

FRAMOS

PRODUCT PORTFOLIO

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

ENGINEERING IMAGING SOLUTIONS

www.amos.eu



FRAMOS Group

Your partner in Imaging Solutions.

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 solutions 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
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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 have the possibility to provide High Speed Sensors with frame rates up to 2500fps. You can choose between Rolling, Global or Half Global Shutter. With resolutions from VGA to 14 Mega Pixel and various technologies such as Interlaced, Progressive Scan and other readout methods we are able to support many types. We have a close relationship to our suppliers in order to provide you a fast and comprehensive support for all your questions and challenges in implementing the sensor, and 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 Calibrating

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

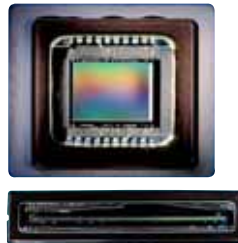
- Cover Glass Removal

For several image applications like laser beam profiling you will need to remove the cover glass of the image sensor. Use our cover glass removal service for numerous CCD and CMOS sensors

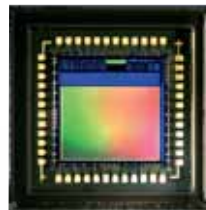
If you need detailed support with your camera development, we can offer you excellent consulting and technical assistance:
sales@framos.eu or support@framos.eu

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

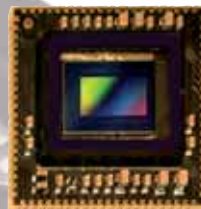
SONY



- High Quality CCD + CMOS Sensors
- VGA up to 8 Mega Pixel
- Outstanding Low Light Performance



- High-End CMOS Sensors
- VGA up to 14 Mega Pixel
- High Dynamic Range up to 120 dB



- Full HD CMOS Sensor (1920 x 1080)
- 90 fps at full Resolution
- High Dynamic Mode (120dB)

Customer Specific Sensors

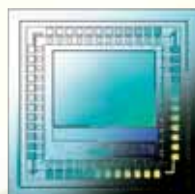


Image Sensors

CCD & CMOS

FRAMOS

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	Color
ICX239AKE	1/6"	752 x 582	3.275µm x 3.150µm	PAL	Ceramic SON (LCC)	12	Color	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 CCD

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
ICX445AQ	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
ICX614AQ	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
ICX618AQ	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
ICX625AQ	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
ICX655AQ	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

SONY Area CMOS sensors

Product	Sensor Size	Effective Pixel	Pixel Size	Framerate Rate*	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 x 1561	1/2.8"	2.5µm x 2.5µm	10bit: 60fps / 12bit: 15fps	Rolling / Global Reset Release	152pin LGA	Mono
IMX036LQR	2096 x 1561	1/2.8"	2.5µm x 2.5µm	10bit: 60fps / 12bit: 15fps	Rolling / Global Reset Release	152pin LGA	RGB

* = at full resolution

Further sensor specifications and prices on request!

Image Sensors

CCD & CMOS

FRAMOS

Aptina™ CMOS Image Sensors

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 that enables easy testing and characterization 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.

Aptina™ CMOS Image Sensors

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
MT9V126	640 x 480	1/4"	5.6µm x 5.6µm	30 fps	Rolling	8bit/10bit-parallel, NTSC/PAL	IBGA	RGB
MT9V128	680 x 512	1/4"	5.6µm x 5.6µm	50-60 fps	Rolling	8bit/10bit-parallel, NTSC/PAL	IBGA	RGB
MT9V022	752 x 480	1/3"	6.0µm x 6.0µm	60 fps	Global	8bit/10bit-serial and parallel	IBGA	RGB or Mono
MT9V024	752 x 480	1/3"	6.0µm x 6.0µm	60 fps	Global	8bit/10bit-serial and parallel	IBGA	RGB or Mono
MT9V032	752 x 480	1/3"	6.0µm x 6.0µm	60 fps	Global	8bit/10bit-serial and parallel	CLCC	RGB or Mono
MT9V034	752 x 480	1/3"	6.0µm x 6.0µm	60 fps	Global	8bit/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
MT9V137	640 x 480	1/4"	5.6µm x 5.6µm	30 fps	Rolling	8bit/10bit-serial and parallel, NTSC/PAL	CLCC	RGB
MT9V138	680 x 512	1/4"	5.6µm x 5.6µm	50-60fps	Rolling	8bit/10bit-parallel, NTSC/PAL	CLCC	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
MT9M033	1280 x 960	1/3"	3.75µm x 3.75µm	45 fps	Rolling	12bit-parallel or 12bit/14bit/20bit-serial	ILCC	RGB or Mono
MT9M023	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		CSP	RGB
MT9M413	1280 x 1024	19.67mm	12.0µm x 12.0µm	500 fps	Global	10bit-digital	PGA	RGB or 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	RGB or Mono
MT9P003	2592 x 1944	1/3.2"	1.75µm x 1.75µm	15 fps	Rolling & Half Global		PLCC	RGB
MT9P031	2592 x 1944	1/2.5"	2.2µm x 2.2µm	14 fps	Rolling & Half Global	12bit-parallel	ILCC	RGB or Mono
MT9J003	3856 x 2764	1/2.35"	1.67µm x 1.67µm	15 fps	Rolling & Half Global	serial/parallel	ILCC	RGB or Mono
MT9F001	4608 x 3288	1/2.3"	1.4µm x 1.4µm	30fps (HiSPI)	Rolling & Half Global	12bit-serial/parallel	ILCC	RGB

HDTV CMOS Sensors

The CMOS sensor of Viimagic is characterized by a dynamic range of over 120dB in nonlinear high dynamic range mode as well as other characteristics such as high performance with low energy requirements.

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

HDTV CMOS Sensors

Product	Resolution	Sensor Size	Pixel Size	Framerate (at full resolution)	Shutter Type *	Output	Package	Package Size	Color/Mono
9211A	1968 H x 1108 V	2/3"	5µm x 5µm	90 fps	Rolling	2 x 12-bit Digital	LCC-84	29,21mm x 29,21mm	Mono
9212A	1968 H x 1108 V	2/3"	5µm x 5µm	90 fps	Rolling	2 x 12-bit Digital	LCC-84	29,21mm x 29,21mm	RGB
9215A	1968 H x 1108 V	2/3"	5µm x 5µm	90 fps	Rolling	2 x 12-bit Digital	µPGA-141 ceramic	25mm x 20 mm	Mono
9216A	1968 H x 1108 V	2/3"	5µm x 5µm	90 fps	Rolling	2 x 12-bit Digital	µPGA-141 ceramic	25mm x 20 mm	RGB

* Global shutter version will be available soon.

Further sensor 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. Therefore we 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@framოს.eu or support@framოს.eu

Housed Cameras



- GigE, FireWire
CameraLink & Analog
- VGA up to 12 Mega Pixel
- CCD & CMOS Sensors



- USB2.0, GigE
& Ethernet
- VGA up to
16 Mega Pixel
- CCD & CMOS
Sensors

Non-Housed Cameras



- Analog
- 330 up to 520 TVL
- CCD Sensors



- USB 2.0
Digital & Analog
- VGA up to
1.3 Mega Pixel
- CCD & CMOS
Sensors



- USB 2.0
Digital & Analog
- VGA up to
10 Mega Pixel
- CMOS Sensors



Machine Vision and Medical Imaging

Toshiba Teli, the world's second 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 huge assortment of analog 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 developments of camera modules which are specific to your requirements.

Teli FireDragon Series

Camera Model	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	Pixel Size	Shutter Type	Color / Mono	Lens Mount	Interface
CSFV90CC3 / BC3	640 x 480	90 fps	CCD	1/3"	7.4µm x 7.4µm	Global	Color or Mono	C	IEEE1394.b
CSFX36CC3 / BC3	1024 x 768	36 fps	CCD	1/3"	4.65µm x 4.65µm	Global	Color or Mono	C	IEEE1394.b
CSFS20CC2 / BC2	1280 x 960	20 fps	CCD	1/2"	4.65µm x 4.65µm	Global	Color or Mono	C	IEEE1394.b
CSFU15CC18 / BC18	1600 x 1200	15 fps	CCD	1/1.8"	4.4µm x 4.4µm	Global	Color or Mono	C	IEEE1394.b

Teli CleverDragon Series

Camera 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	Mono	C	CameraLink
CSCX30BC3	1034 x 779	30 fps	CCD	1/3"	4.65µm x 4.65µm	Global	Mono	C	CameraLink
CSCS20BC3	1392 x 1040	20 fps	CCD	1/2"	4.65µm x 4.65µm	Global	Mono	C	CameraLink
CSCU15BC18	1628 x 1236	15 fps	CCD	1/1.8"	4.4µm x 4.4µm	Global	Mono	C	CameraLink
CSCU30CC18 / BC18	1628 x 1236	30 fps	CCD	1/1.8"	4.4µm x 4.4µm	Global	Mono	C	CameraLink
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	4096 x 3072	25 fps	CMOS	1.9"	6.0µm x 6.0µm	Global	Mono	TFL-II	CameraLink

Teli GiantDragon Series

Camera 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	Mono	C	GigE

Teli FireWire Series

Camera Model	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	Pixel Size	Shutter Type	Color / Mono	Lens Mount	Interface
CSB581QF	640 x 480	130 fps	CCD	1/3"	7.4µm x 7.4µm	Global	Mono	M10.5	IEEE 1394.b
CS3950DIF	1007 x 788	30 fps	CCD	1/3"	4.65µm x 4.65µm	Global	Mono	C	IEEE 1394.a
CS6910F	1280 x 960	15 fps	CCD	1/4.2"	3.8µm x 3.8µm	Global	Color	C	IEEE 1394.b
CSF5M7C3L18NR	1440 x 1060	6.4 fps	CMOS (3-layer)	1/1.8"	5.0µm x 5.0µm	Global	Color	C	IEEE 1394.b
CSB4000F-10	2008 x 2044	7.14 fps	CMOS	1.1"	6.0µm x 6.0µm	Global	Mono	C	IEEE 1394.a

Teli CameraLink Series

Camera 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
CS3960DCL	1392 x 1040	30 fps	CCD	2/3"	6.45µm x 6.45µm	Global	Mono	C	CameraLink
CSB1100CL-10	1240 x 1023	22.2 fps	CMOS	2/3"	6.0µm x 6.0µm	Global	Mono	C	CameraLink
CS3970CL	1628 x 1236	15 fps	CCD	1/1.8"	4.4µm x 4.4µm	Global	Mono	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

Further camera specifications and prices on request!

Industrial Cameras

Teli Line Scan Series

Camera Model	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	Pixel Size	Shutter Type	Color / Mono	Lens Mount	Interface
CSL8000CL (sim. output RGB + Mono)	4080 x 3	9.445 kHz	CCD	50.5mm x 1.1mm	10.0µm x 10.0µm	Global	Color	F(Nikon)	CameraLink
CSL8000CL (sim. output RGB + Mono)	8160	18.975 kHz	CCD	50.5mm x 1.1mm	5.0µm x 5.0µm	Global	Mono	F(Nikon)	CameraLink

Teli Analog Series

Camera Model	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	Pixel Size	Readout Technology	Color / Mono	Lens Mount	Interface
CS3910BH	1392 x 1040	15 fps	CCD	2/3"	6.45µm x 6.45µm	Progressive Scan	Mono	C	analog and digital (EIA-644, 10bit)
CS3920	1636 x 1236	7.5 fps	CCD	1/2"	3.9µm x 3.9µm	Interlaced	Mono	C	analog and digital (EIA-644, 10bit)
CS3930UV	1392 x 1040	7.62 fps	CCD	1/2"	4.65µm x 4.65µm	Interlaced	Mono	C	analog and digital (EIA-644, 10bit)
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)
CS8541D	659 x 494	60 fps	CCD	1/3"	7.4µm x 7.4µm	Progressive Scan	Mono	M10.5	Special format (non-conforming to CCIR)
CS8310BCi	752 x 582	25 fps	CCD	2/3"	11.6µm x 11.2µm	Interlaced	Mono	C	VS (CCIR)
CS8420Ci	752 x 582	25 fps	CCD	1/2"	8.6µm x 8.3µm	Interlaced	Mono	C	VS (CCIR)
CS8430Ci	768 x 494	25 fps	CCD	1/3"	6.5µm x 6.25µm	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)
CS8630HC	752 x 582	25 fps	CCD	1/3"	6.5µm x 6.25µm	Interlaced	Mono	C	VS (CCIR)



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 our complete assortment of imaging accessories such as lenses, special cables, software and lighting.

Lumenera USB & GigE / Industrial Series

Board Level / Enclosed	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	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
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
Lu120/Lu125	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
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
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
Lu200/Lu205	1600 x 1200	10 fps	CMOS	1/2"	4.2µm x 4.2µm	Rolling & Half Global	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
Lu270/Lu275	1600 x 1200	20 fps	CMOS	1/2"	4.2µm x 4.2µm	Rolling	8 or 10	Color	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	6 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
Lw11059	4008 x 2672	3.5 fps	CCD	35mm	9.0µm x 9.0µm	Global	8 or 12	Color or Mono	Canon	USB2.0
Lw11058	4008 x 2672	3.5 fps	CCD	35mm	9.0µm x 9.0µm	Global	8 or 12	Color or Mono	F(Nikon)	USB2.0
Lw11057	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

Further camera specifications and prices on request!

USB / Scientific Series

Camera Model	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	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	Color or Mono	C	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
Infinity3-1 (cooled)	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 (uncooled)	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 lite	1440 x 1080	15 fps	CMOS	1/2.5"	4.2µm x 4.2µm	20e-	8	Color	C	USB2.0

Ethernet / Security Series

Camera Model	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	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	Yes	CS	Ethernet
Le045B	720 x 480	30 fps	CMOS	1/3"	7.0µm x 7.0µm	0.5lux	Color	Yes	CS	Ethernet
Le075	640 x 480	60 fps	CCD	1/3"	7.4µm x 7.4µm	0.1lux	Color or Mono	Yes	CS	Ethernet
Le165	1376 x 1032	15 fps	CCD	2/3"	6.45µm x 6.45µm	< 0.01lux	Color or Mono	Yes	CS	Ethernet
Le175	1280 x 1024	30 fps	CMOS	1/2"	5.2µm x 5.2µm	0.5lux	Color or Mono	Yes	CS	Ethernet
Le259	1920 x 1080	15 fps	CCD	2/3"	7.4µm x 7.4µm	0.5lux	Color or Mono	No	Canon	Ethernet
Le275	1600 x 1200	20 fps	CMOS	1/2"	4.2µm x 4.2µm	0.5lux	Color	Yes	CS	Ethernet
Le375	2048 x 1536	10 fps	CMOS	1/2"	3.2µm x 3.2µm	1.5lux	Color	Yes	CS	Ethernet
Le575	2560 x 1920	6 fps	CMOS	1/2.5"	2.2µm x 2.2µm	2.0lux	Color or Mono	No	CS	Ethernet
Le11059	4008 x 2672	5 fps	CCD	35mm	9.0µm x 9.0µm	0.1lux	Color or Mono	No	Canon	Ethernet

USB / Astronomy Series

Board Level / Enclosed	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	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

Industrial Cameras

PACIFIC CORPORATION Board and Housed Cameras

Pacific is the largest video board camera manufacturer in Japan, specializing in low-, medium-, and high-resolution board-level cameras with video output such as BAS, FBAS and Y/C. Pacific offers a huge amount of cameras for industrial and security applications. Highlights of the offered

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

PACIFIC CORPORATION Analog Board Cameras

Camera 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	CVBS	M12	DC 5V	PC control, Low Voltage
PC-2005	752 x 582	CCD	1/4"	Global	Color	CVBS	M12	DC 5V	PC control, Low Voltage
PC-705	500 x 582	CCD	1/4"	Global	Color	CVBS	M12	DC 12V	RS232C/485 controllable
PC-905	752 x 582	CCD	1/4"	Global	Color	CVBS	M12	DC 12V	RS232C/485 controllable
PC-285A	500 x 582	CCD	1/3"	Global	Color	CVBS	M12	DC 12V	RS232C/485 controllable
PC-685A	752 x 582	CCD	1/3"	Global	Color	CVBS	M12	DC 12V	Mirror Mode, OSD Setup
VPC-885	500 x 582	CCD	1/3"	Global	Color	CVBS, YC (S-Video)	M12	DC 12V	Digital 4x Zoom
VPC-895	752 x 582	CCD	1/3"	Global	Color	CVBS, YC (S-Video)	M12	DC 12V	Digital 4x Zoom
PC-175	500 x 582	CCD	1/3"	Global	Mono	CVBS	M12	DC 12V	Video or DC Iris, ext. Sync.
PC-375A	752 x 582	CCD	1/3"	Global	Mono	CVBS	M12	DC 12V	Video or DC Iris, ext. Sync.
PC-335	752 x 582	CCD	1/3"	Global	Mono	CVBS	M12	DC 12V	Video or DC Iris, ext. Sync.
PC-185	512 x 582	CCD	1/4"	Global	Mono	CVBS	M12	DC 12V	High Sensitivity, Low Smear

PACIFIC CORPORATION Analog Housed Cameras

Camera 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	DC12V	Video Iris
CSB-175	500 x 582	CCD	1/3"	Global	Mono	CVBS	CS	DC12V	DC Iris
CSB-335	752 x 582	CCD	1/3"	Global	Mono	CVBS	cs	DC12V	Video Iris
CSB-375	752 x 582	CCD	1/3"	Global	Mono	CVBS	CS	DC12V	DC Iris
CSC-885	500 x 582	CCD	1/3"	Global	Color	CVBS	CS	DC10.5-15V	RS232 controllable
CSC-895	752 x 582	CCD	1/3"	Global	Color	CVBS	CS	DC10.5-15V	RS232 controllable

Further camera specifications and prices on request!



VIDEOLOGY[®] Board Level Cameras

IMAGING SOLUTIONS INC.

Videology develops imaging products based on the most recent CCD and CMOS image sensors, DSP and CPLD components. The imager resolutions range from VGA up to 1,3 MPixel. Videology has developed

a family of USB 2.0 camera and board products and offer full SDKs for custom integration. Ethernet based technologies have been as well recently released.

VIDEOLOGY[®] USB Series

IMAGING SOLUTIONS INC.

Camera 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"	7.2µm x 4.7µm	Global	Color	M-12 or CS-Mount	USB2.0
21K13XUSB	765 x 582	30 fps	CCD	1/4"	4.85µm x 4.85µm	Global	Mono	M-12 or CS-Mount	USB2.0
21K15XUSB	765 x 582	30 fps	CCD	1/4"	3.8µm x 3.8µm	Global	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

VIDEOLOGY[®] Digital Series

IMAGING SOLUTIONS INC.

Camera 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	Global	Color	M12 pinhole, M12 or CS	CVBS, YUV	Mirror Mode
21K13XDIG	768 x 492	CCD	1/4"	DC 5V	Global	Mono	M12 pinhole, M12 or CS	YUV	Mirror Mode, IFC controllable
21K15XDIG	768 x 494	CCD	1/4"	DC 5V	Global	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	Global	Mono	M12 pinhole, M12 or CS	CVBS, YUV	Mirror Mode, IFC controllable
24B752XA	752 x 582	CMOS	1/3"	DC 5V	Rolling	Mono	M12 pinhole, M12 or CS	CVBS, YUV, LVDS	IFC controllable, 110dB

VIDEOLOGY[®] Analog Series

IMAGING SOLUTIONS INC.

Camera 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	Global	Color		CVBS	housed
21D739B	752 x 585	CCD	1/3"	DC	Global	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	Global	Mono	C or CS	CVBS	housed
21D689	768 x 582	CCD	1/3"	DC 12V	Global	Mono	C or CS	CVBS	housed, NIR Sensitive
21K14X	500 x 582	CCD	1/4"	DC 5V	Global	Color	M12 pinhole, M12 or CS	CVBS	Mirror Mode, IFC controllable
21K14XYC	500 x 582	CCD	1/4"	DC 5V	Global	Color	M12 pinhole, M12 or CS	CVBS, YC (S-Video)	Mirror Mode, IFC controllable
21K15X	768 x 492	CCD	1/4"	DC 5V	Global	Color	M12 pinhole, M12 or CS	CVBS	Mirror Mode, IFC controllable
21K15XYC	765 x 582	CCD	1/4"	DC 5V	Global	Color	M12 pinhole, M12 or CS	CVBS, YC (S-Video)	Mirror Mode, IFC controllable
21Z404-22x	768 x 494	CCD	1/4"	DC 12V	Global	Color	Integrated Lens	CVBS, YC (S-Video)	Auto Focus & 22 Optical Zoom
21D10X	768 x 492	CCD	1/3"	DC 12V	Global	Color	M12 pinhole, M12 or CS	CVBS	DC Auto Iris
21D10XB	768 x 492	CCD	1/3"	DC 12V	Global	Color	M12 pinhole, M12 or CS	CVBS	DC Iris, Balanced Video Cat5/6
21D20X	752 x 582	CCD	1/3"	DC 12V	Global	Color	M-12 or CS-Mount	CVBS	Software Control
21D20XB	752 x 582	CCD	1/3"	DC 12V	Global	Color	M-12 or CS-Mount	CVBS	„SW Control, Balanced Video Cat5/6“
21RD8	512 x 585	CCD	1/3"	DC 12V	Global	Color		CVBS	Low Power, Round Dual Board
21K13X	752 x 582	CCD	1/4"	DC 5V	Global	Mono	M12 pinhole, M12 or CS	CVBS	Mirror Mode, IFC controllable
21D35X	752 x 582	CCD	1/3"	DC 12V	Global	Mono	M12 pinhole, M12 or CS	CVBS	Balanced Video for Cat5/6
31D35XO	752 x 582	CCD	1/3"	DC 12V	Global	Mono	M12 pinhole, M12 or CS	CVBS	Aerospace grade
31D35XOB	752 x 582	CCD	1/3"	DC 12V	Global	Mono	M12 pinhole, M12 or CS	CVBS	Both
21D479	752 x 582	CCD	1/3"	DC 12V	Global	Color	M12 or CS	YC (S-Video), RGC, YUV 8-bit	H&V lock
21D779	752 x 585	CCD	1/3"	DC 12V	Global	Color	CS	CVBS, YC (S-Video)	housed
21E709TDN3	768 x 585	CCD	1/3"	DC 12V	Global	Color	C or CS	CVBS	housed
21Z704-TDN	752 x 582	CCD	1/4"	DC 12V	Global	Color	Integrated Lens	CVBS, YC (S-Video)	housed, 26x Optical Zoom

Further camera specifications and prices on request!

Industrial Cameras

visiosens Standard Cameras

Focused on customers' needs, Visiosens offers a wide range of innovative industrial USB 2.0 Cameras with imager resolutions from WVGA up to 10 MPixel, especially designed for price sensitive applications. Standard board outline combined with additional features like LED con-

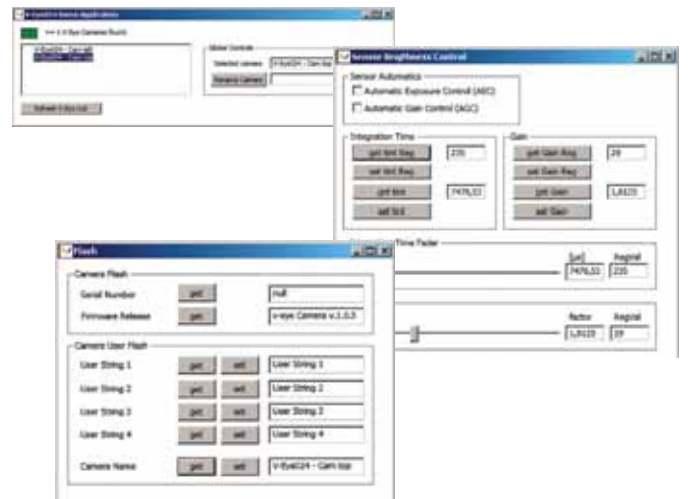
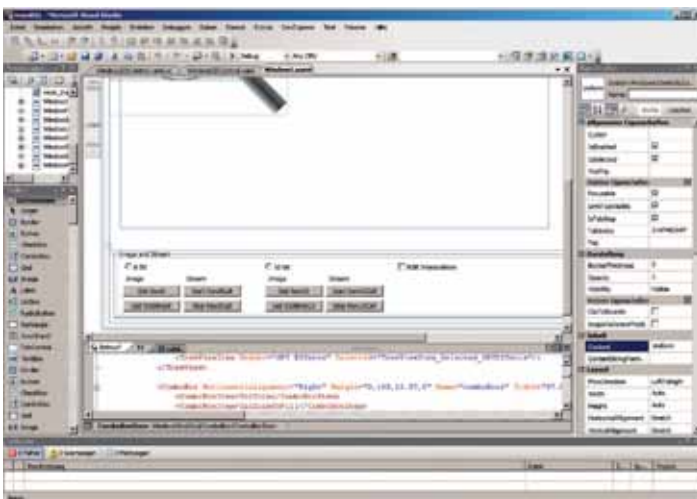
troller and various I/O functionalities as well as multiple lens mount solutions allow easy integration into customer's application. Comprehensive SDK, equivalent both for Microsoft Windows and Linux, ensures easy software integration.

visiosens Standard Cameras

Camera Model	Resolution	Frame at full resolution	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

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

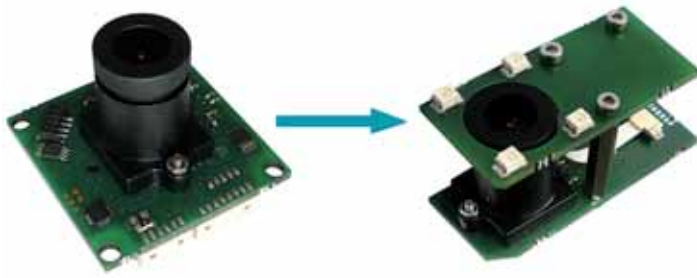


Further camera developments and prices on request!

visiosens Camera Development

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

software functionalities is a key competence as well as realizing complete custom designs in close collaboration with you as customer.



Headboards for GigE-Cameras

These headboards with Apina CMOS imagers are compatible with Pleora's NTX Mini Interface and Processing Board and enable easy realization of OEM-GigE-Cameras based on standard components.



visiosens Headboards

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

Modules

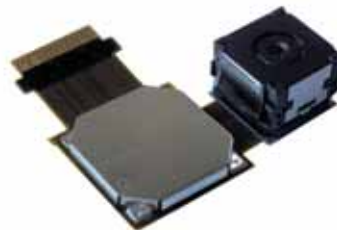
Sensors & Cameras

FRAMOS supplies a comprehensive range of CMOS Image Sensor modules from various suppliers. We are offering a wide range of image sensors and outputs to be able to offer the right module for your needs.

The range of MCB modules from Sony is especially equipped for high-quality, high-end solutions since the modules offer all functionalities of a digital camera, high resolution, and high data rate. With built-in functionalities like movie stabilization, face detection, autofocus and motion autofocus the module serves for a wide range of applications.

Our OEM modules are available for various industries like automotive, scientific, or consumer. To find the right module for your needs, please contact our sales teams: sales@framos.eu or support@framos.eu

SONY

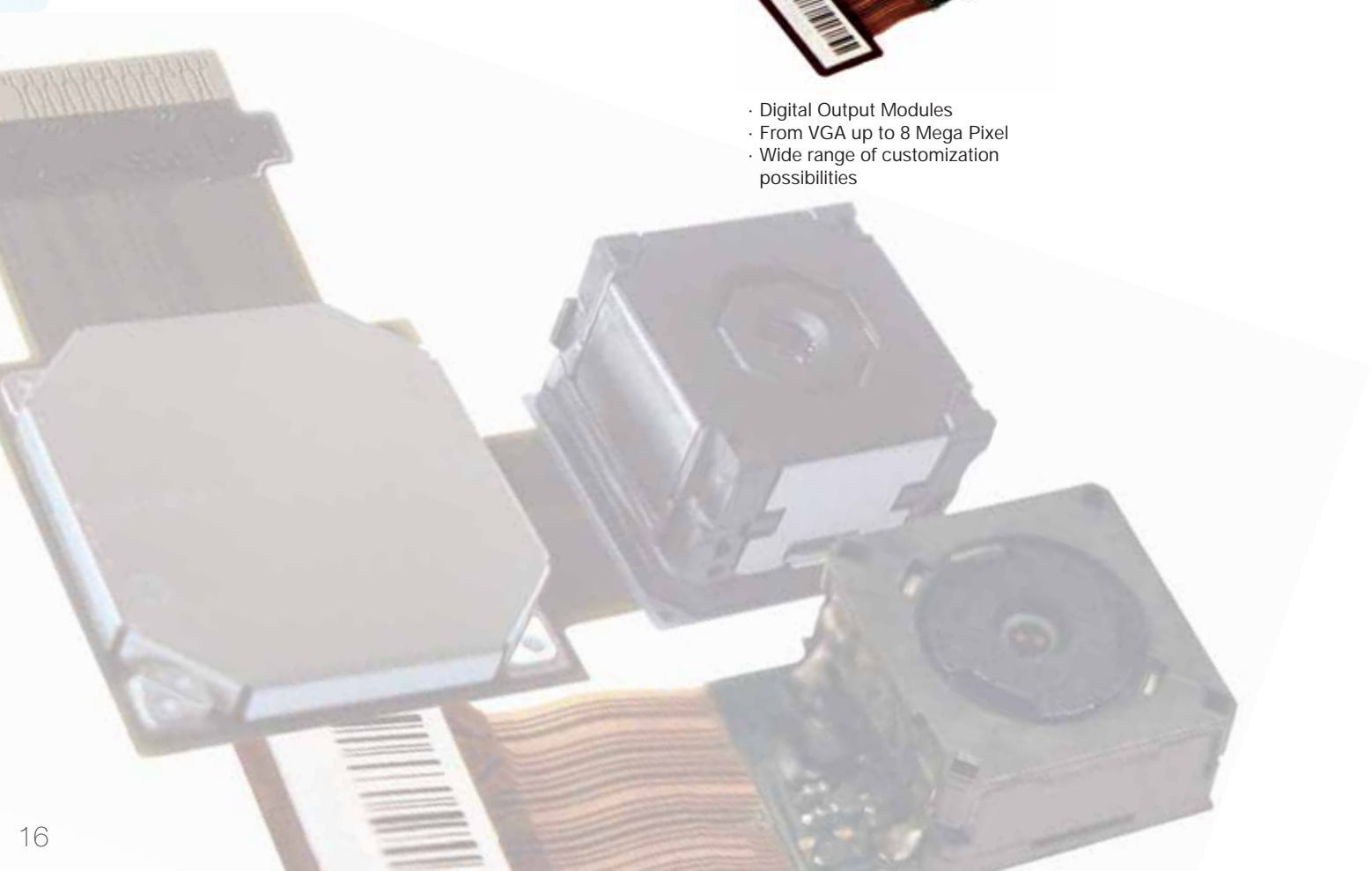


- Compact Camera Module
- 720p High Definition, 8.3 Mega Pixel
- JPEG Output

OEM Modules



- Digital Output Modules
- From VGA up to 8 Mega Pixel
- Wide range of customization possibilities





SONY Compact Camera Module

The compact, high definition, 8.3 megapixel Sony MCB is the smallest camera module capable of delivering 720p HD quality video at a high frame rate (30 fps at 720p). The 1/3.2" type camera module consists of a lens, a feature-rich DSP and a high quality Sony CMOS sensor. The progressive

scan „Exmor“ CMOS sensor delivers video support with YCbCr video or JPEG still image output. This module will also be proposed with an option of a Wide Conversion lens to reach a HFOV of 80°, ideal for visual communication or security applications.

SONY Compact Camera Module

Product	Resolution (H x V)	Framerate (at full res.)	Focus Range	Package dimension (D x H)	Output
MCB1182	3264 x 2448	30fps at 720p	100 mm - infinity with auto focus	12,3 mm x 6,71 mm (camera head block)	YCbCr 4:2:2, JPG

OEM Modules

Competitive pricing and high quality characterise the image sensor modules from Framos. Based on CMOS technology, the modules are available in resolutions from VGA up to 8 MP. Designed for OEM applica-

tions like cell phones or laptop PCs, the modules offer a wide range of customization possibilities like special form factors, different sensor manufacturers, software customization and other options.

Digital Output

Model	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	Color / Mono	Focus Range	F#	HFOV	Output Data Format	Dimensions
C03M7690P20	640 x 480	30 fps	CMOS	1/1.3"	Color	1.19 mm	2,8	61°	YUV, RGB, CCIR, Raw RGB Data Output	6.500mm x 16.000mm
C03M7670P24	640 x 480	30 fps	CMOS	1/6"	Color	2.70 mm	2,8	58°	YUV, RGB, Raw RGB Data	3.785mm x 4.235mm
C03M7670P22	640 x 480	30 fps	CMOS	1/6"	Color	2.70mm	2,8	58°	YUV, RGB, Raw RGB Data	3.785mm x 4.235mm
C03M7670P20	640 x 480	30 fps	CMOS	1/6"	Color	2.7mm	2,8	58°	YUV, RGB, Raw RGB Data	3.785mm x 4.235mm
C13M9655P24	1280 x 1024	15 fps	CMOS	1/4"	Color	4.06mm	2,8	65°	YUV, RGB, GRB, Raw RGB Data	5.145mm x 6.145mm
C30M3640P30	2048 x 1536	15 fps	CMOS	1/4"	Color	3.39mm	2,8	68°	YUV, RGB, Raw RGB Data	6.285mm x 6.125mm
C50M5642P30	2592 x 1944	15 fps	CMOS	1/4"	Color	3.42mm	2,8	68°	RGB, YUV, RGB Raw Data, 8bit JPEG Output	6.945mm x 6.695 mm

USB

Model	Resolution	Framerate (at full res.)	Sensor Type	Optical Format	Color / Mono	Focus Range	F#	HFOV	Output Data Format	Dimensions
U03M7670H1	640 x 480	30 fps	CMOS	1/6"	Color	30cm to infinity	2,8	61°	USB2.0	4.485mm x 4.985mm
U03M7725H1	640 x 480	60 fps	CMOS	1/4"	Color	30cm to infinity	2,8	62°	USB2.0	60 x 8mm
U13M1320	1280 x 1024	15 fps	CMOS	1/4"	Color	30cm to infinity	2,8	67°	USB2.0	60 x 8mm
U13M9665	1280 x 1024	8 fps	CMOS	1/5.5"	Color	30cm to infinity	2	77°	USB2.0	60 x 8mm
U20M2665	1600 x 1200	4 fps	CMOS	1/5"	Color	10cm to infinity	2,8	68°	USB2.0	60 x 8mm

Interfaces

Boards, Reference Designs & Cores

FRAMOS provides an extensive range of Gigabit Ethernet (GigE) interface solutions for the image processing sector from manufacturer Pleora Technologies Inc.

The GigE Vision and GenICam compliant products allow high-performance GigE connectivity to be added to almost any camera or system quickly, cost-effectively and 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.

Working with its rich portfolio of interface solutions, Pleora partners with 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



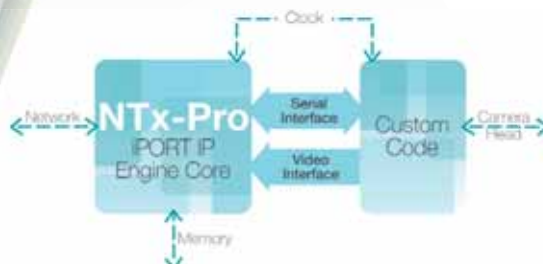
Software / Drivers

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



IP offering

- Board Reference Design
- IP Core
- Design Review Services



Interfaces

Boards, Reference Designs & Cores

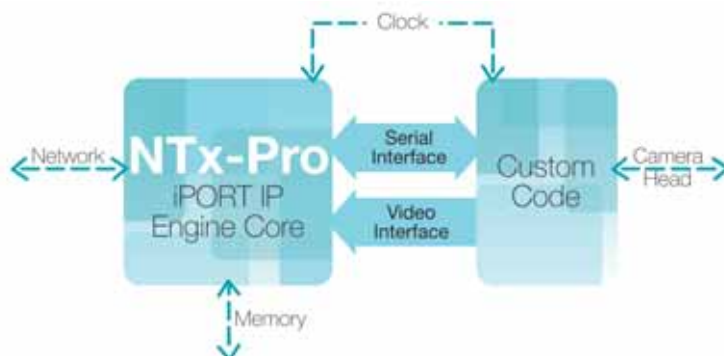


Pleora Technologies Boards	
Product	Description
iPORT™ NTx-Mini IP Engine	The iPORT™ NTx-Mini IP engine adds full GigE Vision connectivity to digital video data sources. The NTx-Mini is optimized for in camera design with a small form factor (42mm x 42mm), low power consumption and design flexibility. Supports PLC and external control with the standard deserialized Cameral Link™ data interface.
iPORT™ NTx-Pro IP Engine	The iPORT™ NTx-Pro IP engine adds full GigE Vision connectivity to digital video data sources. The NTx-Pro board 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 Cameral Link™ video interface.
iPORT™ PT1000ST IP Engine	The 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 Cameral Link™ video interface.
iPORT™ FB1000ST IP Engine	The 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 Cameral Link™ video interface. For use with fiber cabling.
iPORT™ PT1000VB IP Engine	The iPORT™ PT1000VB IP engine adds full GigE Vision connectivity to digital video data sources. Supports PLC for external control and a standard deserialized Cameral Link™ video interface.

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

Pleora Technologies Software / Driver	
Product	Description
SDK and eBUS Driver Licensing	The 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 is fully compatible with the GigE Vision® and GenICam™ standards.

Pleora Technologies IP Offering	
Product	Description
IP offering	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!

GigE Converters

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

Pleora offers the worldleading iPORT™ series to convert different input signals (CameraLink, LVDS and analog) 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 scalable processing and flexible networking.

Pleora also offers the groundbreaking vDisplay™ series that are comprised of compact, purpose-built hardware that allows high-resolution video streams on GigE networks to be displayed directly on monitors, in real time, without the need for a PC.

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

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








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.

 iPORT™ Converter Boxes	
Product	Description
iPORT™ PT1000-CL IP Engine	The iPORT™ PT1000-CL IP engine is GigE Vision-compliant and delivers high-performance, ultra-efficient GigE connections between Base-configuration CameraLink® cameras and PCs.
iPORT™ PT2000-CL IP Engine	The iPORT™ PT2000-CL IP engine delivers high-performance, ultra-efficient GigE connections between Medium configuration CameraLink® cameras and standard PCs.
iPORT™ FB1000-CL IP Engine	The iPORT™ FB1000-CL IP engine delivers high-performance, fiber-based GigE connections between Baseconfiguration CameraLink® cameras and PCs.
iPORT™ PT1000-LV IP Engine	The iPORT™ PT1000-LV IP engine delivers high-performance, ultra-efficient GigE connections between TIA/EIA 644 LVDS cameras and PCs.
iPORT™ PT1000-ANL-2/12 Analog Video IP Engine	The iPORT™ PT1000-ANL-2/12 analog video IP engine delivers high-performance, low-cost GigE connections between analog cameras and PCs. It digitizes two full 30-f/s image streams or up to 12 multiplexed video sources without compression.
iPORT™ PT1000-ANL-2/6 Analog Video IP Engine	The iPORT™ PT1000-ANL-2/6 analog video IP engine delivers high-performance, low-cost GigE connections between analog cameras and PCs. The ANL-1/6 digitizes one full 30-f/s image streams or up to six multiplexed video sources without compression.

 vDisplay™ Converters	
Product	Description
vDisplay™ HDMI-Pro IP Engine	The 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. It 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. The HDMI-Pro engine is available as a compact OEM board set or a small enclosed unit. Pleora's vDisplay™ HDMI-Pro IP engine 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.

 iPORT™ SB-Pro IP Engine	
Product	Description
iPORT™ SB-Pro IP Engine	Transform camera blocks from Sony into GigE Vision® compliant cameras with Pleora's iPORT™ SB-Pro IP engines. Compact and simple to integrate, iPORT SB-Pro IP engines transmit high-definition video with low, predictable latency. Complete with extensive feature control using GeniCam™, this product is ideal for system integrators looking to differentiate their offerings, increase interoperability and introduce networking capabilities.

Frame Grabber

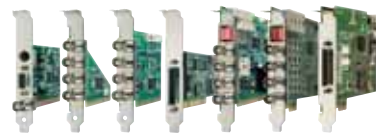
Euresys is a major player in the field of machine vision offering high-performance products and services for image acquisition and vision-oriented analysis. Euresys offers a complete range of robust and powerful machine vision software tools; as well as innovative and high-performance frame grabbers for high-end video surveillance and industrial machine vision applications. Euresys offers the PicoLO Series of frame grabbers for standard analog (interlaced) cameras, Grablink Series for CameraLink cameras, as well as Domino Series for non-standard analog outputs such as Progressive Scan, 3-CCD and RGB cameras.

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



PICOLO Series

- Analog 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
- Dedicated to high-end applications



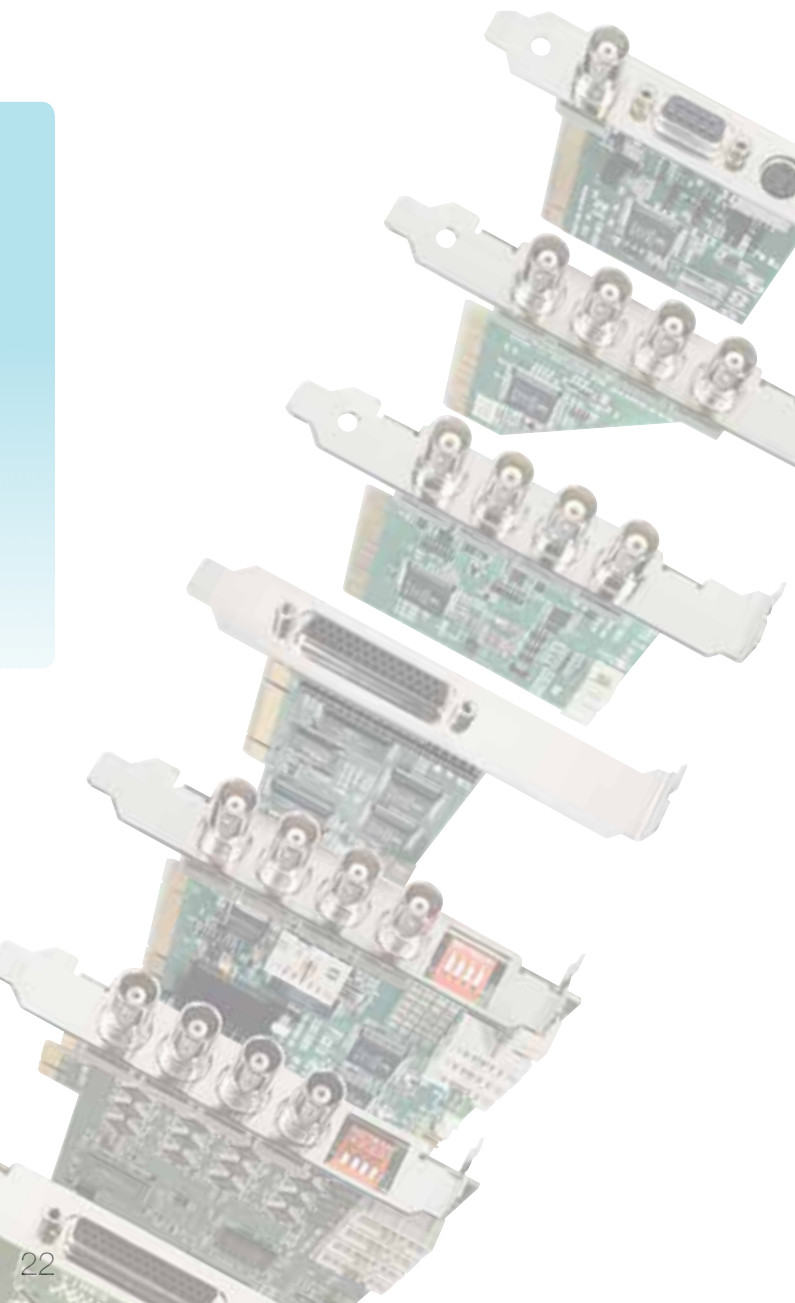
DOMINO Series

- Analog Image Acquisition Boards with Perfect Digital Quality
- Range of PCI and Compact PCI frame grabbers
- Compatible with standard and non-standard analog cameras



GRABLINK Series

- CameraLink® Digital Image Acquisition
- Range of high-speed PCI and Compact PCI frame grabbers for line-scan or area-scan digital CameraLink cameras
- Ideal for industrial applications






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 digitize the video signal provided, offering perfect image fidelity to make the most of the data provided by a camera.

 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.

 PICOLO H.264 Series	
Product	Description
Picolo U4, U8 and U16	PCIe 4, 8 and 16 composite video inputs
Picolo U4	compact PCI 4 composite video inputs

Domino Series

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


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

 DOMINO Series	
Product	Description
Harmony	single channel for 1 monochrome camera
Melody	dual-single channel or 1 RGB camera
Symphony	quad channel for up to 4 monochrome cameras

GrabLink Series

High-Speed 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.

 GrabLink Series	
Product	Description
GrabLink Value	PCI single channel CameraLink base, up to 60MHz
GrabLink Avenue	PCI single channel CameraLink base with ADR technology, up to 85MHz
GrabLink Express	PCIe single channel CameraLink base with ADR technology, up to 85MHz
GrabLink Express 2	PCIe dual channel CameraLink base or CameraLink medium, up to 60MHz
GrabLink Full	full featured CameraLink frame grabber, for one base-, medium- or full-configuration (including 10-tap) camera, up to 85MHz

Further frame grabbers and prices on request!

Accessories

Lenses, Lighting & Cables

Our product range is complemented by a comprehensive list of accessories for digital image processing. We offer a wide range of lenses, lightings, cables, extension tubes and filters.

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

Sunex

FALCON
LED LIGHTING SYSTEMS FOR MACHINE VISION

PENTAX

**VISION&CONTROL**
SYSTEMS • LIGHTING • OPTICS

 **FUJINON**

TAMRON

 **NORTHWIRE**
INC



Accessories

Lenses, Lighting & Cables



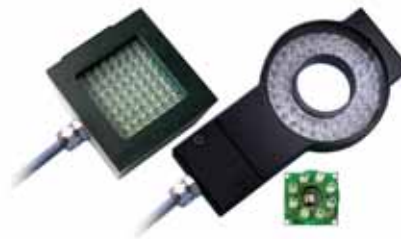
Lenses

FRAMOS can offer 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.



Lighting

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.



Cables

The FRAMOS portfolio includes a wide range of ready to order cables for industrial applications. Cables are available for all of the established interfaces types, such as: USB, FireWire, GigE, CameraLink and Analog. 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
- Customization Available



We also offer accessories such as extension tubes, filters and more. Please ask!

Software & Tools

Application Software, Interface & Software Development

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

Application software is the key to analyze, decide, and react. With Boulder Imaging, which is software to record images from various sources and analyze the content, and Open eVision, which is 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 get your application done.

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

On top of that we provide various possibilities to improve your time-to-market in camera development. Our own Aptina development tool helps you, for example, to test any algorithm code for your development. To improve your image quality and application we offer you a wide range of algorithms, like auto exposure, Bayer pattern and more. To speed up your time-to-market we provide a full range of software development services which enable you to focus on your key differentiation factors.

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

Application Software



Software Development



Software & Tools

Application Software, Interface & Software Development



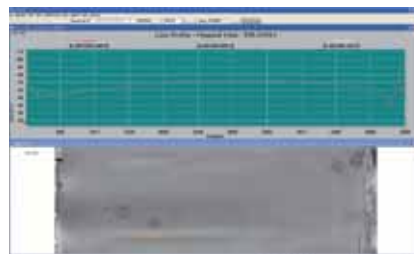
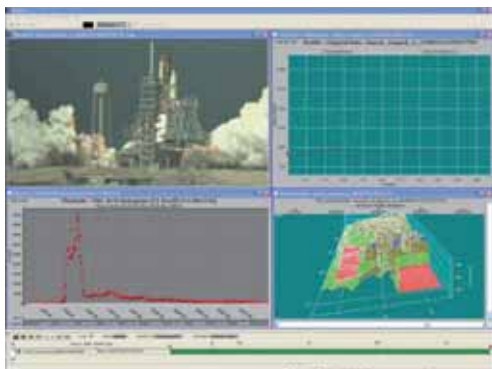
BOULDER IMAGING INC. Application Software

- Imaging specialists providing real-time image acquisition, analysis, and processing solution
- Focus on high speed, high performance, or high precision for manufacturing, engineering, and scientific applications
- Developer of Quazar, which is the most flexible and fastest High Performance Digital Video Recorder (HPDVR™) on the market today
- Developer of the Vision Inspector™ line of vision systems which addresses complete manufacturing and industrial requirements including micron level precision parts measurement, automated inspection, quality control, segregation, categorization, and defect detection, equipment monitoring, alerting, and more.

Boulder Imaging, Inc. is the leading U.S. imaging specialist providing real-time image acquisition, analysis, and processing solutions for high speed, high performance, or high precision manufacturing, engineering, and scientific applications. Our Vision Inspector™ Intelligent Machine Vision and Quazar High Performance Digital Video Recording (HPDVR™) systems simultaneously capture complex video imagery from multiple camera/sensor inputs, process and analyze that data in real-time using its proprietary software. Boulder Imaging's reputation for excellence in quality, innovation and customer care has contributed to its growing success in this highly technical niche. Boulder Imaging's systems are currently used in machine vision, industrial production, product quality control,

military testing and training (in the air, land, and water), object tracking, medical imaging, security applications, surveillance, motion analysis and scientific research.

The thorough understanding of the application needs of each customer and the ability to meet 100% of our customer's requirements has earned Boulder Imaging preferred partner status with Fortune 100 companies, military and government organizations, and top university research labs. This level of exposure to diverse and demanding imaging applications has resulted in deep market intelligence and experience which contributes to the ongoing development of cutting-edge technology that serves as the core of our imaging solutions.



Laser Printer Drum Inspection



Software & Tools

Software & Tools

Application Software, Interface & Software Development



Open eVision

Open eVision 1.1 is a rich suite of reliable, powerful and flexible software tools dedicated to image processing and analysis:

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

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.

Easy Gauge Features



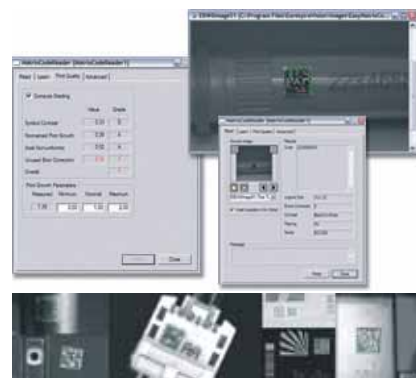
Easy Barcode Features



Easy OCR Features



Easy Matrix Code Features



Software & Tools

Application Software, Interface & Software Development



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.

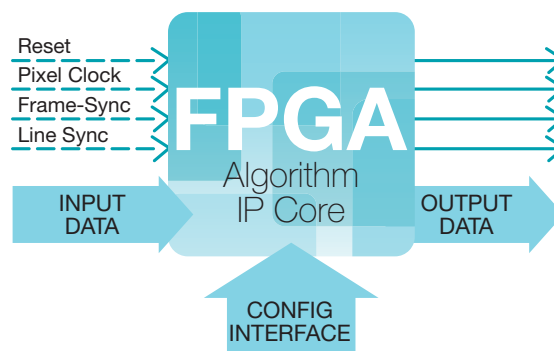
Algorithm Development

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



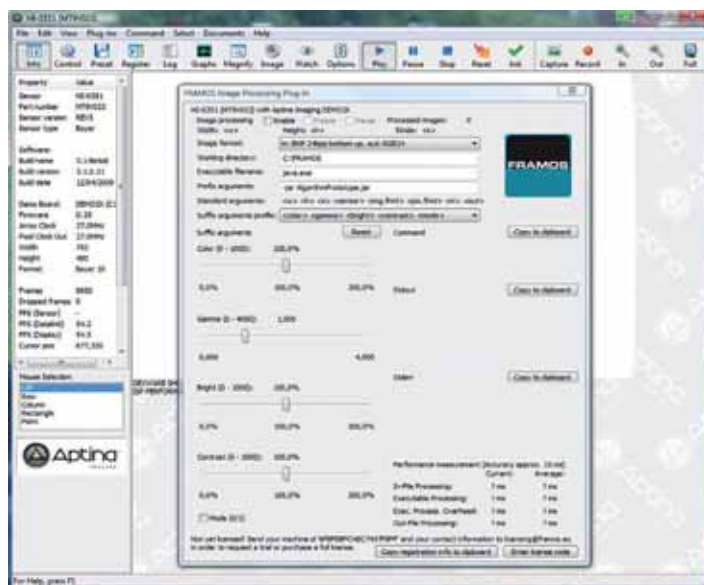
Tools

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



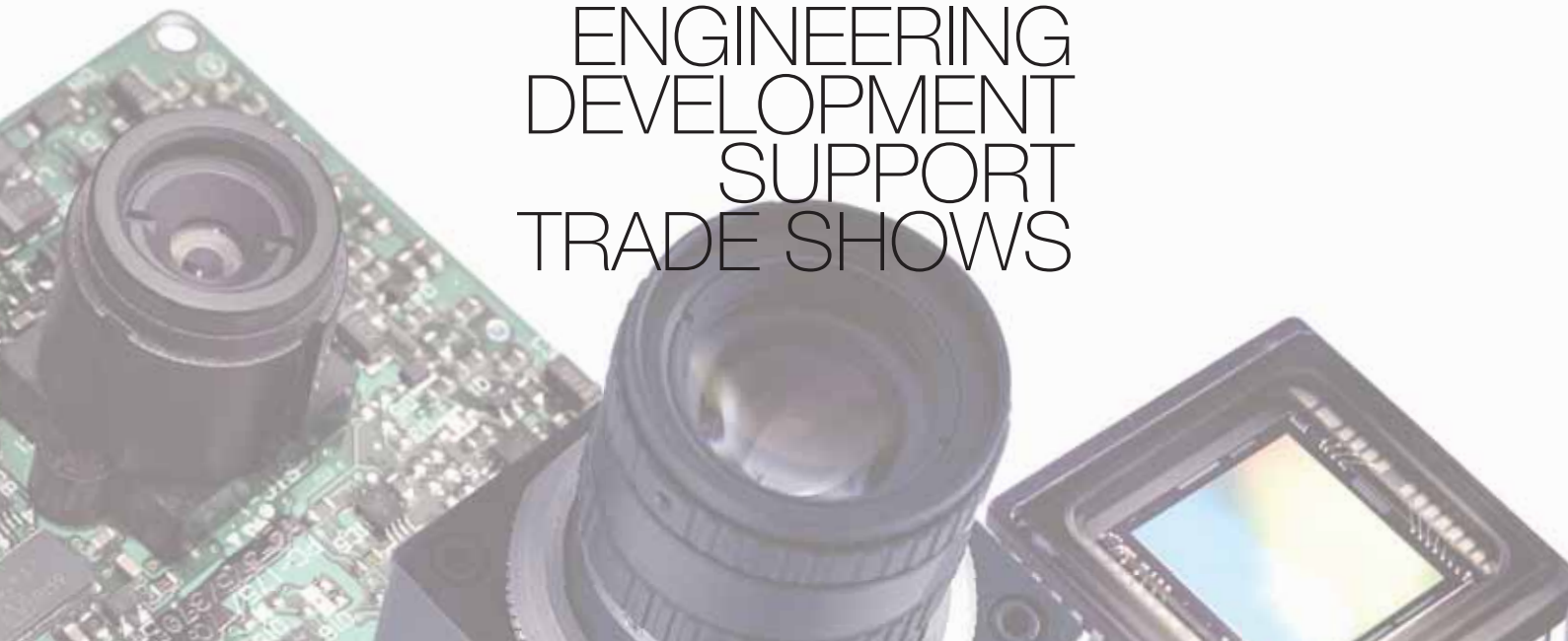
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