1mA	1µs – 1s	1µs	84W	24V (22-27V)	130x142x56
SC6	6	RS232	385mA	8A	1mA	1µs – 50ms	1µs	84W	24V (22-27V)	130x182x56

Software & Tools

Application Software, Interface & Software Development

FRAMOS sees software as key differentiating factor. We offer a wide range of software, development tools and services.

Application software is the key to analyse, decide, and react. With Bol-der Imaging, software to record images from various sources and analyse the content, and Open eVision, a cost effective application suite, we offer the tools you need to build your application.

With our in depth knowledge in usage of "Halcon" and "Labview" software we can provide you with relevant programming know-how to complete your application.

Due to ever increasing data rates, interfaces become more and more important. In cooperation with Pleora, FRAMOS provides a complete GigE/10GigE solution including interface hardware, programming environment, drivers, and interface software.

In addition, we provide various possibilities to improve your time-to market in camera development. Our own Aptina development tool helps you to test any algorithm code for your application. To improve your image quality we offer you a wide range of algorithms, including auto exposure, Bayer pattern and more. To speed up your time-to-market we provide a full range of software development services enabling you to focus on your key differentiating factors.

Please ask your technical sales representative for further information: sales@framოს.eu or support@framოს.eu

Application Software



Software Development



Software & Tools

Application Software, Interface & Software Development



Image Analysis and Processing Software Tools

Open eVision

Open eVision 1.2 is a rich suite of reliable, powerful and flexible software tools dedicated to image processing and analysis:

- Complete set of 64-bit and 32-bit libraries designed to be integrated in C++, .NET or ActiveX application
- Results with sub-pixel accuracy and improved execution time thanks to SSE2 technology
- Thread-safe
- Opened to all image sources from image files or scanners to industrial GigE, FireWire, USB cameras or frame grabber
- Straightforward to evaluation, learning and development thanks to dedicated accessories

GENERAL PURPOSE LIBRARIES:

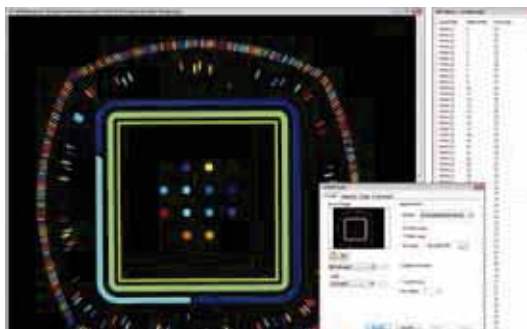
EasyImage, EasyColor, EasyObject, EasyMatch, EasyFind and EasyGauge cover applications such as image filtering and enhancement, blob analysis, pattern matching, alignment and metrology.

MARK INSPECTION LIBRARIES:

EasyOCV, EasyOCR, EasyBarCode and EasyMatrixCode, include functions for optical character recognition, character printing inspection and 1D / 2D barcode reading.

EasyFind features

EasyObject features



EasyGauge features

EasyMatrixCode features



Software & Tools

Image Analysis Software Tools for Applications



Software Development

The services offered by FRAMOS cover a multitude of development platforms in the image processing field. For CMOS sensors from Aptina, we have developed an independent platform, which enables you to evaluate a functional product as quickly as possible.

The sensor platform is further enhanced by an FPGA GigE interface platform (scalable up to 10 GigE), enabling image processing and interface facilities on a single board. In this way, even complex algorithms such as HDR are possible. Complex algorithms can be specially adapted to your exacting requirements and assembled in a modular fashion to get an individual product onto the market as rapidly as possible, saving time on development and maximising your return on investment. If required, FRAMOS are also

fully enabled to advise you on how best to optimise your own algorithms.

In camera development the software is becoming an increasingly important factor for raising your product above the competition. For this reason the FRAMOS platform is enhanced by a range of software tools which allows the immediate development of FPGA-based image processing solutions. The FRAMOS plug-in for Aptina CMOS sensors guarantees you the ability test for an algorithm developed by you or supplied by FRAMOS and is totally independent of the programming language used, saving you time and money. Together we can ensure that your product produces the best image for your application.

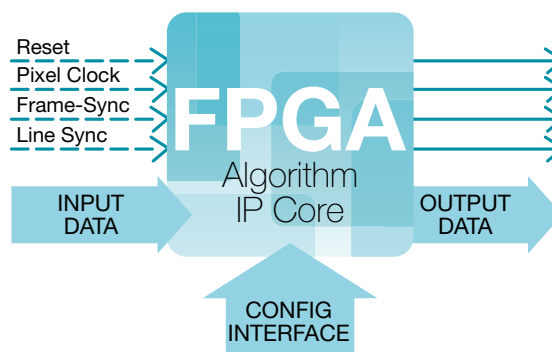
Algorithm Development

FRAMOS offers pre-engineered, customized and ready-

to-use algorithms and IP cores for video surveillance, automotive, and medical imaging systems.

FEATURES

- Seamless image sensor configuration and control
- Image sensors up to 12MP resolution supported
- Full-HD streaming at 60 fps supported
- Data path supports up to 32 bit per color channel
- Special image processing algorithms available
 - Color pipeline
 - Image manipulation and optimisation
 - HDR tonemappings
 - High quality scaling and rotation
 - Image background and noise removal
 - any many more on request
- OCP (Open Core Protocol) compatible IP-Cores for seamless NIOS integration
- PC-based algorithm evaluation system for Aptina sensors and Pleora-based camera systems



Software & Tools

Application Software, Interface & Software Development



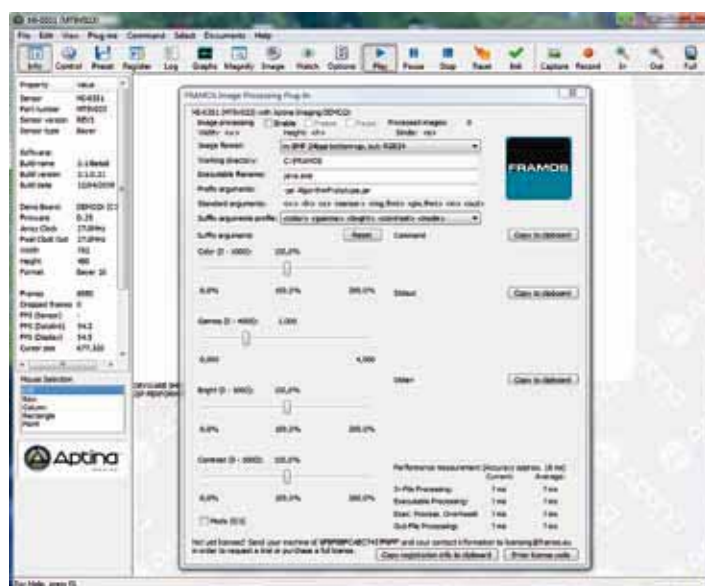
Tools

The FRAMOS Image Processing Plug-In is an expansion module for the DevWare application by Aptina. It supports the rapid, uncomplicated development and evaluation of image processing algorithms on your PC.

With an Aptina demo board connected to the PC via USB, DevWare by Aptina provides access to the full range of sensor parameterisation. It is expanded by the FRAMOS IPPI to support rapid prototyping of image processing algorithms using any programming language with command line support. In addition to compiled command line programmes, all other interpreted programming languages, which can be addressed using the Windows command line are also supported. For each image transmitted by the sensor, the FRAMOS IPPI calls the command line programme and, in addition to all relevant parameters, also supplies the image information in the format required by the command line programme. In addition to the raw image sensor data (raw / Bayer,

depending on the sensor and parameterisation), other transmission formats such as RGB (24 bit, 8 bpp) and Windows Bitmap (BGR, 24 bit, 8 bpp, top-down or bottom-up) are also supported. The FRAMOS IPPI expects RGB (24 bit, 8 bpp) as the return format and displays the image file that is returned in the Aptina DevWare viewing pane. In addition to the plug-in with DLL files that can be integrated into Aptina DevWare in a single step, the scope of delivery for the FRAMOS IPPI package includes technical documentation with sample algorithms in Java, Pearl and C/C++.

Take off with rapid prototyping for image processing algorithms. FRAMOS is always at your side as a competent, reliable partner offering comprehensive support services. Evaluate and assess your image processing algorithms along with their interaction with the numerous Aptina image sensors that are available.



SYSTEM REQUIREMENTS

- Aptina Imaging Suite/DevWare, Version 3.1 or higher (Additional system requirements to run DevWare)
- Aptina Demo Board (USB) with corresponding headboard
- Microsoft .NET Framework, Version 2.0 or higher

Engineering

Custom-made Camera Solutions & Embedded Processing

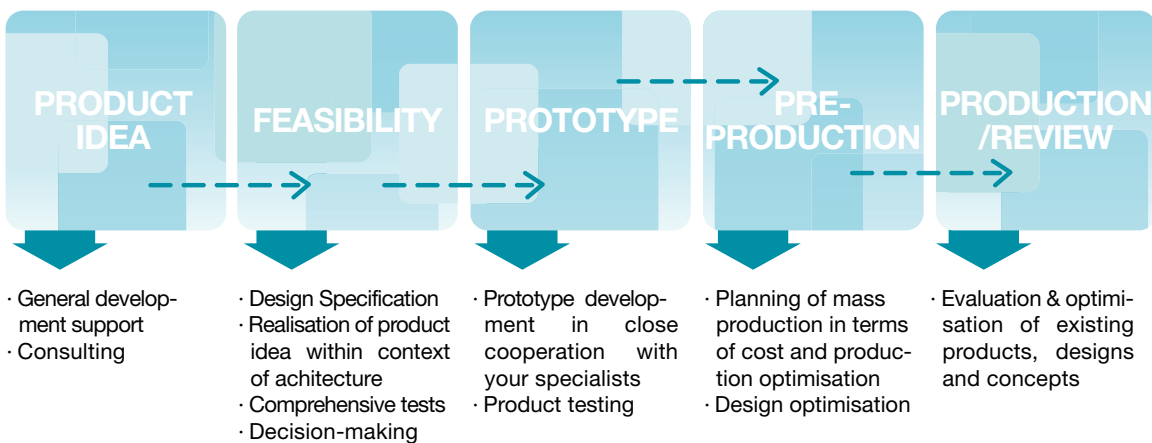
Demands on the flexibility and scalability of image processing components are steadily increasing together with pressure for cost reduction. For cameras, more and more customers are considering proprietary developments and the rapid advances in CMOS sensor technology, especially the minimal design effort compared to CCD sensors, is proving to justify this idea. To help you

optimise your decision-making for the finished product, we have developed a number of strategies. For example, we offer extensive hardware and software platforms (please see pages 22-23 and 42-46 for reference) that allow you to quickly enter and evaluate the sensor and all necessary system components, without the need for complicated layout-effort and prototype manufacturing.

For further information regarding development support, please contact our team:

engineering@framos.eu or +49 (0)89 710 667 -55

Our services include:



Learn more about

FRAMOS

www.amos.eu

where you will find detailed
up to date information on
our products as well as

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