

INET

Industry Leading Imaging Solutions

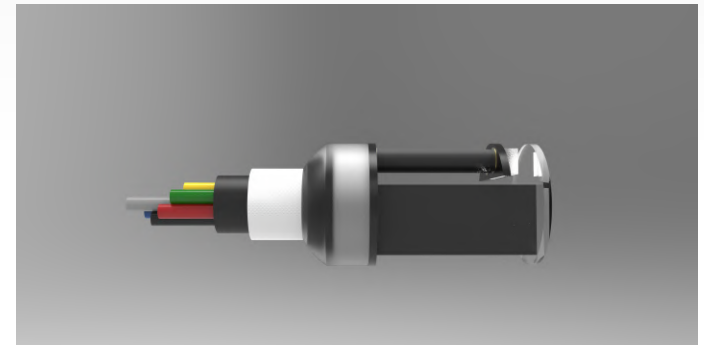
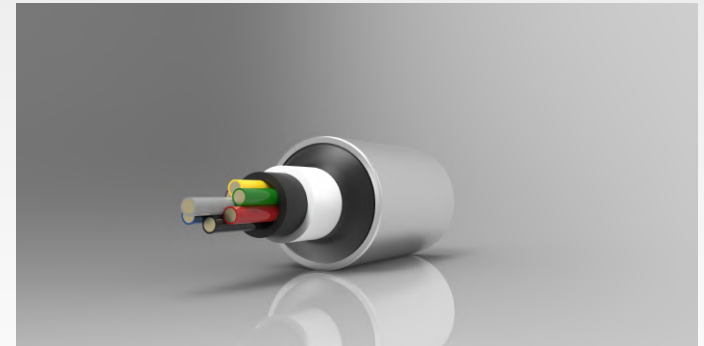
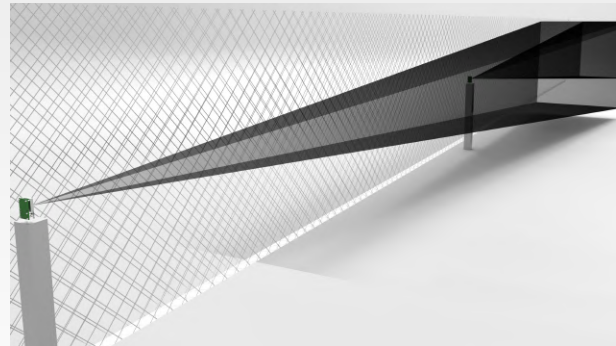
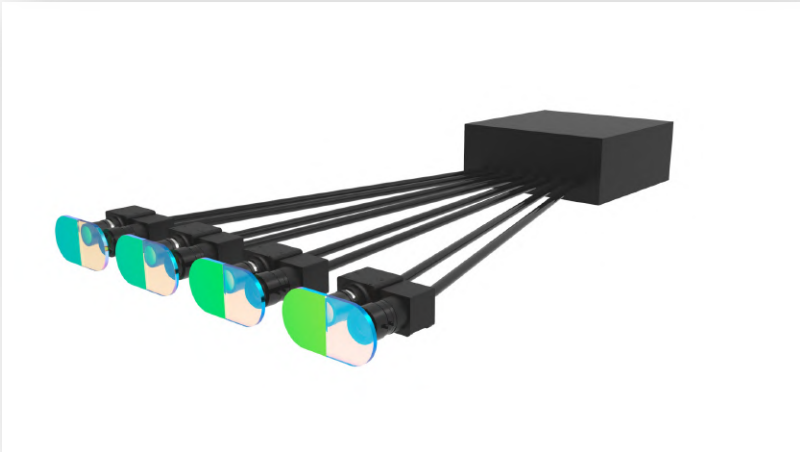
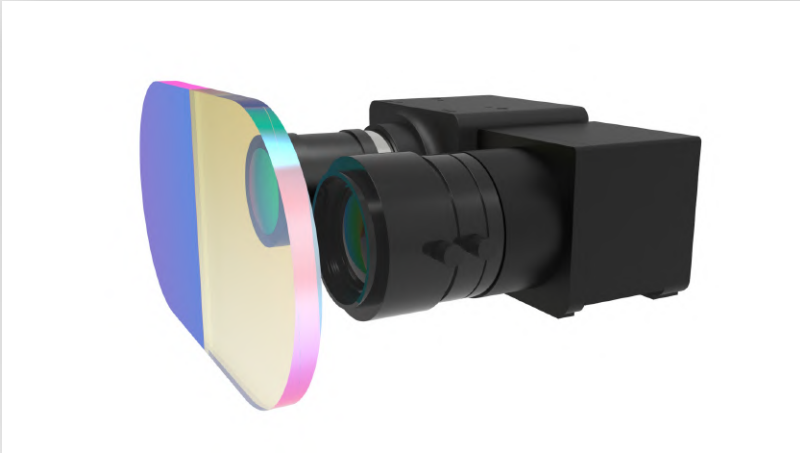
September 2020

INET Introduction

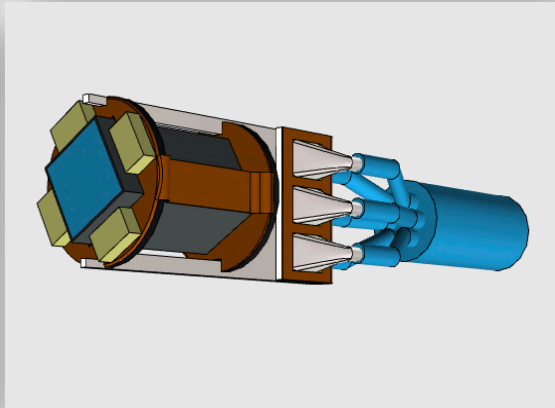
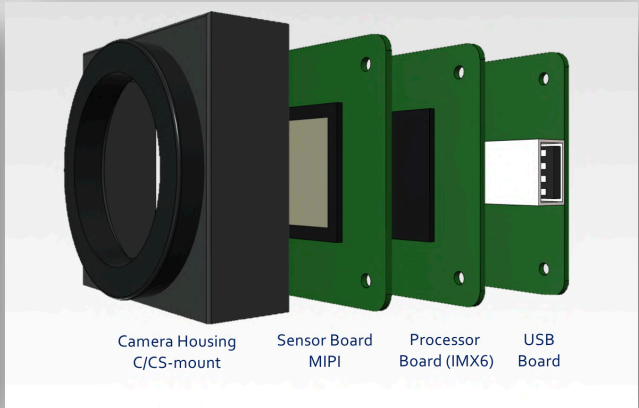
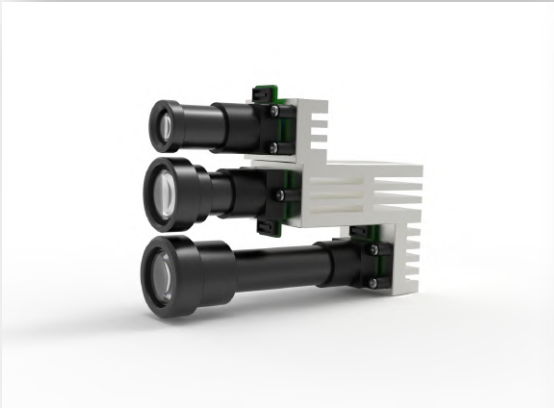
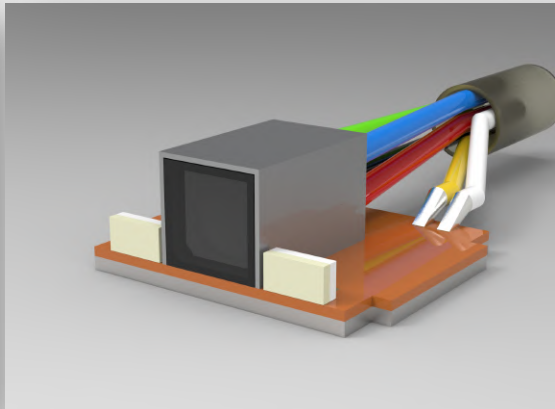
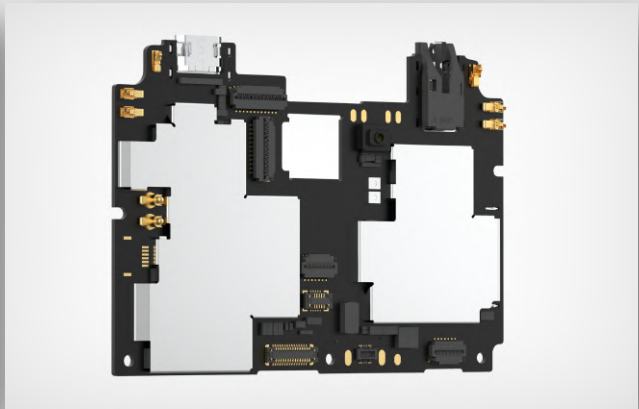
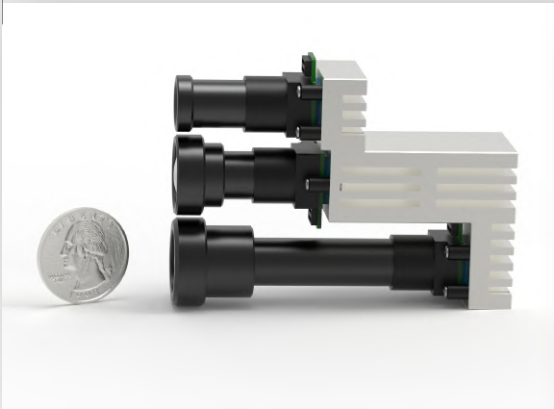
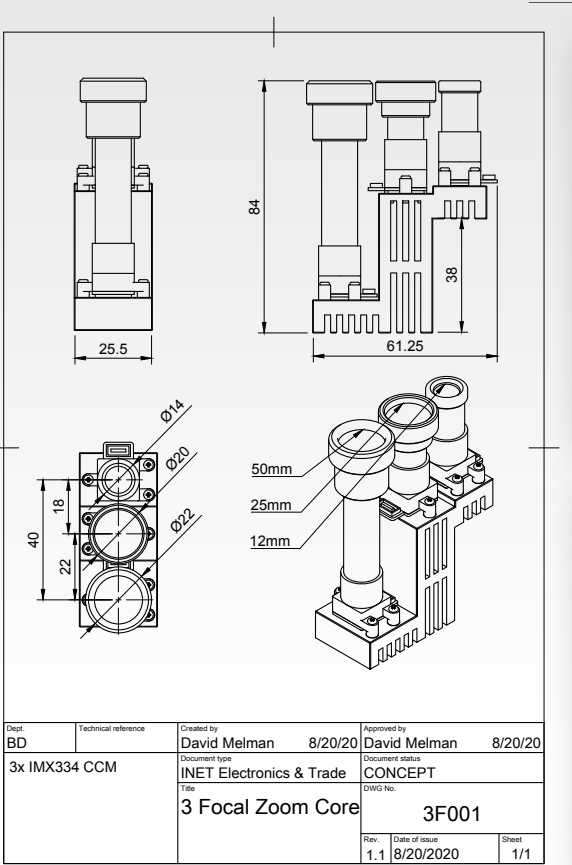
INET provides Optics and Electro-optic solutions, From board level up to full system solution. INET will be an executive consulting and connection firm servicing the electro-optical industry, exploiting and capitalizing on experience, reputation and networks.

Established in 2008 by Ilan Eliezer, 20 years semiconductor sales experience, INET become main Camera Module supplier among Israel's largest companies with special focus on Startups industry and new projects in wide range of applications.

In-House Designs Services



In-House Designs Services



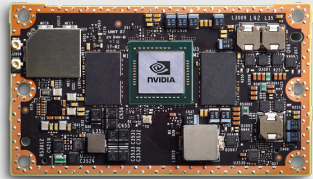
INET Introduction

INET is supporting customers from the block diagram stage with monthly shipments of MP. Focusing on design activity, definition cameras, according to customers' applications and our supplier roadmaps

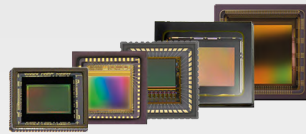
- Defining with customer the relevant sensor, optics, holder, mechanics of his application.
- Supporting cameras peripherals ICs: encoders, IMU, accelerometers, ISP and displays.

INET Solutions

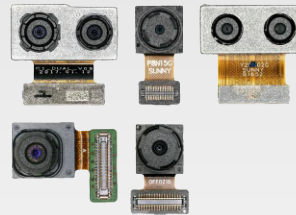
ISP Implement



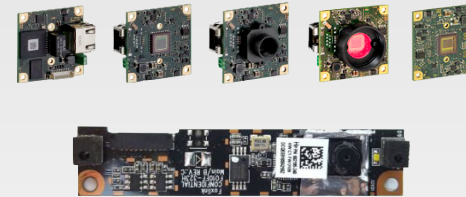
Sensors



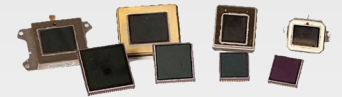
Modules



Board Level Camera



LWIR & MWIR
Sensors and Cameras



RF Cables



VIS Optics



MV Solutions



Block/Zoom Cameras



LWIR & MWIR & SWIR
Lenses and Optics



INET APPLICATIONS

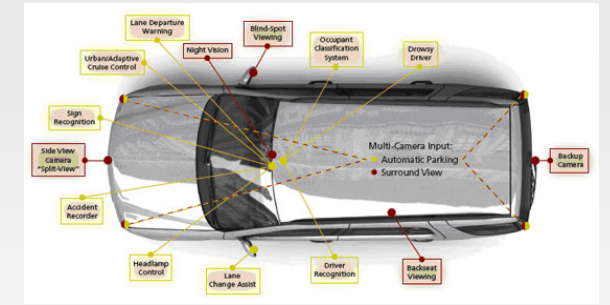
Mobile phones



Security and Surveillance



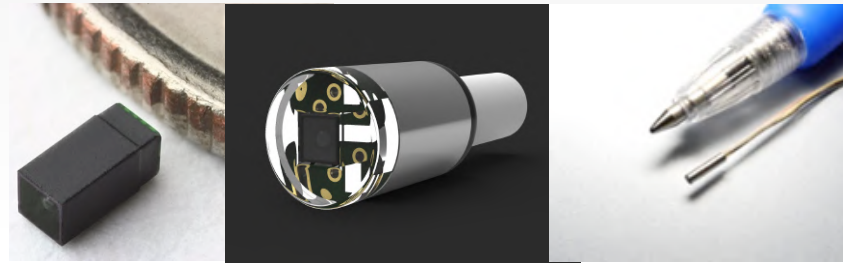
Automotive



3D & AR-VR



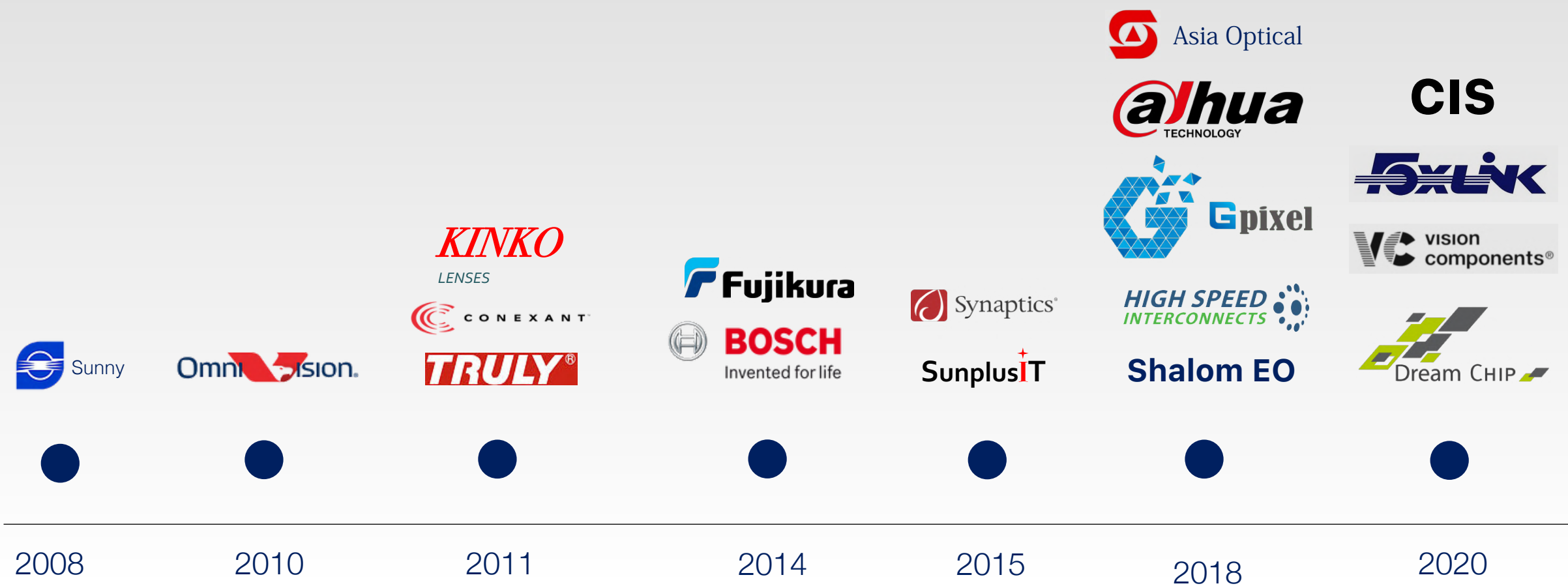
Medical



Others

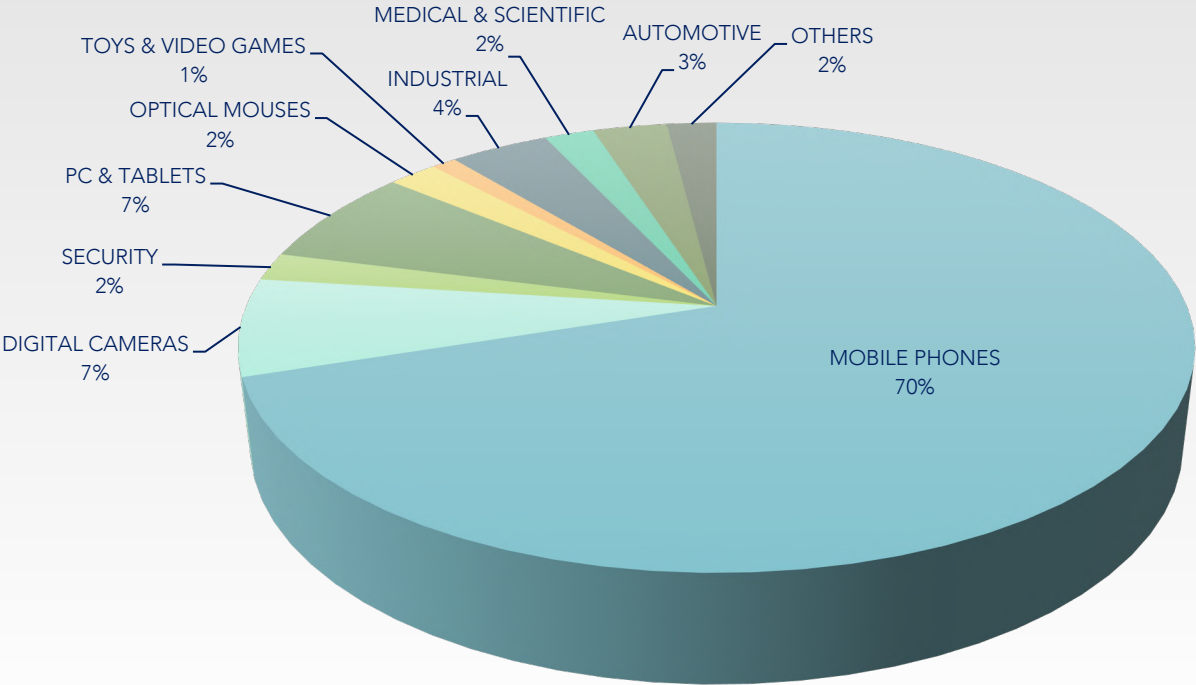


INET Suppliers

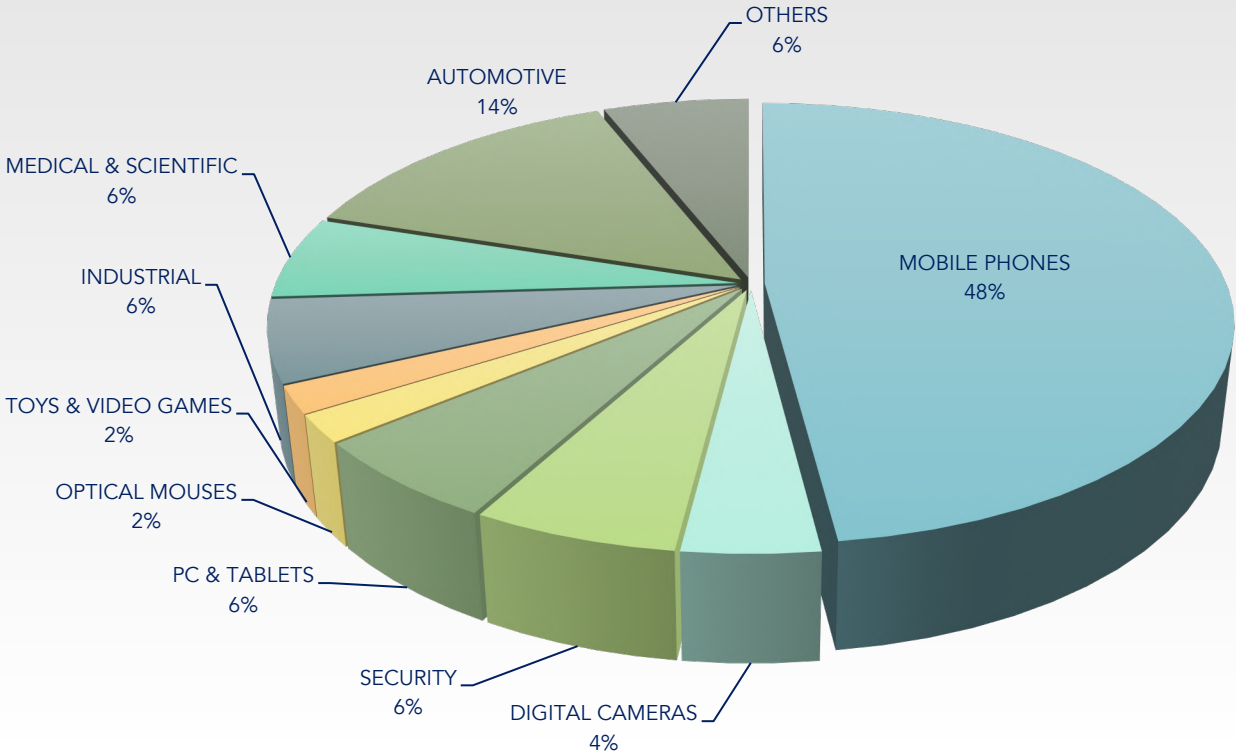


Camera Module Market Growth

2015 MARKET (\$9.9B)



2022 MARKET (\$17.2B, Fcst)



INET Customers



Omnivision

Technology Leader

Founded in 1995

OmniVision Technologies, Inc. develops and delivers advanced imaging solutions to a variety of industrial and consumer markets:

Automotive, Medical Imaging, Mobile Devices, Surveillance, AR, VR, Drones, Robotics, Notebooks & Entertainment.

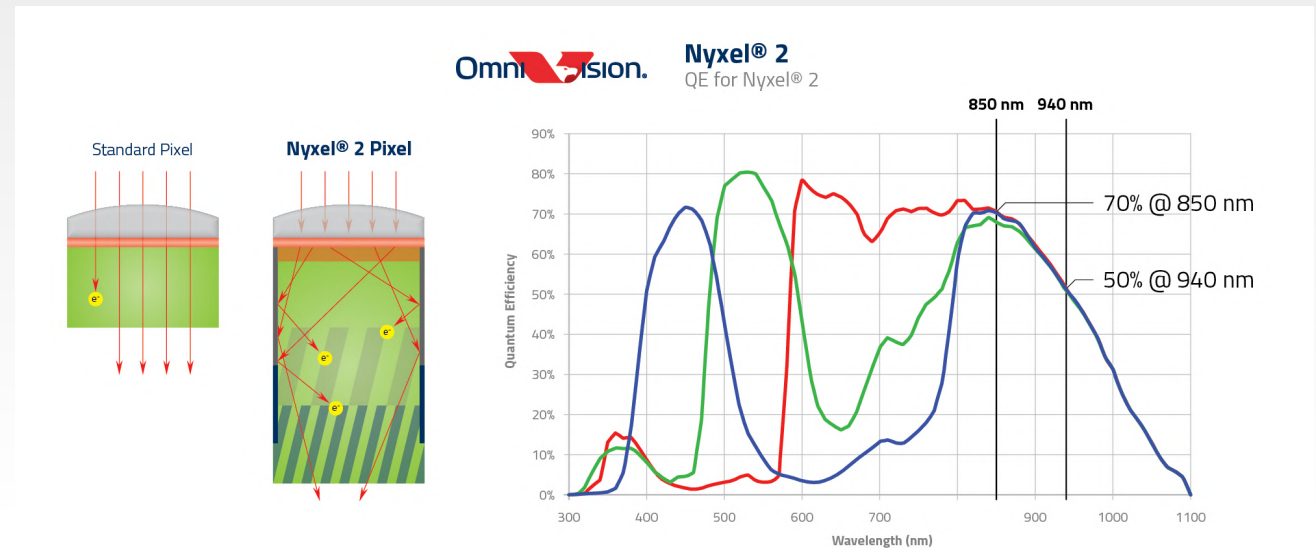
OmniVision's core strengths are its proprietary image sensing, state-of-the-art CMOS processing, and packaging technologies. Through superior pixel design, semiconductor manufacturing processes and package development, OmniVision sensors enable customers to capture images at higher resolutions, lower light levels, with better image quality, and in less space than ever before.

INTRODUCING
Nyxel™ Technology
&
Global Shutter BSI

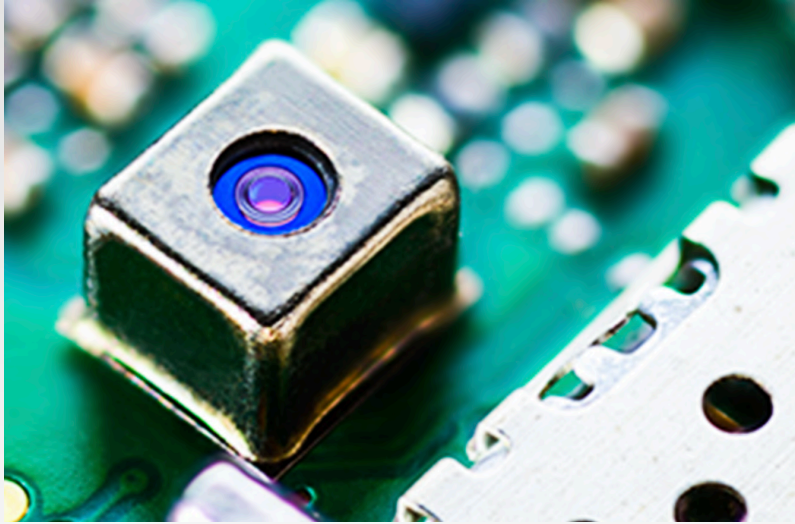
VGA and 1.3MP Imagers
Wafer-Level Camera Module

Standard Pixel
Nyxel Pixel

QE 850nm - 60%
QE 940nm - 40%



Omnivision CameraCubeChip

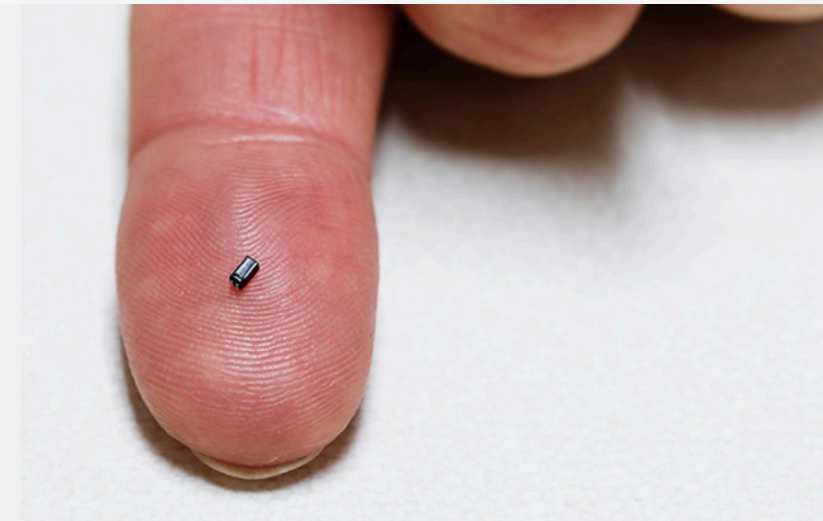


A Simplified Supply-Chain Solution

OmniVision has created a simplified, one-stop shop for wafer-level camera modules that require minimal assembly and handling. The reflowable CameraCubeChip™ can be directly soldered to the printed circuit board with no socket or insertion required, making integration simple.

Small-Form-Factor Camera Solution

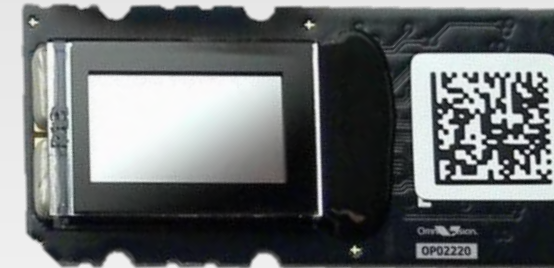
With the CameraCubeChip™, OmniVision delivers fully integrated CMOS-based chip products with high-quality camera functionality in very small footprints and low profiles to deliver miniature camera modules that fit in tiny spaces, allowing for multiple cameras in one device.



Omnivision LCOS

Omnivision's LCOS technology enables a turnkey solution with image sensor and LCOS display technologies.

Omnivision's LCOS technology targets AR and VR , smart shelves, pico projectors, automotive and medical applications.



Full digital single chip LCOS panel

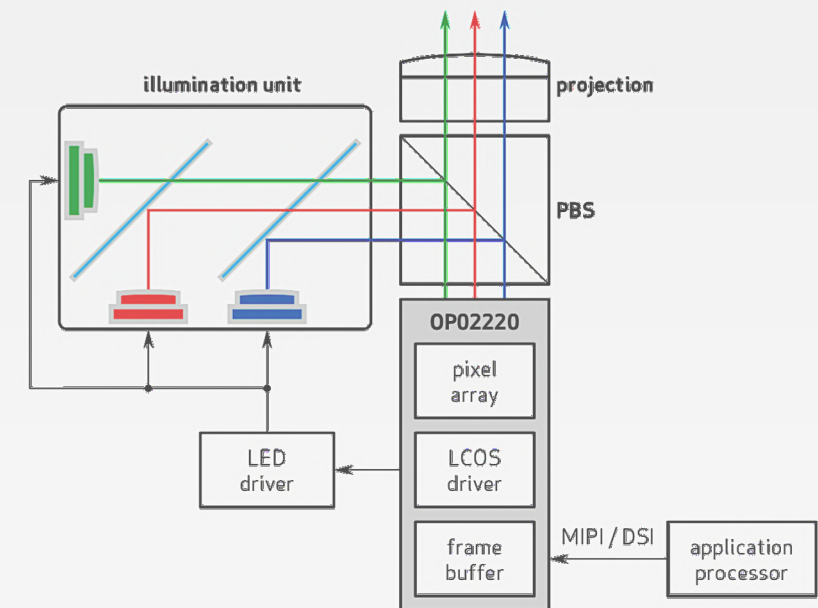
Integrated driver function and frame buffers in a single chip LCOS panel simplifies the system design and makes the system compact with the small form factor.

Low power consumption

All in one LCOS successfully reduces the power consumption by 40% compared to the 2 chip solution. It is ideal for wearable devices, such as AR and VR products.

High resolution and high frame rate

Omnivision's LCOS products feature high resolution, high frame rate, and up to 6 color fields to deliver crisp clear stable images without image retention.



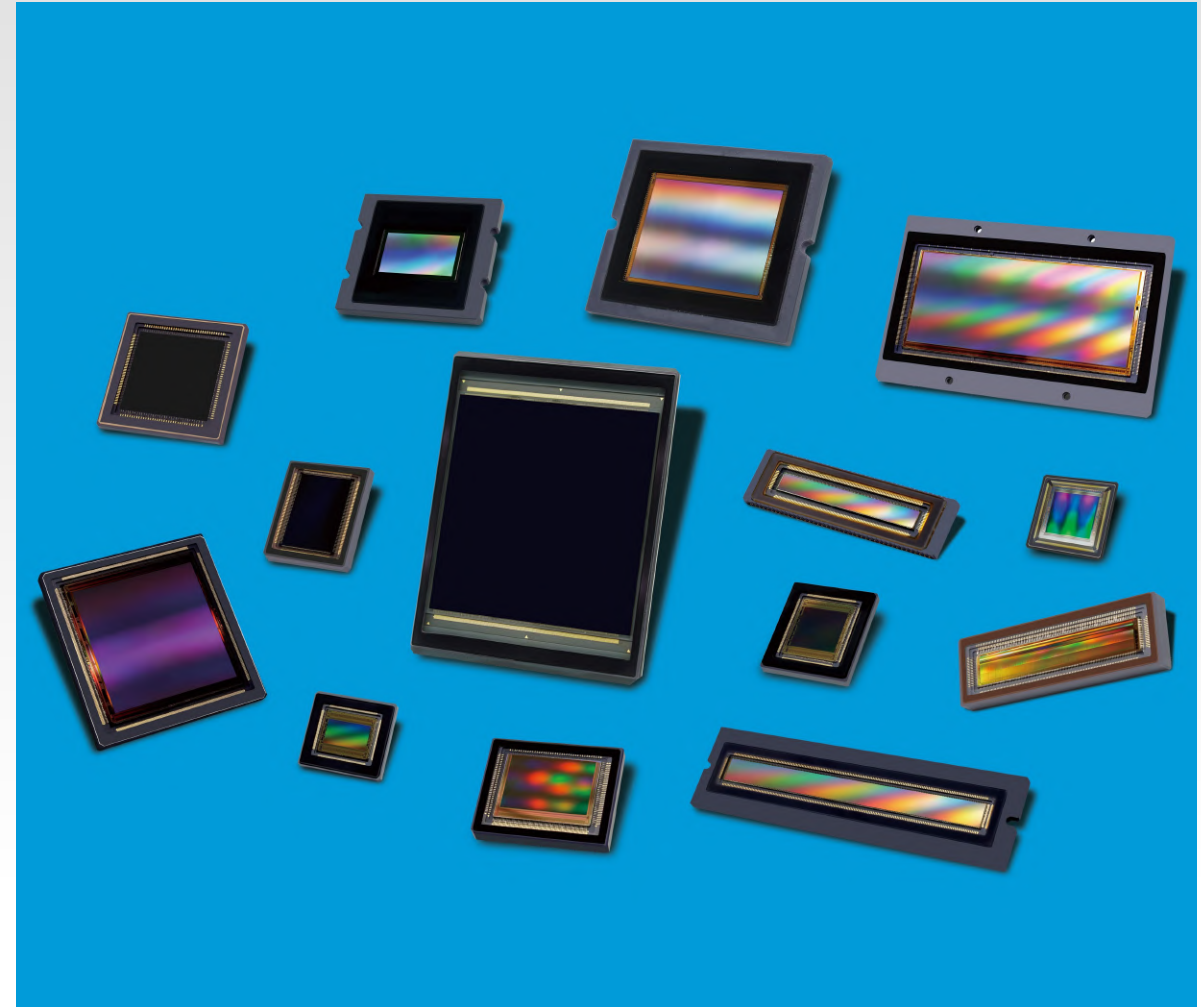
Gpixel

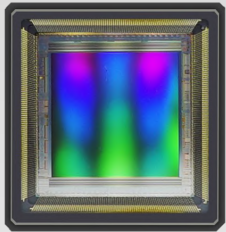
CMOS IMAGE SENSORS FOR PROFFESIONAL APPLICATIONS

Gpixel is a turnkey supplier of advanced off-the-shelf, customized and full custom CMOS image sensors, developed by a seasoned, multi-disciplinary team of image sensor experts. From the offices in Changchun, China (headquarters) and Antwerp, Belgium is Gpixel specialized in providing high-end CMOS image sensor solutions for industrial, professional, medical and scientific applications.

Founded in 2012 by experienced CMOS image sensor designers and semiconductor physicists, Gpixel is committed to continuously innovate and work in close cooperation with its customers and business partners to deliver the most state-of-art CMOS image sensor technologies and products to the global market.

[Click Here - Full Sensors Catalogue](#)





Gpixel - Red Fox NIR-enhancing

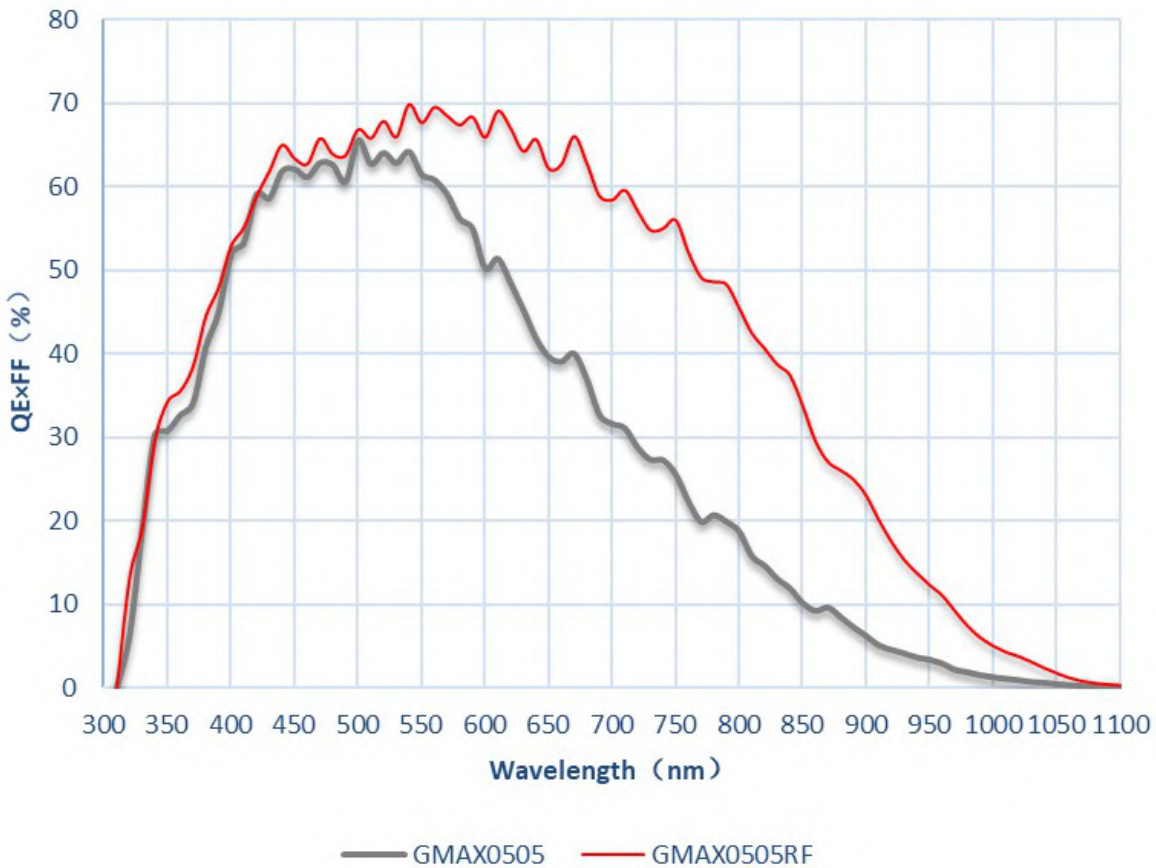
GMAX0505

GMAX0505 2.5 UM 26 MP GLOBAL SHUTTER IMAGE SENSOR

The GMAX0505 is ideal for machine vision applications where both resolution and optical format are critical factors, utilizing a 2.5 μm global shutter pixel to deliver 26 MP resolution in a 1.1” optical format, and a dynamic range of 60 dB at 150 fps. The sensor is pin compatible with the GMAX2505 and GMAX2509.

Resolution (H x V pixels)	2600万 – 5120 (H) x 5120 (V)
Pixel size (μm)	2.5 μm x 2.5 μm
Optical format (mm/inches)	1.1” – 12.8 mm x 12.8 mm – diam 18.1
Frame rate (fps full resolution)	150 fps (10-bit), 42 fps 12-bit)
Shutter type	Global
Chroma	Monochrome, RGB Color

Spectral Response



Gigajot Technologies

Quanta Image Sensor

R&D for commercialization of the Quanta Image Sensor, CMOS imager with accurate photon-counting and photon number resolving capabilities at room temperature.

The QIS is a platform technology and can be used in a wide range of imaging and photonics applications ranging from consumer to high-end (e.g. scientific). It provides excellent photon-counting capability, low dark current, high resolution, and high-speed operation. Also, QIS is compatible with the mainstream CMOS image sensor processes. The QIS devices can be designed and implemented in different formats (from a few pixels to hundreds of megapixels), different pixel sizes (from sub-micron to more than ten microns), and different spectral sensitivity (UV-VIS-NIR).



Gigajot Technologies

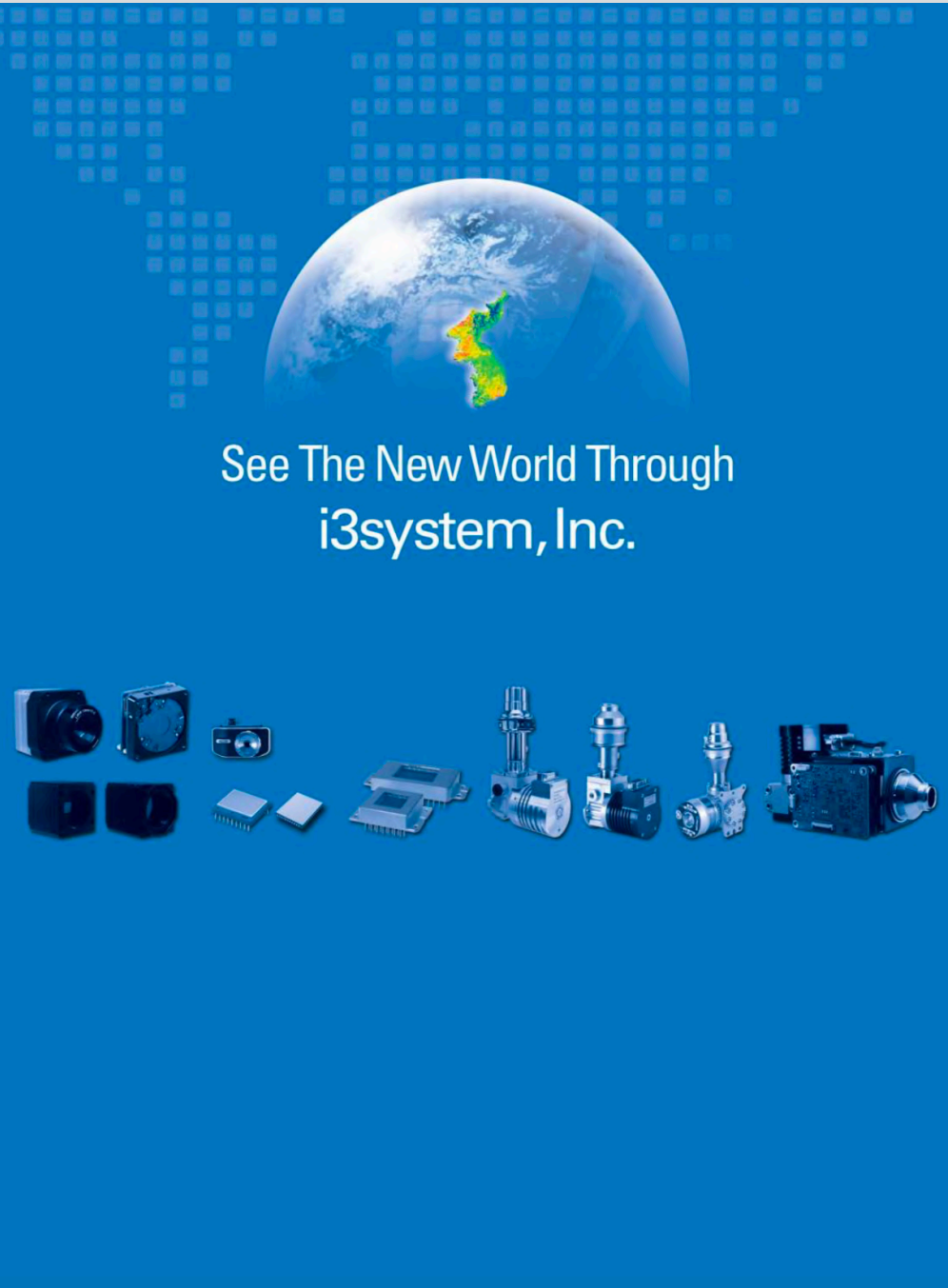
Sensor		GJ00111	GJ00422	GJ01611	GJ04022	GJ16311
Sensor Specifications	Resolution (MP)	1.0	4.2	16.8	40.8	163.0
	Pixel Array	1024 X 1024	2048 X 2048	4096 X 4096	7232 X 5632	14464 X 11264
	Pixel Pitch (um)	1.1	2.2	1.1	2.2	1.1
	Binning (Charge Domain)	NA	2X2	NA	2X2	2X2
	Active Area (mm x mm)	1.1 X 1.1	4.5 X 4.5	4.5 X 4.5	15.9 X 12.4	15.9 X 12.5
	Full Frame Rate (fps)	>30	>120	>30	>30	>10
	Average Read Noise (e- rms) @ 20C	<0.3	<0.5	<0.3	<0.5	<0.7
	Average Dark Current (e-/pixel/sec) @ 20C	<0.2	<1	<0.2	<1	<0.2
	Bit Depth (Programmable)	1 to 14	1 to 14	1 to 14	1 to 14	1 to 14
	Intra-scene (one shot) Dynamic Range (dB)	>80	>90	>80	>90	>90
	QE at Peak (%)	>80	>80	>80	>80	>80
	Shutter (with global reset)	Rolling	Rolling	Rolling	Rolling	Rolling
	Chroma	Mono/Color	Mono/Color	Mono/Color	Mono/Color	Mono/Color
Tentative Sampling Dates	Camera Sampling Out (Tentative Date)	Q2 - 2021	Q4 - 2020	Q1 - 2021	Q1 - 2021	Q1 - 2021
	Sensor Sampling Out (Tentative Date)	Q3 - 2021	Q1 - 2021	Q2 - 2021	Q2 - 2021	Q2 - 2021

I3 Systems

See The New World Through

Rising Star in the design, the manufacture of the thermal imaging detector and the X-ray detector. i3system, Inc. which was founded in 1998, has developed capsule endoscope for medical use and cooled infrared detectors for thermal imaging cameras for Korean military use. We later expanded our business to X-ray imaging detectors for dental X-ray imaging equipment's such as panoramic and cephalometric systems. i3system, inc. is officially designated as a military product contractor for Korean military since 2010 by Korean government.

I3system also develop and manufacture uncooled IR detectors for uncooled thermal imaging cameras for commercial products such as security, surveillance, radiometry devices and night vision systems as well as military product for personal rifle of Korean Army. Our products for military use include IR scene projector, real time scene simulator, IR camera and laser detector. We are now expanding our commercial business to space area with IR detector and camera electronics for satellite applications.



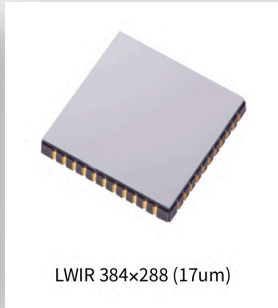
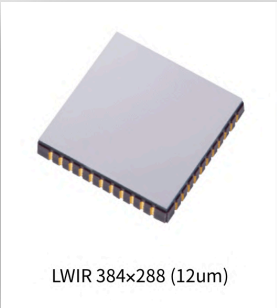
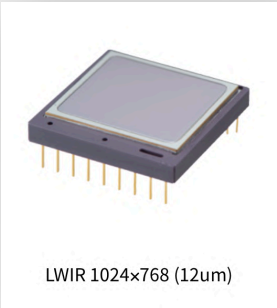
See The New World Through
i3system, Inc.

I3 Systems

Cooled Detectors



Uncooled Detectors



WLP 8um Upcoming !

SWIR Detector



X-ray Detectors



I3 Thermal-Expert - OEM Cores

E2 series - TE-Engine (12 μ m)

TE Engine (12 μ m) is compact, light weight Thermal Camera.
Various output interfaces are selectable to meet own application.
Based on uncooled 12 μ m detector, XGA (1024x768), VGA (640x480), and QVGA (384x288) resolutions are available up to 30Hz (60Hz).
Compared to TE Engine (17 μ m), the size has reduced approximately 60%, but shows equal performance.

Array format, Pixel pitch	1024x768, 12 μ m
Thermal sensitivity (NETD)	50mk / F#1.0, Room Temperature
Wavelength band	8 to 14 μ m
Power consumption	< 2.5W @ 30Hz (Steady State)
Video output format	Digital: Camera Link, USB, LVDS, LVCMOS, BT656 Analog : NTSC, PAL
Control	RS-232(RS-485 optional)
Frame rate	30Hz
Time to first image	< 7 sec max. (Typ. < 6 sec)
Dimensions (W x H x D)	30mm x 36mm x 27mm
Weight	< 50g (Without Lens)
Operating temperature	-10°C ~ 65°C
Scene range temperature	-10°C ~ 150°C



E1 series - TE-Engine (17 μ m)

TE-Engine (17 μ m) is compact, light weight Thermal Imager.
Various output interfaces are selectable to meet your own application.
Based on uncooled 17 μ m detector, both VGA (640x480) and QVGA (384x288) resolutions are available up to 30 Hz.
TE Engine is a precise thermal imager that can be installed into your complete product.

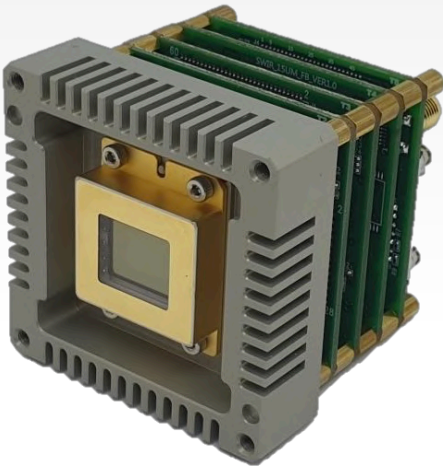
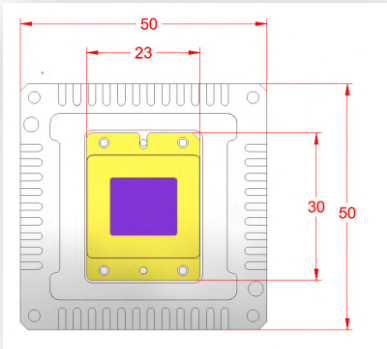
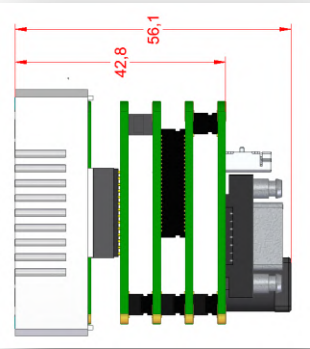
Array format, Pixel pitch	640x480, 17 μ m
Thermal sensitivity (NETD)	≤ 50mk(35mk optional)@F/1, 300K
Spectral range	8 to 14 μ m
Power consumption	<2.0W @ (30Hz)
Video output format	Digital: Camera Link, USB, LVDS, LV CMOS, BT656, IP(OnVif) Analog: NTSC, PAL
Control	USB2.0, RS-232, I2C, UART
Frame rate	30Hz
Time to first image	< 10sec
Dimensions (W x H x D) (with lens mount)	42.5mm x 44.6mm x 41.1mm
Weight	< 110g (without lens)
Operating temperature	-10°C ~ 65°C (-40°C ~ 65°C optional)
Storage temperature	-40°C ~ 85°C



I3 Thermal-Expert - OEM Cores

SWIR VGA CORE

SWIR VGA Engine is a brand-new module based on i3system VGA InGaAs sensor. It can be easily and quickly adapted in your system. A Well-established InGaAs technology of i3system provides excellent reliability and performances in operability, responsivity, noise and dark current.



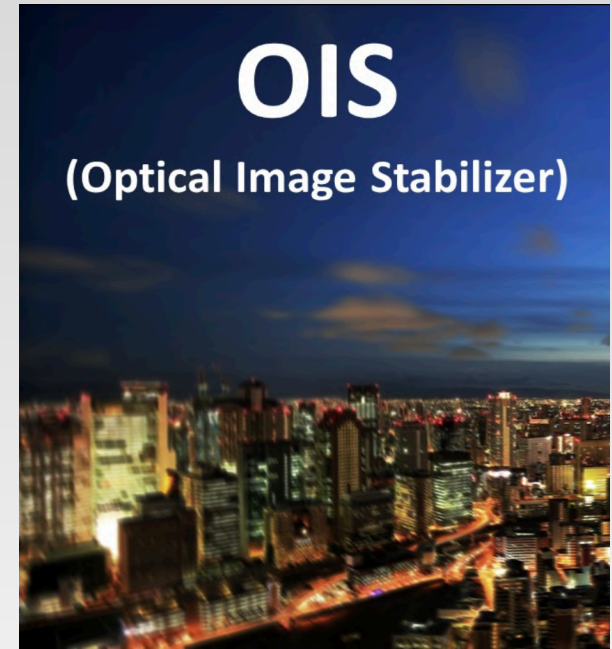
Sensor	InGaAs
Format	640 × 512
Pitch	15 um
Spectral range	0.6 ~ 1.7 um
Quantum efficiency (1.2 ~ 1.6 um)	≥ 70 %
Readout Floor Noise	≤ 50 e-
NEP	≤1 fW
Image correction/enhancement algorithms	NUC, BPR, AGC, Image Filter, NR
Frame rate	30 Hz
Time to image	< 10 sec
Latency	Sub frame
Supply Voltage	5V
Power consumption	< 5.0W at 71°C (detector)
Video output	Camera Link
Polarity invert	Yes
Image flip	Yes
Size	50x50x56.1 mm
Weight	≤ 150g

Vista Innotech

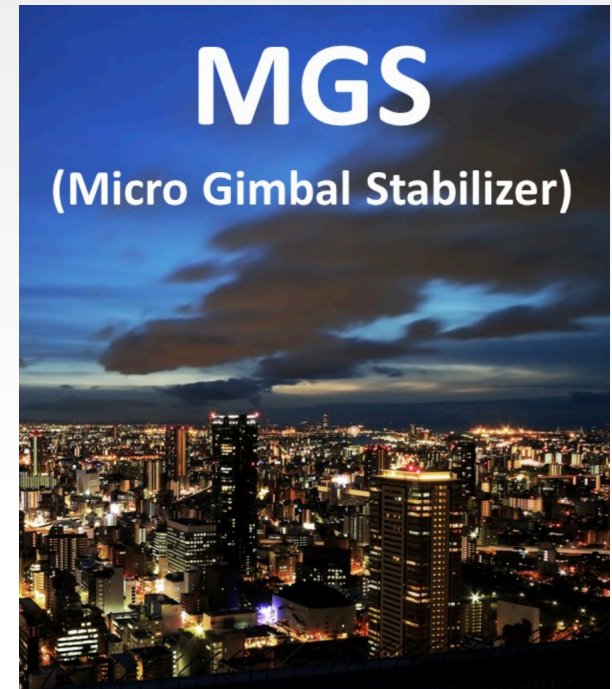
World's Smallest Gimbal Stabilizer Module

Vista Innotech Limited (VIT) is a new startup company inventing innovative technology and one stop solutions for Micro Gimbal Stabilizer (MGS) Compact Camera Modules (CCMs). The solutions are with integrated designs, superb anti-shaking performance and 15+ pending patents.

OIS **(Optical Image Stabilizer)**



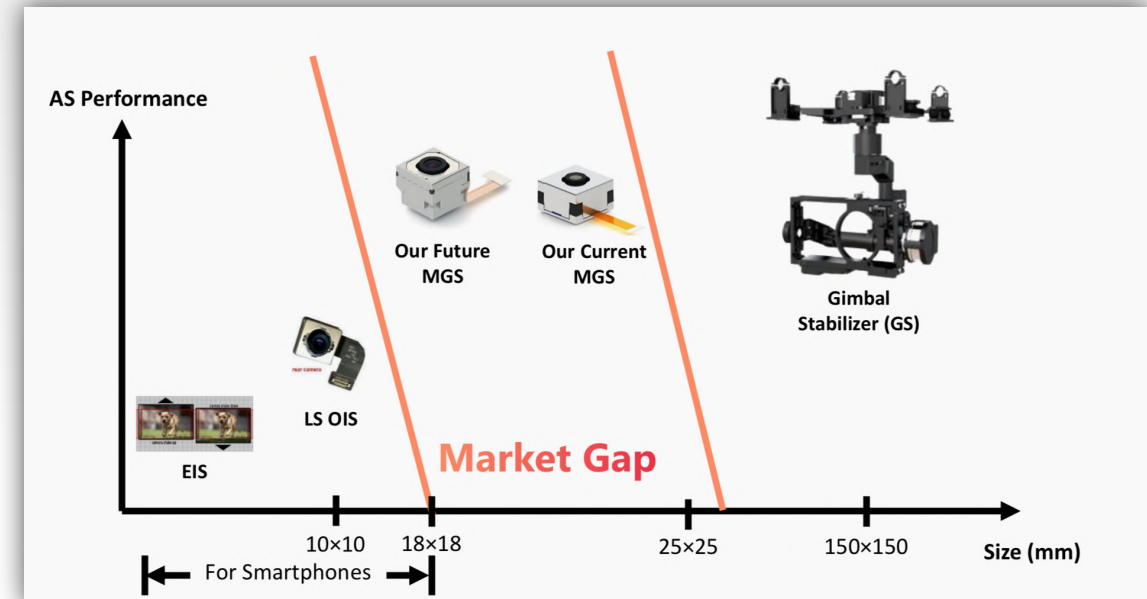
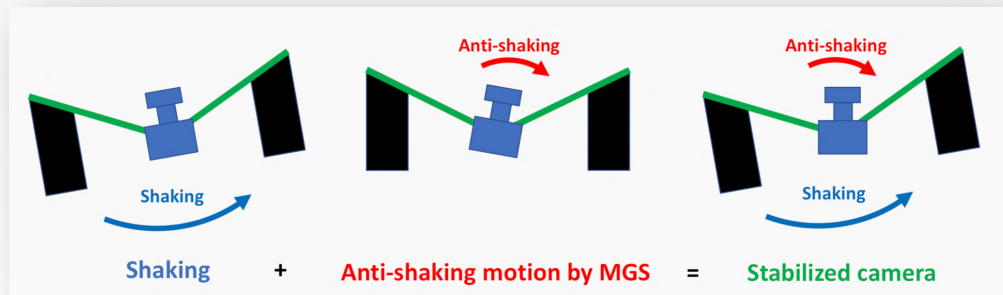
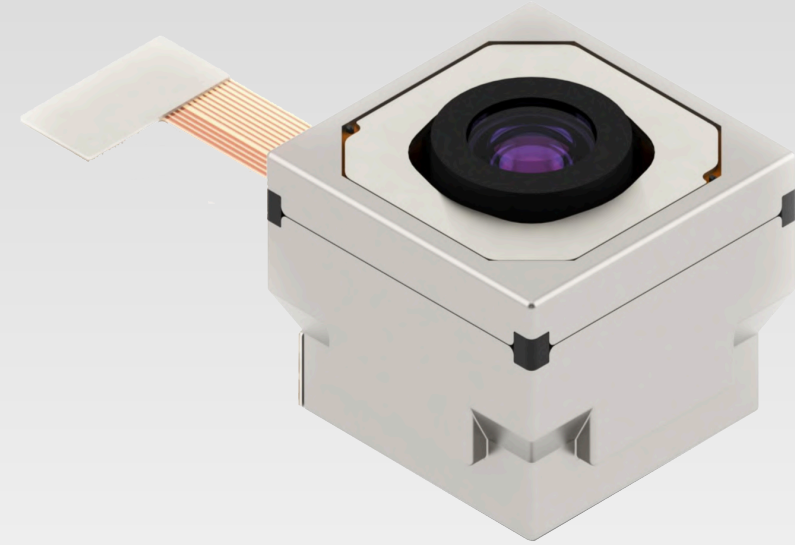
MGS **(Micro Gimbal Stabilizer)**



Vista Innotech

World's Smallest Gimbal Stabilizer Module

- Mechanical stabilizer
- Large compensation angle ($\pm 5\text{deg}$)
- Suitable for super wide-angle lens
- Integrated and compact design
- Simple and easy to use solution
- Much lower power consumption than GS



CIS

Welcome New Technological Challenges

CIS Corporation is a manufacturer of industrial cameras. We develop, design, manufacture, and market high quality industrial camera systems and board cameras for machine vision and security camera applications. We began manufacturing industrial cameras under our own brand in 1991, and have consistently pursued "high-density packaging", "high speed", and "high performance" ever since.

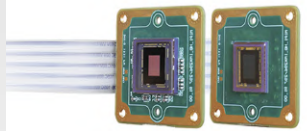
We are developing cameras featuring unique high-speed, high-resolution and CMOS image sensors equipped with faster interfaces ranging from CoaXPress to optical I/F.

We also have dedicated teams for the design and development of signal processing using both FPGA and Texas Instruments' digital media processors.

As for our image process technology "Clairivu™", we provide licenses of our IP for incorporation into our customers' products. The number of licensees is on a steady rise, and we will carry on promoting our technology for use in such areas as medical, broadcasting and food inspection applications which are all new business terrains to CIS.

[Click Here - Off-The-Shelf Camera Catalogue](#)

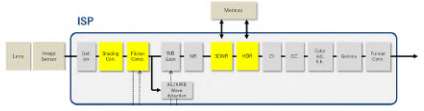
CIS




Modular Design
Image sensor board /
Image processing IP

Clairvu™

ISP Implementation on customer's hardware
High quality imaging with small FPGA footprint

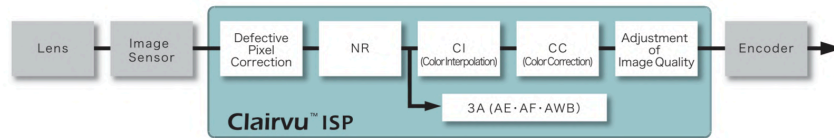




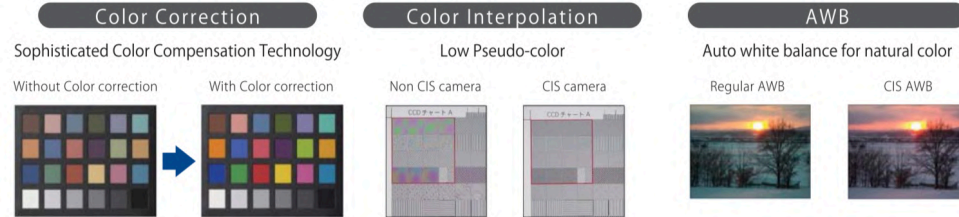
CIS - ISP Solution

ISP Algorithm **Clairvu™**

Proprietary ISP (Image Signal Processor) engine for crisp, low pseudo - color, and low artifact, color image processing.



<Signal Processing Technologies – Examples >



■ High Quality Image

Crisp, low pseudo - color, and low artifact color interpolation process produces high quality images equivalent to that of non - real time PC - based DPE application software.

■ (CC) Precise Color Correction

Enables precise color reproduction by way of sophisticated color compensation technology (multiple - axis division of the color plain)

■ High Speed yet Cost Effective

Algorithm engine that processes 1920x1080 progressive image signals at 60fps can be implemented into a relatively small, a medium sized FPGA.

■ (CI) Color Interpolation

Color interpolation process produces color images out of signal output from Bayer array color sensor, and significantly affects its image quality. "Clairvu™" enables high resolution, low pseudo-color, and low noise at the same time.

■ (AE) Auto Exposure

According to the detected luminance conditions, diaphragm (lens iris), gain level, and shutter speed are controlled to keep the brightness of the image constant.

■ (AF) Auto Focus


Contrast detection method that defines the focus position for the maximum contrast as the full focus. Eliminating signal noises as much as possible, auto focus function is effective even for difficult scenes, such as the one under low illumination, telescopic zooming, and others.

■ (AWB) Auto White Balance

Human eyes are color flexible and sense the original colors even when the ambient light source changes. To acquire natural images, cameras need to have a similar function to human eyes, in other words, the function to correct the color depending on illuminating conditions. This is a so-called "White Balance" function. In addition to the conventional AWB to make the average color of the image be close to gray, CIS developed auto white balance algorithm to control its balance more precisely, estimating the color of the lighting source.

CIS – Pixel Shift

Pixel Shift Technology Camera



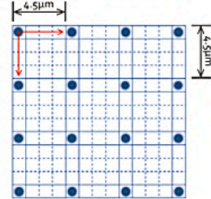
CMOS	Max 400M pixels Ultra-high resolution
Interface	CoaXPress
Model name	(B/W) (Color) VCC-25CXP1MPS VCC-25CXP1RPS
Sensor	PYTHON25K
Sensor size	APS-H CMOS
Unit cell size (μm)	4.5 μm × 4.5 μm
Effective pixels (H) × (V)	5120 × 5120
Resolution	(B/W) (Color) 25M • 100M • 400M 25M • 25M (Equivalent to 3CMOS True color) • 104M (Equivalent to 3CMOS True color)
Frame rate	(B/W) (Color) 81fps • 10fps • 2.5fps 81fps • 4fps
Pixel clock	72MHz
Shutter	1/30 ~ 1/30,000s
Lens mount	M48 mount
Dimensions (W) × (H) × (D) mm	65 × 65 × 77
Features	Global shutter, DIN connector B/W : 20480 × 20480 Color : 5120 × 5120 / 10240 × 10240 (Equivalent to 3CMOS True color) Build-in Piezo actuator drive unit

【Precise image sensor positioning】

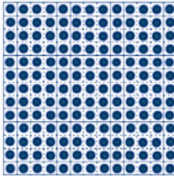
In the case of VCC-25CXP1MPS, an ultra high def image of 400M pix. is generated using 25M pixel CMOS. This is done by shifting X and Y axes between the sensor's pixel pitch 4 times in each direction (4x4 of 4.5 μm/4), capturing images at each position, and synthesizing them to create a single image.

Displacement accuracy of the pixel shift is less than ±0.2 μm. The time required for the CMOS to move to the predefined position is less than 10ms.

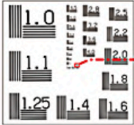
Movement of CMOS




Synthesized image




Shoot a chart by VCC-25CXP1MPS (B/W)



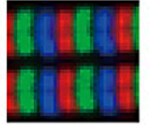
Enlarged image




Shoot a LCD of smart phone by VCC-25CXP1RPS (Color)




Enlarged image




25MPix (Without pixel-shift)



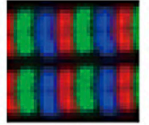
100MPix



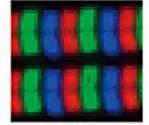
400MPix



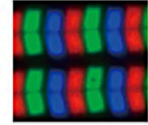
25MPix (Without pixel-shift)

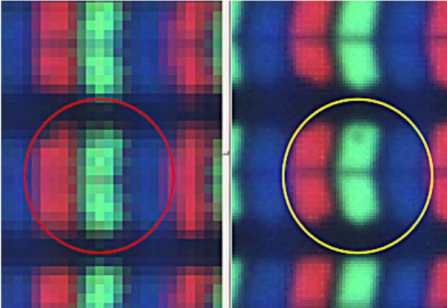



25MPix (Equivalent to 3CMOS•True Color)



104MPix (Equivalent to 3CMOS•True Color)







Vision Components

Embedded Solutions

VC mission is offering the customers the best solution possible. This principle is basic to all our developments and enables us to guarantee optimal performance with our SMART CAMERAS.

During the recent years, VC EMBEDDED VISION PORTFOLIO has been growing enormously along with our customers' demands. VC STANDARD MODELS are designed for a broad range of inspection tasks and find their use in many application areas around the world. Of course, being a reliable OEM partner, we also offer INDIVIDUAL SOLUTIONS for specific applications.



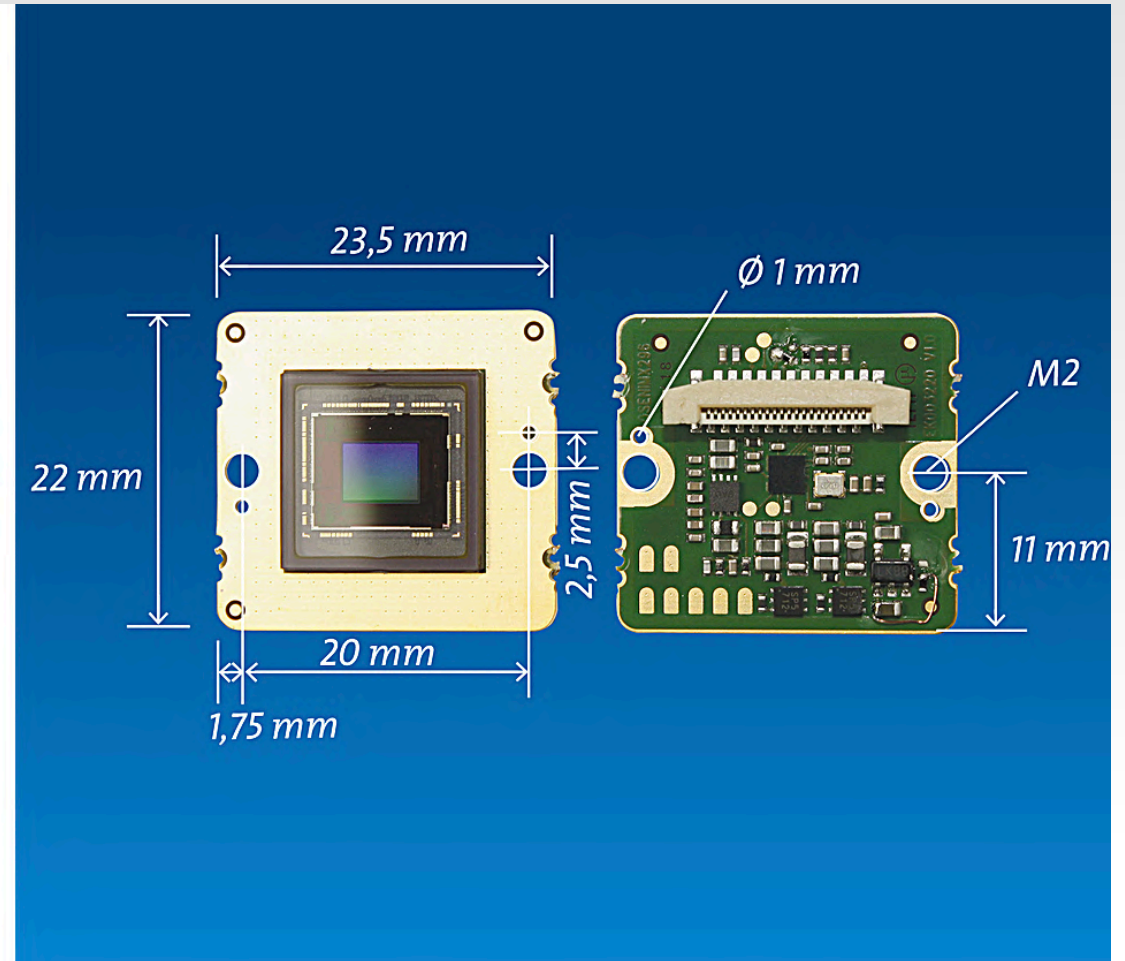
Vision Components - MIPI Camera Modules

MIPI CSI-2 Camera Modules for Embedded Vision

The VC MIPI camera boards support the MIPI® CSI-2 (Camera Serial Interface) specification and they are available with many different image sensors, e.g. from z.B. from Omnivision® and from the series Sony Pregius® und Sony Starvis®. The miniature cameras are COMPATIBLE WITH MANY CPU BOARDS. With our VC ADAP96 BOARD, a CSI & Ethernet Adaptor Board, we offer the perfect solution to make an intelligent VC camera from a 96board!

MIPI CSI-2 camera modules are ideal for multi camera applications including mobile and distributed applications like autonomous driving, UAVs, Smart City, medical technology, and laboratory automation.

With MIPI sensor boards we offer OEMs a highly versatile component for their embedded vision solutions – and it's all made in Germany!



Vision Components - MIPI Camera Modules

VC MIPI CAMERA MODULES							
Module ID	CMOS Sensor	RESOLUTION px	RESOLUTION MP	Color B&W	Shutter	TrigIn/ FlashOut	fps
VC MIPI OV9281	Omnivision®	1280 x 800	1.0	●	Global	✓	120
VC MIPI IMX183	SONY® Exmor R®	5496 x 3672	20.2	●	Global Reset	✓	24
VC MIPI IMX183-C	SONY® Exmor R®	5496 x 3672	20.2	●	Global Reset	✓	24
VC MIPI IMX226	SONY® Starvis™	4072 x 3046	12.4	●	Global Reset	✓	40
VC MIPI IMX290	SONY® Starvis™	1920 x 1080	2.1	●	Rolling		120
VC MIPI IMX296	SONY® Pregius™	1440 x 1080	1.6	●	Global	✓	60
VC MIPI IMX297	SONY® Pregius™	728 x 544	0.4	●	Global	✓	120
VC MIPI IMX327-C	SONY® Starvis™	1920 x 1080	2.1	●	Rolling		60
VC MIPI IMX412-C	SONY® Starvis™	4056 x 3040	12.3	●	Rolling		60
VC MIPI IMX415-C	SONY® Starvis™	3840 x 2160	8.3	●	Rolling		90
VC MIPI OV7251	Omnivision®	640 x 480	0.3	●	Global	✓	120
VC MIPI IMX226-C	SONY® Starvis™	4072 x 3046	12.4	●	Global Reset	✓	40
VC MIPI IMX250	SONY® Pregius™	2464 x 2056	5.1	●	Global	✓	130
VC MIPI IMX252	SONY® Pregius™	2064 x 1544	3.2	●	Global	✓	160
VC MIPI IMX264	SONY® Pregius™	2464 x 2056	5.1	●	Global	✓	30
VC MIPI IMX265	SONY® Pregius™	2064 x 1544	3.2	●	Global	✓	50
VC MIPI IMX273	SONY® Pregius™	1456 x 1088	1.6	●	Global	✓	225
VC MIPI IMX287	SONY® Pregius™	728 x 544	0.4	●	Global	✓	530
VC MIPI IMX290-C	SONY® Starvis™	1920 x 1080	2.1	●	Rolling		120
VC MIPI IMX335	SONY® Starvis™	2592 x 1944	5.1	●	Rolling		60
VC MIPI IMX392	SONY® Pregius™	1920 x 1200	2.3	●	Global	✓	200
VC MIPI IMX392-C	SONY® Pregius™	1920 x 1200	2.3	●	Global	✓	200
VC MIPI IMX415	SONY® Starvis™	3840 x 2160	8.3	●	Rolling	✓	90
VC MIPI IMX490-C	SONY®	2896 x 1876	5.4	●	Global	✓	40
VC MIPI IMX500-C	SONY®	4056 x 3040	12.3	●	Rolling		60
VC MIPI IMX501-C	SONY®	4056 x 3040	12.3	●	Rolling		60

Compatible CPU Boards

- Vision Components®**
VC Adap96 CSI & Ethernet Adapter
VC Compute Module Interface (CMI) Board
- Auvideo**
Auvideo NVIDIA® Jetson™ J100 Processor: NVIDIA® TX1
Auvideo NVIDIA® Jetson™ AGX Xavier™ Carrier
- Geniatech**
4 IoT - Geniatech Processor: Snapdragon™ 410E
- HummingBoard™**
HummingBoard™ Processor: NXP i.MX6
HummingBoard™ Pro Processor: NXP i.MX6
- MSC**
MSC SM2-MB-EP1 (Smarc carrier board)
MSC SM2-IMX8 (Smarc carrier board)
- Raspberry Pi®**
Raspberry Pi® Zero V1.3 Processor: Broadcomm®
RaspberryPi® 3B+ Processor: Broadcomm®
RaspberryPi® 4B Processor: Broadcomm®
Raspberry Pi® Compute Module Industrial Processor: Broadcomm®
- Trenz Electronic**
ZynqBerry (RaspberryPi® Form Factor with Xilinx® Z-7007S)
- Asus®**
Asus® Tinker Board Processor: Rockchip® RK3288
- DragonBoard™**
DragonBoard™ 410C Processor: Snapdragon™ 410E
DragonBoard™ 820C Processor: Snapdragon™ 820E
- HiKey**
HiKey960 Processor: Kirin™ 960
HiKey970 Processor: Kirin™ 970
- MediaTec**
MediaTec X20 Processor: Helio X20
- NVIDIA®**
NVIDIA® Jetson™ TX2 module Processor: NVIDIA® TX2
NVIDIA® AGX Xavier™
NVIDIA® Jetson Nano™
- Rock960**
Rock960 Processor: Rockchip® RK3399
- SightLine Applications**
4000-OEM Processor: Snapdragon™ 820/
Inforce 6601™ SoM
- Ultra96™**
Ultra96™ Processor: Zynq UltraScale+™ ZU3EG
- Voipac**
Voipac i.MX6 Open Rex single board comp.
Voipac i.MX6 Tiny Rex Baseboard lite

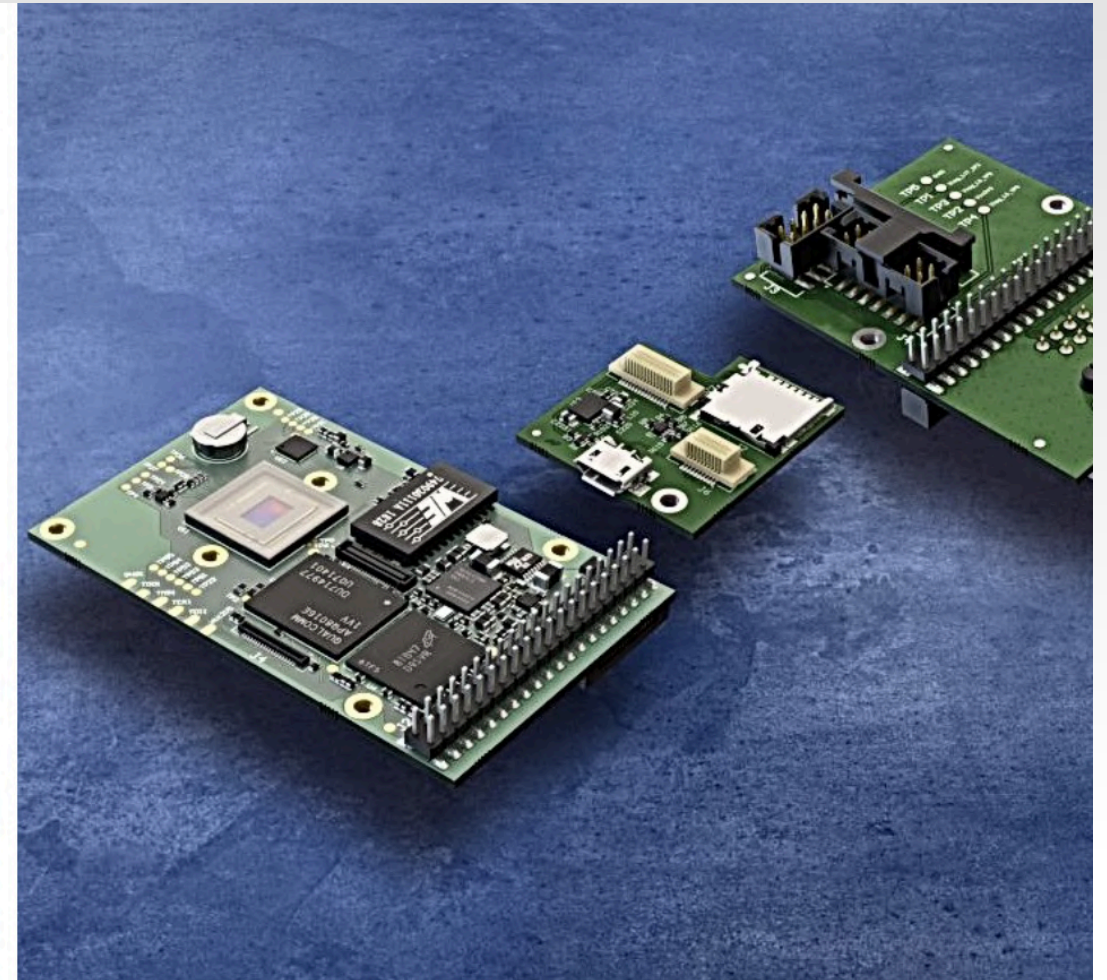
Vision Components – Board Level Camera

Intelligent Board Level Cameras for OEM Applications

Basis for the ARM-based board cameras of the VCSBC nano Z series is the ZYNQ® module, a Dual Core ARM Cortex™-A9 module with 2 x 866 MHz and integrated FPGA from Xilinx®. As with all VC Smart Cameras, these processors provide the necessary computing capacity to achieve VC standards: Extreme high-speed in real-time.

The ARM/Linux Smart Cameras are ideally suited for use in industry, but, of course, also for other applications.

The operating system VC Linux takes care of hard- and software interaction. And, last but not least, the Z models provide a special feature: On request, the FPGA CAN BE PROGRAMMED to achieve a considerable speed boost. With that, the image processing can be executed up to twenty times faster than without FPGA support.

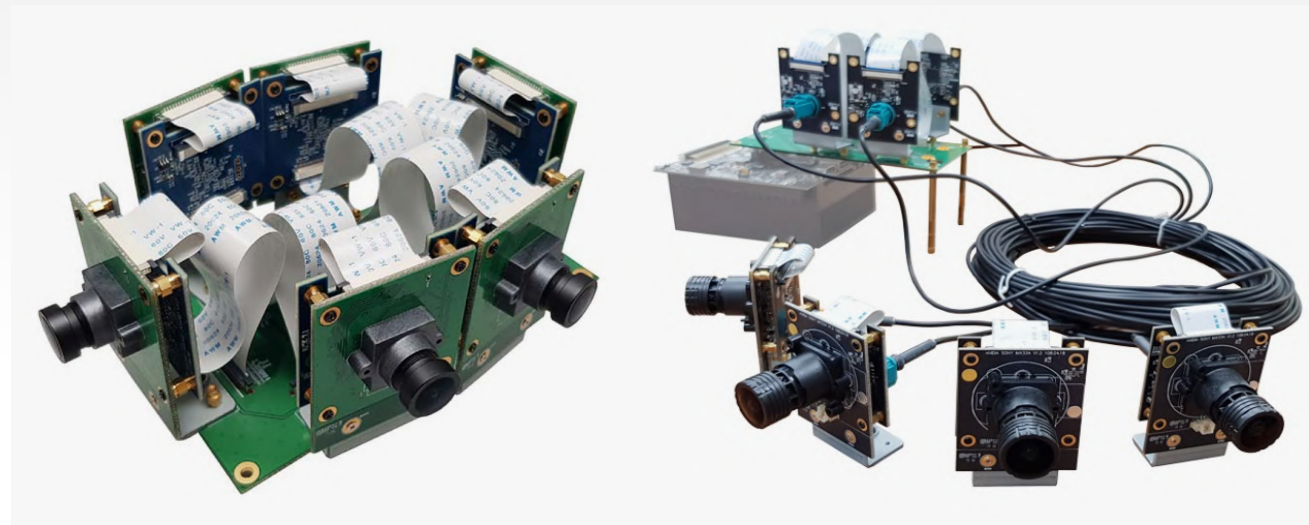


Appro Photoelectron

Nvidia Mipi / Serdes Camera Module Solutions

APPRO was established in 1999 and dedicated itself to be a professional design house for image products to help customers to develop products using Nvidia signal process as its core system. APPRO provides all customers the most competitive price to have excellent market share.

Besides, APPRO also cooperates with SONY Taiwan providing high resolution of CCD/CMOS technical supports in Mobile phone and Camera modules as a total photoelectron- integrated solution.



Appro Photoelectron

Appro Photoelectron Inc. has extensive experience in the image processing industry serving large OEMs. They have created solutions for various verticals such as consumer and industrial devices, security and surveillance, and automotive embedded products. Appro has been enabled by the Jetson camera toolchain to develop imaging solutions for any camera system needs for the Jetson Embedded Program. They can support a variety of imaging sensors, including for multiple-sensor applications, tuned on, both, external ISPs or NVIDIA's on-chip ISP.

Title	Interface	Sensor	Sensor Vendor	Resolution max	Frame rate max
IMX290(FHD) V-by-One® HS x6	SerDes(V-by-One® HS)	IMX290	SONY	2M(1920x1080)	60fps
IMX290(FHD) V-by-One® HS x3	SerDes(V-by-One® HS)	IMX290	SONY	2M(1920x1080)	60fps
IMX290(FHD) V-by-One® HS	SerDes(V-by-One® HS)	IMX290	SONY	2M(1920x1080)	60fps
IMX290(FHD) FPD-LINK III x6	SerDes(FPD LINK III)	IMX290	SONY	2M(1920x1080)	60fps
IMX290(FHD) FPD-LINK III x3	SerDes(FPD LINK III)	IMX290	SONY	2M(1920x1080)	60fps
IMX334(4K) V-by-One® HS x1	SerDes(V-by-One® HS)	IMX334	SONY	4K(3840x2160)	30fps
IMX334(4K) V-by-One® HS x4	SerDes(V-by-One® HS)	IMX334	SONY	4K(3840x2160)	30fps
IMX334(4K) MIPI x4 for Xavier	MIPI (RAW)	IMX334	SONY	4K(3840x2160)	30/60fps
IMX334(4K) MIPI x3	MIPI (RAW)	IMX334	SONY	4K(3840x2160)	30/60fps
IMX334(4K) MIPI	MIPI (RAW)	IMX334	SONY	4K(3840x2160)	30/60fps
IMX179(8M)MIPI for NX/NANO	MIPI (RAW)	IMX179	SONY	8M(3280x2464)	8M15fps/1080P(30fps)
IMX334(4K)+ISP(YUV) x4 for Xavier	MIPI (YUV)	IMX334	SONY	4K(3840x2160)	30fps
IMX334(4K)+ISP(YUV) x3	MIPI (YUV)	IMX334	SONY	4K(3840x2160)	30fps
IMX334(4K)+ISP(YUV)	MIPI (YUV)	IMX334	SONY	4K(3840x2160)	30fps
IMX179 MIPIx2	MIPI (RAW)	IMX179	SONY	4K(3840x2160)	15fps
IMX290(2M)MIPI x6	MIPI (RAW)	IMX290	SONY	2M(1920x1080)	60fps
IMX290(2M)MIPI x3	MIPI (RAW)	IMX290	SONY	2M(1920x1080)	60fps
IMX290(2M)MIPI	MIPI (RAW)	IMX290	SONY	2M(1920x1080)	60fps
IMX290(2M)MIPI for NX/NANO	MIPI (RAW)	IMX290	SONY	2M(1920x1080)	60fps
IMX290(2M)+ISP(YUV)x1 for NX/NANO	MIPI (YUV)	IMX290	SONY	2M(1920x1080)	60fps
IMX290(2M)+ISP(YUV)x6	MIPI (YUV)	IMX290	SONY	2M(1920x1080)	60fps
IMX290(2M)+ISP(YUV)x3	MIPI (YUV)	IMX290	SONY	2M(1920x1080)	60fps
IMX290(2M)+ISP(YUV)x1	MIPI (YUV)	IMX290	SONY	2M(1920x1080)	60fps
IMX290 MIPIx2	MIPI (RAW)	IMX290	SONY	2M(1920x1080)	60fps
IMX290+ISP(YUV)x2	MIPI (YUV)	IMX290	SONY	2M(1920x1080)	60fps
AR0234(Global shutter)+ISP(YUV)+AF Zoom lens(4.4X)	MIPI (YUV)	AR0234	ONSEMI	2.3M(1920x1200)	100fps(4lane)
AR0234(Global shutter)+ISP(YUV)+AF Zoom lens(3.6X)	MIPI (YUV)	AR0234	ONSEMI	2.3M(1920x1200)	100fps(4lane)

Misumi

Micro USB & Analog Cameras

Established in 1982, Misumi Electronic Corporation has surged ahead and become one of the leading CCTV & CMOS security equipment manufacturers and exporters in Taiwan. Our product lines range from all kinds of CCTV & CMOS cameras to related peripherals. Misumi products have been proven highly reliable wherever marketed or applied. Our professional R&D team has been applying state-of-the-art technology to our quality products and has enabled us to take the lead over our competitors in design and innovation.



Dream-Chip

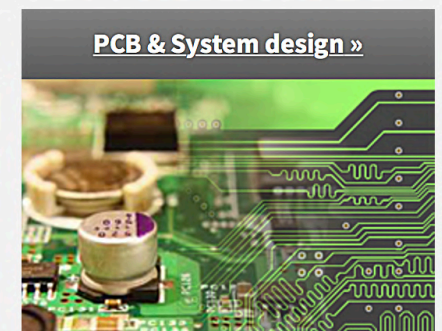
Accelerates Your Product Innovation

Germany's largest independent Engineering Service Provider with a cutting-edge focus on the development and design of ASICs, SoCs, FPGAs, Embedded Software and discrete Systems.

More than 25 years of experience in the micro-electronics industry make us experts in turnkey solutions from specification to production and delivery – including embedded Linux or Android based board support packages (BSP), Linux or Android driver development or porting and high-speed PCB design with all necessary qualifications CE and FCC.

Whether they are in the automotive, broadcast, consumer, industrial or medical market – our clients know they can always rely on our expertise and outstanding engineering skills.

[Click Here – Atom Off-The-Shelf SDI Cameras](#)



Dream-Chip - Atom Camera Series

Atom one mini Waterproof

Smallest SDI broadcast waterproofed camera

- ▶ FULL HD resolution
- ▶ RS 485 control + power on **breakout cable**
- ▶ One 3G-SDI output
- ▶ Size : 32mm x 32mm x 51mm
- ▶ Weight : 115 g
- ▶ Rolling shutter
- ▶ Sensor size : 1/2.5"
- ▶ Mount : S-Mount
- ▶ Wide angle : 85° @3.4mm lens (included)



ATOM One 4K Mini 16

Smallest UHD 1" Global shutter / (4K HDR) camera

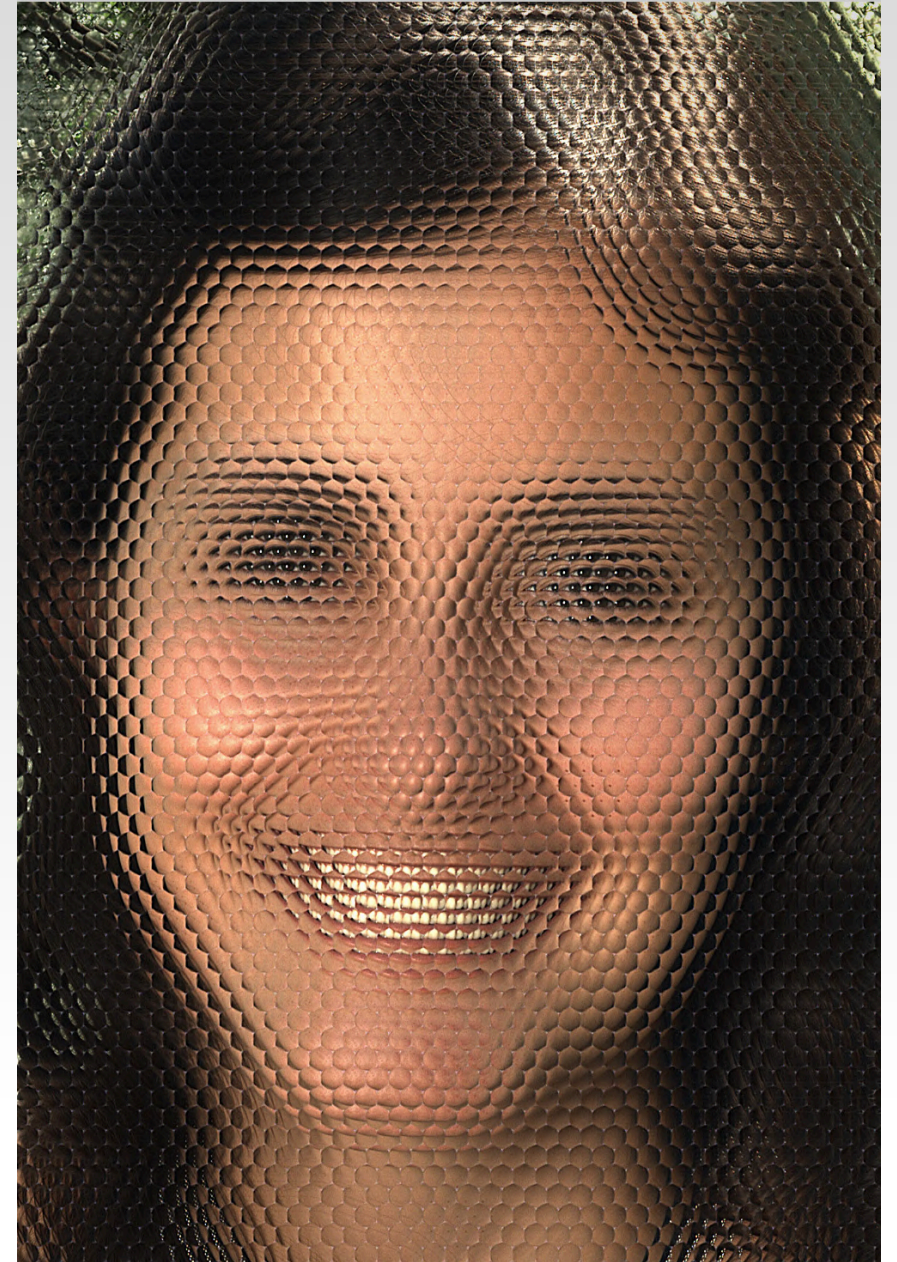
- ▶ 4K resolution
- ▶ RS 485 control + power on Hirose connector
- ▶ Two 4K-SDI output (one can be downscaled to 3G)
- ▶ Genlock
- ▶ Size : 36mm x 36mm x 79mm
- ▶ Weight : 123 g
- ▶ **Global** shutter
- ▶ Sensor size : 1"
- ▶ Mount : C-Mount
- ▶ Wide angle : 98° @6mm lens
- ▶ Microphone (stereo)

RayTrix

Accelerates Your Product Innovation

Raytrix was founded in 2009 and develops 3D light field cameras for different applications and research since 2010. Today Raytrix is worldwide leader in 3D light field camera technology.

Light Field cameras are a new type of 3D-cameras that capture a standard image together with the depth information of a scene. Metric 3D information can be captured with a single light field camera through a single lens in a single shot using just the available light. Raytrix has specialized on developing light field cameras for industrial applications. A patented micro lens array design allows for an optimal compromise between high effective resolution and large depth of field.



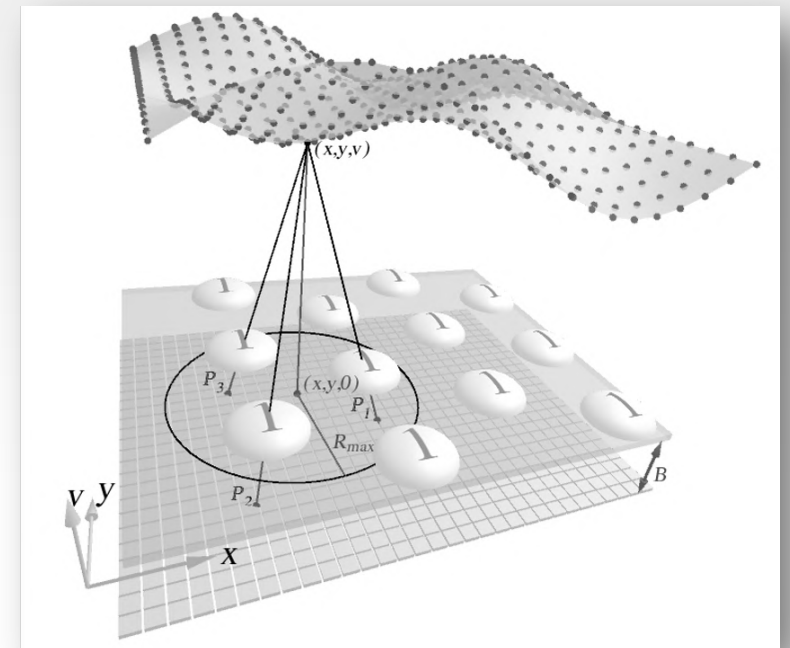
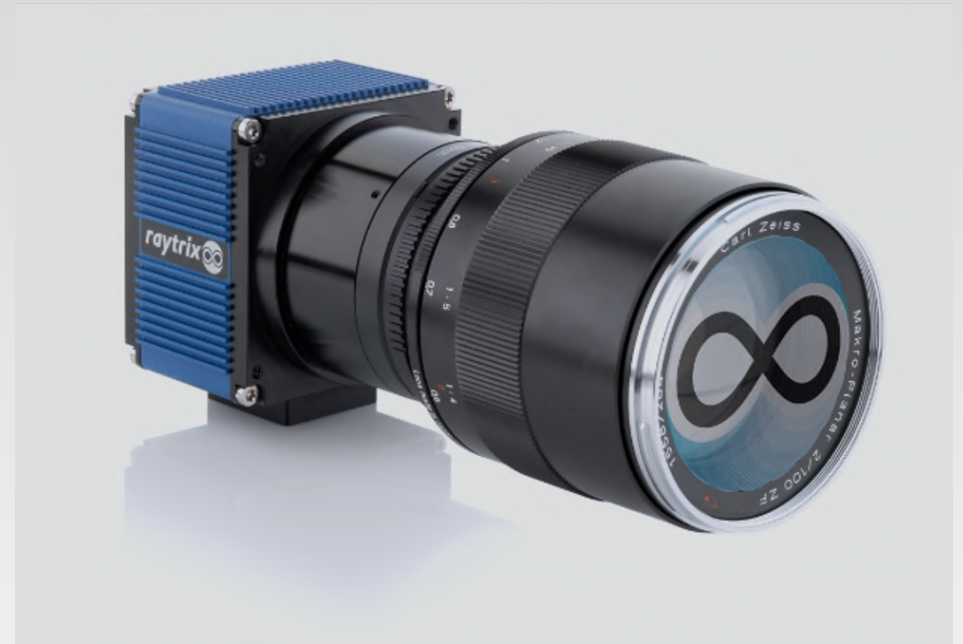
RayTrix

3D Light Field Camera Technology

The technology works by placing a micro lens array (MLA) in front of the image sensor of a standard camera. The main lens of the camera is set to generate an intermediate image in front of the MLA. The micro lenses now act as micro cameras that each see part of the intermediate image from a slightly different perspective. In other words, the main lens shrinks the scene and the MLA acts as a micro camera array looking at this shrunken scene. From the different micro images the scene depth and a standard 2D image are calculated. As usual, there is no free lunch: the effective image resolution of a Raytrix light field camera is at most a quarter of the image sensor resolution.

*Space approved

[Raytrix 3D Driver Assistance Video](#)

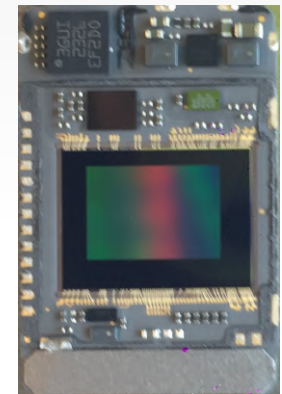
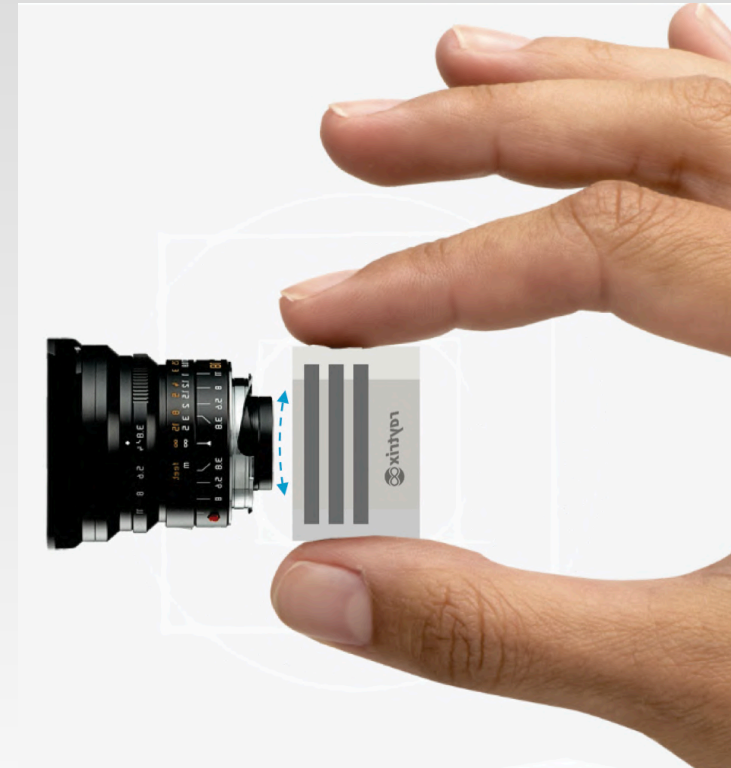


RayTrix

2D 41.3mp Sensor and Camera

- CMOS, HDR, color noise reduction, defect pixel correction
- rolling shutter with global start, 2/3" sensor class
- 1.1 μ m pixel size, back side illuminated (BSI) • raw mode: Bayer8, total sensor size 7728 x 5368 with 41.5 MP, future work: 12bit pixel depth
- dimensions: 39mm (W), 39mm (H), 28mm (D), weight: 71g, case material: aluminum
- Board: 5g
- Camera Module: 5g

*Space approved



Emergent Vision Technologies

The World's First Provider of 10 and 25 Gigabit Ethernet Cameras

Emergent Vision Technologies was founded in 2007 in Vancouver, Canada. We are the first providers of cameras based on the 10 Gigabit Ethernet (10GigE) and 25 Gigabit Ethernet (25GigE) interfaces. Our team comes with a vast experience in machine vision and high-speed imaging solutions from design to engineering, manufacturing, consulting, and technical support.



Emergent Vision Technologies

Model	Sensor	Resolution	Megapixels	Sensor Type	Max Frame Rate	Cell Size	Standard Mount	Dimensions (mm)
HB-500-S	IMX426	812 x 620	0.50 MP	1/1.7 CMOS	1594.7 fps	9µm	C Mount	97 x 58 x 40
HB-1800-S	IMX425	1604 x 1100	1.76 MP	1.1" CMOS	662.1 fps	9µm	C Mount	97 x 58 x 40
HB-2000-S	IMX422	1624 x 1240	2.01 MP	1/1.7 CMOS	477.6 fps	4.5µm	C Mount	97 x 58 x 40
HB-2800-S	IMX421	1936 x 1464	2.8 MP	2/3" CMOS	409.2 fps	4.5µm	C Mount	97 x 58 x 40
HB-5000-G	GMAX2505	2600 x 2160	5.61 MP	1/2" CMOS	290 fps	2.5µm x 2.5µm	C Mount	97 x 58 x 40
HB-5000-SB	IMX537	2472 x 2064	5.1 MP	1/1.8 CMOS	269 fps	2.74µm x 2.74µm	C Mount	97 x 58 x 40
HB-7000-S	IMX420	3208 x 2200	7.06 MP	1.1" CMOS	207.1 fps	4.5µm	C Mount	97 x 58 x 40
HB-8000-SB	IMX536	2856 x 2848	8.1 MP	2/3 CMOS	201 fps	2.74µm x 2.74µm	C Mount	97 x 58 x 40
HB-9000-G	GMAX2509	4200 x 2160	9.07 MP	2/3" CMOS	290 fps	2.5µm x 2.5µm	C Mount	97 x 58 x 40
HB-12000	CMV12000	4096 x 3072	12 MP	28mm CMOS	188 fps	5.5µm square	M42	97 x 58 x 50
HB-12000-SB	IMX535	4128 x 3008	12.4 MP	1/1.1 CMOS	192 fps	2.74µm x 2.74µm	C Mount	97 x 58 x 40
HB-16000-SB	IMX532	5320 x 3032	16.13 MP	1.1 CMOS	145 fps	2.74µm x 2.74µm	C Mount	97 x 58 x 40
HB-17000-S	IMX387	5456 x 3076	16.8 MP	Four Thirds CMOS	61 fps	3.45µm square	M52	97 x 58 x 60
HB-20000-S	IMX367	4416 x 4428	19.5 MP	Four Thirds CMOS	43 fps	3.45µm square	M52	97 x 58 x 60
HB-20000-SB	IMX531	4504 x 4504	20.28 MP	1.1 CMOS	100 fps	2.74µm x 2.74µm	C Mount	97 x 58 x 40
HB-25000-G	GMAX0505	5120 x 5120	26.21MP	1.1 CMOS	75 fps	2.5µm x 2.5µm	C Mount	97 x 58 x 40
HB-25000-SB	IMX530	5320 x 4600	24.47 MP	1.2 CMOS	98 fps	2.74µm x 2.74µm	C Mount	97 x 58 x 40
HB-30000-S	IMX342	6464 x 4852	31.36MP	APS-C (4:3) CMOS	35.4 fps	3.45µm square	M52	97 x 58 x 60
HB-50000	CMV50000	7920 x 6004	50 MP	35mm CMOS	30 fps	4.6µm square	M52	97 x 58 x 60
HB-65000-G	GMAX3265	9344 x 7000	65MP	35mm CMOS	35 fps	3.2µm x 3.2µm	M52	97 x 58 x 60



10GigE Area Scan Cameras

HR-Series

- 10GigE SFP+ interface
- 2 to 50 Megapixel
- Frame rates up to 338 fps
- Latest CMOS sensors from Sony and AMS

HT-Series

- 10GBaseT – RJ45 interface
- 2 to 50 Megapixels
- Frame rates up to 338 fps
- Latest CMOS sensors from Sony and AMS



10GigE Line Scan Cameras

PACE-Series

- 10GigE SFP+ or RJ45 10GBaseT interface
- Gpixel GL0816 CMOS sensor
- 8K resolution



25GigE Area Scan Cameras

HB-Series (BOLT)

- 25GigE SFP28 interface
- 0.5 to 65 Megapixel
- Frame rates up to 1594.7 fps
- Latest CMOS sensors from Sony, AMS, and Gpixel



25GigE Line Scan Cameras

ACCEL-Series

- 25GigE SFP28 interface
- Gpixel GL0816 CMOS sensor
- 8K resolution

Probe Digital

Digital & Network Zoom Cameras

PROBE DIGITAL is the global leader in network video products and the leading independent provider of IP video surveillance solutions like a PTZ cameras.

PROBE DIGITAL has been developing products and technology that add value to network IP video surveillance and PTZ since 2007. One of the special features of PROBE DIGITAL is that it owns multidisciplinary technology.



PV6403-A2D
x3 1/3 Full HD Module



PV6418-A2D
x18 1/3 Full HD Module



PV8420-B2D
x20 1/3 Full HD Module



PV8430-F2D
x30 1/3 Full HD Module



PV8512-H2D
x12 1/1.9 Ultra Low light Module



PV8530-H2D
x30 1/1.9 Ultra Low Light Module



PV8536-H2D
x36 1/1.9 Ultra Low Light Module



PV9432-H1D
x32 1/2.8 inch Long-Focal Module



PV8503-G2D
x3 1/1.9 Ultra Low Light Module



PV8420-D21D
x20 1/3(IMX291) Full HD Module



PV8440-H12D
x40 1/3(IMX291) Full HD Module



PV9428F-E12D4
x28 1/3(IMX291) OIS Full HD Module

Probe Digital

Camera

Image Device	1/2.8" Progressive Scan CMOS
Effective Pixels	Approx. 2.13 Mega pixels
Aspect Ratio	HD: 16:9 SD: 4:3
Zoom Ratio	Optical x40, Digital x12
Focal Length	f = 7.35 ~ 294mm, F1.8 ~ F6.5
Horizontal angle	41.54°(W) ~ 1.07°(T)
MIN. Illumination	COLOR : 0.05 Lux@F1.5 B/W : 0.01 Lux@F1.5, 0 Lux (IR)
Day & Night	Auto(CDS/CAM) / Day / Night(ICR)
Focus	Auto/Semi Auto/Manual
DNR(2D/3D)	OFF/Level Adjustment(1~5)
Shutter Speed	1 sec ~ 1/10,000sec(60/30 mode) 1 sec ~ 1/10,000sec(50/25 mode)
Privacy Masking	Max. 8 Zone
White Balance	Auto/Indoor/Outdoor/Manual
Other Function	Defog(Digital), HLC, Dynamic slow shutter

General

Alarm In /Out	1 Input / 1 Output
Audio In / Out	1 Audio In / 1 Audio Out
Video Out	BNC: VBS 1.0 Vp-p
Serial Communication	RS-485 or RS232 TTL
Power	DC12V(9V~15V)
Power Consumption	Approx. 5W
Dimension	61.2 x 72 x 132.7
Weight	Approx.m300g
Operating Temp.	-10°C ~ 50°C, Humidity <90%RH

2MP 40x HD IP Zoom Block Camera

NEW PYN-8440U2F



Network

Ethernet	10Base-T/100Base-Tx
Video Compression	H.265/H.264/MJPEG
Video Stream	Main 1080p/720p
	Second D1/CIF/QCIF
	Third 1080p/720p/D1/CIF/QCIF
Stream Type	Video/Complex(Video/Audio) Stream
Frame Rate	Max. 30 /25 fps for 1080P/720P/D1/CIF/QCIF
Bitrate	30Kbps ~ 16Mbps. Supports CBR/VBR/FIX QP
Audio Compression	Two way, G.711 A-law, G.711 μ-law, 128kbps, sampling rate 8kHz
Local Storage	Micro SD/SDHC/SDXC card. Support up to 128GB
Alarm actions	Micro SD/SDCH/SDXC Record, Relay Output, Snapshot, Notification of Client
Alarm	Pre-Post Alarm
Max No. of Clients	10 users(Depending on user bandwidth)
Web Brower	IE 6.0 above
Protocols Support	IPv4 IPv4*, TCP/IP, UDP, RTP, RTSP, RTMP, NTP, HTTP, HTTPS, SSL, DNS, DDNS, DHCP, FTP, SMTP, ICMP
	DDNS Public DDNS services Suport: www.dyndns.com
	ONVIF PROFILE S
	Security User Authentication(ID/PW), IP Address/Mac Address filtering

Probe Digital

No.	Model	CMOS Sensor			Aperture	Focal Length	Optical Zoom	Resolution	Interface	Development Status	Remark
		Sensor	Active Pixel	Optical Size						2020 June	
1	PYD-8503Z2F	IMX385	2.13MP	1/2"	F1.5~F2.5	3.6~10mm	3x	1920x1080/60fps	Digital	Mass Production	Ultra low light
2	PYN-8503Z2F								IP	Mass Production	
3	PYD-8503Y2F	IMX385	2.13MP	1/2"	F1.2~F2.0	3.6~11mm	3x	1920x1080/60fps	Digital	To be dated	Ultra low light
4	PYN-8503Y2F								IP	To be dated	
5	PYD-8512Z2F	IMX385	2.13MP	1/2"	F1.5~F1.9	7~84mm	12x	1920x1080/60fps	Digital	Mass Production	Ultra low light
6	PYN-8512Z2F								IP	Mass Production	
7	PYD-8518Z2F	IMX385	2.13MP	1/2"	F1.5~F1.9	6.6~117mm	18x	1920x1080/60fps	Digital	To be dated	Ultra low light
8	PYN-8518Z2F								IP	To be dated	
9	PYD-8536Z2F	IMX385	2.13MP	1/2"	F1.5~F4.8	5.8~210mm	36x	1920x1080/60fps	Digital	Mass Production	Ultra low light
10	PYN-8536Z2F								IP	Mass Production	
11	PYN-8536Z2F-D	IMX385	2.13MP	1/2"	F1.5~F4.8	5.8~210mm	36x	1920x1080/30fps	IP	Mass Production	H/W Defog
12	PYD-8545Z2F	IMX385	2.13MP	1/2"	F1.4~F4.5	5.7~256mm	45x	1920x1080/60fps	Digital	Mass Production	Ultra low light + Long Range
13	PYN-8545Z2F								IP	Mass Production	
14	PYD-8555U2F	IMX385	2.13MP	1/2"	F1.8~F5.0	10~550mm	55x	1920x1080/60fps	Digital	To be dated	Ultra low light + Long Range
15	PYN-8555U2F								IP	To be dated	
16	PYD-8588Z2F	IMX385	2.13MP	1/2"	F2.1~F11.2	10.5~920mm	88x	1920x1080/60fps	Digital	To be dated	Ultra low light + Long Range
17	PYN-8588Z2F								IP	To be dated	
18	PYD-8405Y2F	IMX327	2.13MP	1/2.8"	F1.3~F2.1	2.7~13.5mm	5x	1920x1080/60fps	Digital	To be dated	STARVIS
19	PYN-8405Y2F								IP	To be dated	
20	PYD-8423Z2F	IMX327	2.13MP	1/2.8"	F1.5~F3.2	5~117mm	23x	1920x1080/60fps	Digital	Mass Production	STARVIS
21	PYN-8423Z2F								IP	Mass Production	
22	PYD-8430Z2F	IMX327	2.13MP	1/2.8"	F1.5~F4.0	4.7~141mm	30x	1920x1080/60fps	Digital	Mass Production	STARVIS
23	PYN-8430Z2F								IP	Mass Production	
24	PYD-8440U2F	IMX327	2.13MP	1/2.8"	F1.8~F6.5	7.35~294mm	42x	1920x1080/60fps	Digital	Mass Production	STARVIS
25	PYN-8440U2F								IP	Mass Production	
26	PYN-3505Z2F-G	IMX265	3.19MP	1/1.8"	F1.3~F1.5	10.5~47mm	5x	2048x1536/30fps	IP	Mass Production	Global Sutter
27	PYN-9703Z2I	IMX334	8.42MP	1/1.8"	F1.35~F2.2	9~32mm	3x	3840x2160/30fps	IP	To be dated	4K
28	PYN-9720Z2I	IMX334	8.42MP	1/1.8"	F1.6~F4.1	6.5~125mm	20x	3840x2160/30fps	IP	To be dated	4K
29	PYN-9735Z2I	IMX334	8.42MP	1/1.8"	F1.4~F4.9	6.4~220mm	36x	3840x2160/30fps	IP	To be dated	4K

NEXVISION

A GLOBAL EXPERTISE ON THE WHOLE VISION SYSTEM CHAIN AND A SHORT INTEGRATION PROCESS OF LATEST TECHNOLOGIES

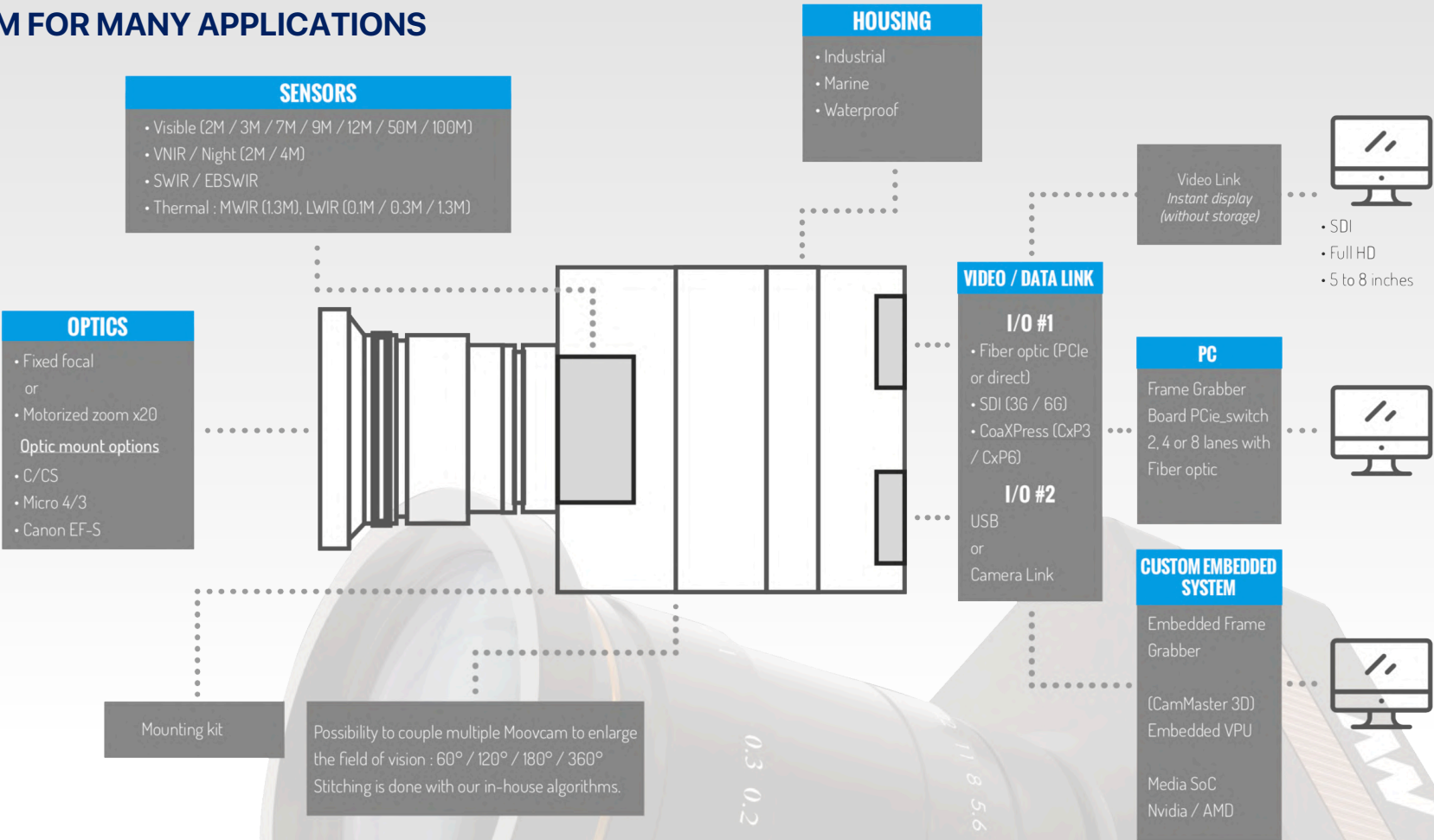
NEXVISION is an independent, innovative and successful design house for electro-optics systems. Exploration of new technologies is our DNA, and we integrate the entire design and integration scheme in our core activity.

Nexvision is a hardware and software design house specialized in vision systems and video over IP network technologies.



NEXVISION

MOOVCAM Series - A MODULAR CAM FOR MANY APPLICATIONS



NEXVISION

MOOV CAM Series - A MODULAR CAM FOR MANY APPLICATIONS

* **Fiber Optic** : long reach (up to 100m at full 16Gb/s speed), EMI immune, low cost OM3 MTP fiber optic cable.



PRODUCT NAME	SPECIAL FEATURES
SWIR : SOFRADIR's uncooled	
MOOV CAM « SWIR 640 »	Spectral band : Short Wave IR SWIR Sensor : LYNRED «SNAKE» Resolution : 640 x 512 Dual Use - export regulation free
VISIBLE	
MOOV CAM « VIS7M420 »	Spectral band : Visible, Color Sensor : SONY's «Pregius» global shutter IMX420 Resolution : 7M pixel High dynamic range Night level sensitivity (NAT0) : 2.5
MOOV CAM « VIS12M253 »	Spectral band : Visible, Color Sensor : SONY's «Pregius» global shutter IMX253, 1.1inch Resolution : 12M pixel Night level sensitivity (NAT0) : 2
MOOV CAM « VIS12M226 »	Spectral band : Visible, Color Sensor : SONY's «Starvis» IMX226, 1/1.7inch Resolution : 12M pixel
MOOV CAM « VIS4M »	Spectral band : Visible, Color Sensor : CMOSIS's CMV4000, 1inch Resolution : 4M pixel, 2000x2000
Interface choice	
PCIe over fiber optic link , 3G/6G-SDI output, USB link (type C connector), CameraLink	
Frame grabber choice	
Frame grabber PCIe (2, 4 or 8 channels fiber optics), USB link (4 channels), CameraLink	
Lens mount choice	
Micro 4/3 mount with motorized lens control link, CS type lens mount (C to CS adaptor)	

PRODUCT NAME	SPECIAL FEATURES
VNIR Night vision : Photonis's EBCMOS/iCMOS	
MOOV CAM « EBCMOS 4M »	Spectral band : near infrared Sensor : PHOTONIS EBCMOS intensified Resolution : 4M pixel Night level sensitivity (NAT0) : 5 Export regulation restriction
MOOV CAM « EBCMOS 2M »	Spectral band : near infrared Sensor : PHOTONIS EBCMOS intensified Resolution : 2M pixel Night level sensitivity (NAT0) : 5 Export regulation restriction
MOOV CAM « iCMOS 12M »	Spectral band : near infrared Sensor : PHOTONIS iCMOS intensified Resolution : 12M pixel Night level sensitivity (NAT0) : 4 Export regulation relaxed with FOM < 1600
MOOV CAM « iCMOS 7M »	Spectral band : near infrared Sensor : PHOTONIS iCMOS intensified Resolution : 7M pixel Night level sensitivity (NAT0) : 4 Export regulation relaxed with FOM < 1600
MOOV CAM « iCMOS 3M »	Spectral band : near infrared Sensor : PHOTONIS iCMOS intensified Resolution : 3M pixel Night level sensitivity (NAT0) : 4 Export regulation relaxed with FOM < 1600
LWIR : ULIS's uncooled bolometer	
MOOV CAM « LWIR 320 »	Spectral band : Thermal Infrared LWIR Sensor : LYNRED-ULIS's ATTO320 Resolution : 320 x 240
MOOV CAM « LWIR 640 »	Spectral band : Thermal Infrared LWIR Sensor : LYNRED-ULIS's ATTO640 Resolution : 640 x 480
MOOV CAM « LWIR 1280 »	Spectral band : Thermal Infrared LWIR Sensor : LYNRED-ULIS's ATTO1280 Resolution : 1280 x 1024

NEXVISION

PANOMIX Series – Rugged Perimetric Surveillance System

FEATURES

120° / 180° / 360° panoramic vision with realtime video stitching

Customizable solution depending on vehicle constraints

High performance video camera up to 72MP global shutter high sensitivity sensors Available with Photonis EBCMOS sensor (night vision : down to level 5), up to 24MP Realtime intrusion detection and track following

Fiber optic for long reach (up to 100m) uncompressed video transmission or wireless digital link for realtime H264 video streaming for drones

Embedded inertial measurement unit for accurate video stabilization and world space measurement.

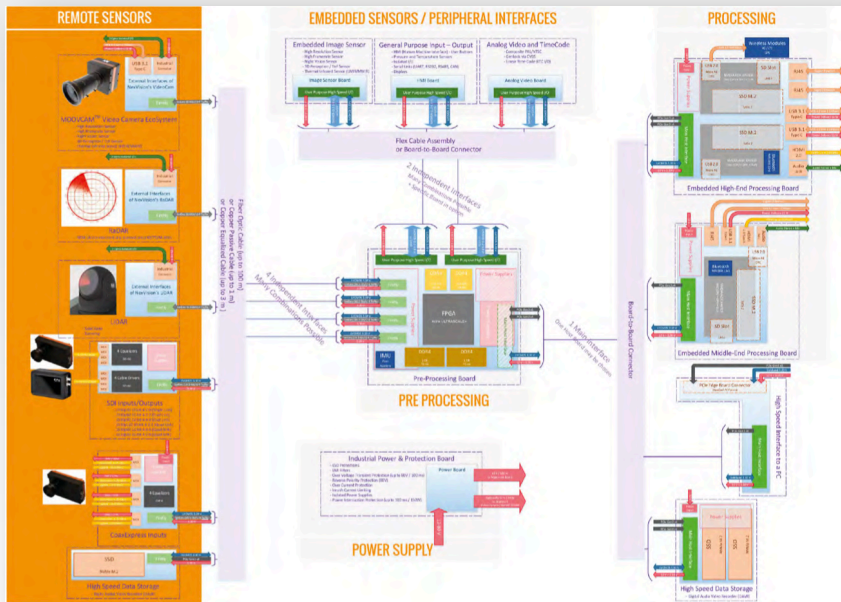
Panomix is a perimetric surveillance system based on a combination of multiple 12MP global shutter color sensor with very high sensitivity (down to NATO Night Level 2), a realtime panorama stitching system and a operating software for controlling, recording and playing back. Panomix is also available with EBCMOS sensor for night vision (down to NATO Level 5).



NEXVISION

CAM MASTER - EMBEDDED VISION REFERENCE DESIGN BOARD

A POWERFUL PLATFORM READY-TO-CUSTOMIZE FOR ROBOTIC APPLICATIONS



OVERVIEW

- ➔ Modular reference design
- ➔ Nexvision's most powerful computer vision unit for robotic market
- ➔ 3x NVIDIA® Jetson AGX Xavier™ Module + Xilinx UltraScale+™ FPGA video processing
- ➔ On-board video analytics (recognition, object tracking, deep learning)

HIGHLIGHTS

- ➔ On-board dedicated video enhancement image pipe (FPN correction, HDR, 3D noise reduction, stabilization) using Nexvision's IP : NEXIP™
- ➔ Video : 3G-SDI in/out, HDMI output, analog composite video + optical fiber link (Quad Tx/Rx: up to 56 GT/s max, full duplex)
- ➔ Gigabit Ethernet, USB 3.1 Gen 1, SPI, I2C, PCIe Gen 3
- ➔ Onboard video recording and meta data storage (SSD NVMe)
- ➔ Onboard streaming server based on our NexStream™

APPLICATIONS



A PLATFORM WITH HIGH-END SOFTWARE LIBRARY

IMAGE PROCESSING : NEXIP™

FPGA (Image Pre-Processing)

- Multiple exposure blending provides realtime HDR for high details retention in low and over exposed area
- Video enhancement and advanced video processing : temporal noise filtering and contrast enhancement, dynamic tone mapping
- Multispectral band image sensor fusion (Visible, SWIR, Thermal IR)
- Feature point extraction, image stabilization

GPU (Image analysis and codec)

- Detection, recognition, tracking
- Machine learning / AI
- 3D perception / SLAM / 360° vision
- Full framerate, high quality video encoding

SOFTWARE DEVELOPMENT

Dedicated embedded Linux BSP based on buildroot, including:

- U-boot bootloader
- Custom Linux kernel based on NVIDIA® sources
- Integration of NVIDIA® specific frameworks: CUDA®, OpenCV, OpenGL TensorRT™, cuDNN, NVIDIA DIGITS™ Workflow, NVIDIA VisionWorks™, Camera imaging, Video CODEC
- Customizable failsafe update system (FPGA, SoC)
- Embedded debugging and profiling tools: quadd, nvprof, cuda-gdb, gdb, LTTng

External debugging and profiling tools:

- Tegra system profiler, NVIDIA® NSight

Specific drivers:

- FPGA: PCIe based, video acquisition, video display, Xilinx IPs (UART, SPI, I2C, XADC, ...), high speed inter SoCs communication channel, generic data transfer to/from SoC modules

Nexvision's Middleware:

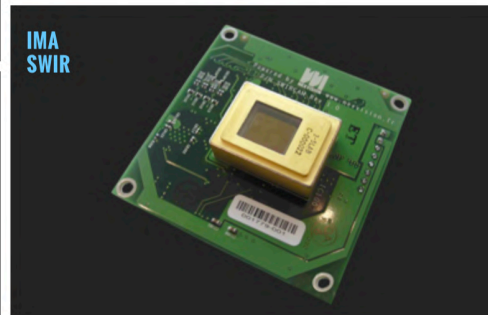
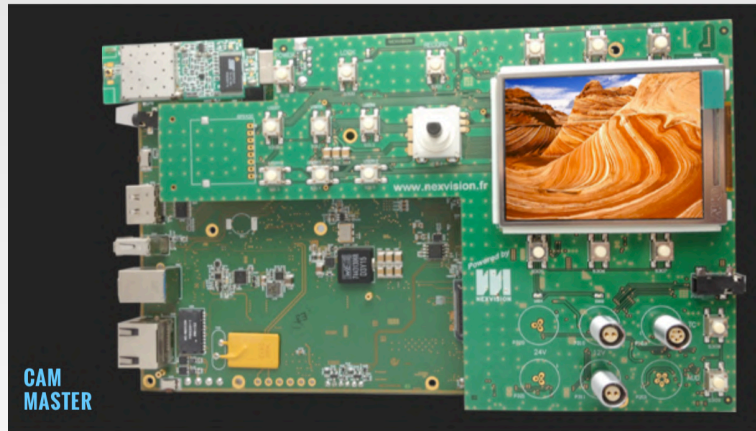
- Video analysis framework
- Embedded video recording: H264, H265, MP4, MKV, AAC
- Video streaming: RTSP/RTCP/RTP, H264, H265, AAC
- ONVIF NVT profile support

PARTNERS



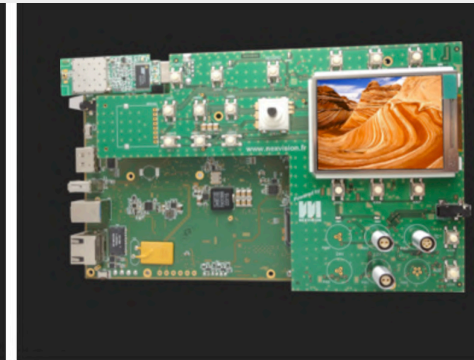
NEXVISION

DESIGN CUTTING-EDGE VISION SYSTEMS.



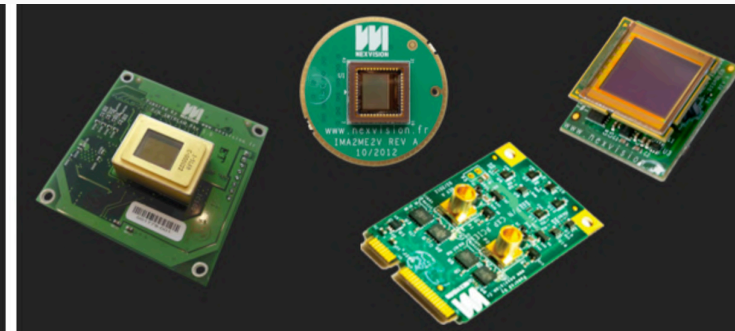
VIDEO PROCESSING BOARDS

- ▶ HIGHEND PROCESSING BOARDS
 - CAM MASTER +
 - CAM MASTER
- ▶ MIDDLE RANGE PROCESSING BOARDS
 - CAM SMOOV+
- ▶ HYBRID PROCESSING / IMAGE SENSORS BOARDS
 - CAM GURU



OPTIONAL MODULES

- ▶ VIDEO SENSOR BOARDS
- ▶ VIDEO INPUT BOARDS
- ▶ DISPLAY BOARDS
- ▶ INTERFACE BOARDS
- ▶ LIGHTING BOARDS



EXPERT IN OPTRONIC SYSTEM
REFERENCE DESIGN

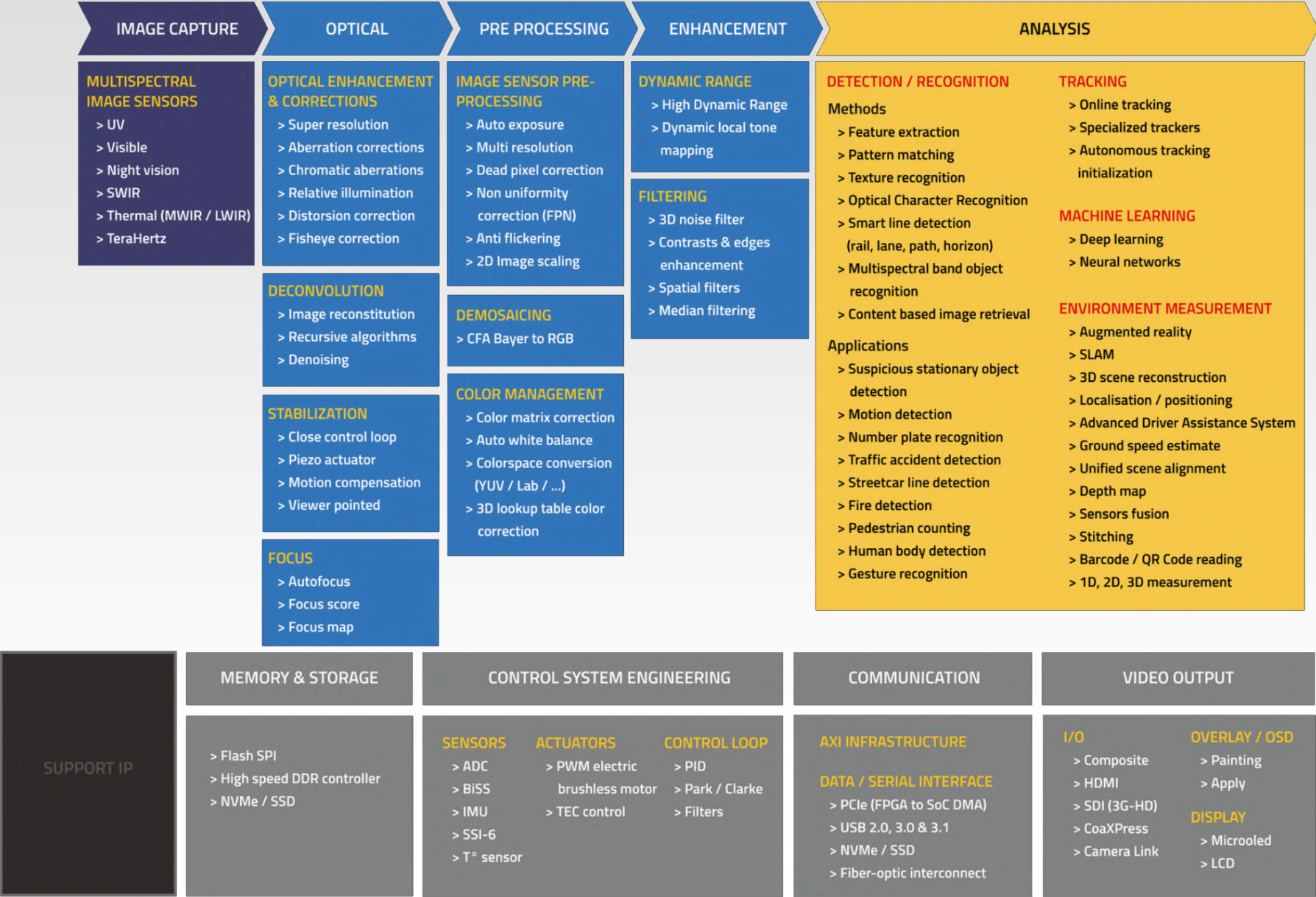


NEXVISION
ELECTRONIC
REFERENCE DESIGN

NEXVISION

A COMPLETE IMAGE
PROCESSING & ANALYSIS
ALGORITHM'S LIBRARY

IP CORE FPGA



Analinear

SWIR, MWIR and LWIR Cameras and Cores Provider

Analinear is an imaging solution company, providing Imaging Sensor IP's, Peripheral Analog IP's, Imaging SoC design and Specialized camera System products. Focused on its core competency.

Analinear technologies products and professional services enable electronic and semiconductor companies to deliver next-generation devices, systems and services competitively to customers in Aerospace, Defense, Medical, Industrial, Automotive and Security industries.

We have a comprehensive portfolio of mixed signal IP's. Our proven nanometer SoC customers have benefited by putting their confidence in Analinear's capabilities to meet tight time to market schedules with reduced design risk.



Analinear

Jaguar Series

JAGUAR is a versatile and compact InGaAs based SWIR camera core offering a comprehensive suite of features including camera link and USB 3.0 digital outputs.

Jaguar's ultra-low noise and high sensitivity combined with advanced digital image enhancement offers a new reference point when it comes to image sharpness and clarity needed for a variant of SWIR application. Additionally, 300 Hz frame rate provides best imaging capability for high speed applications in a compact low-power package.

SPECIFICATIONS

	Jaguar VGA 300	Jaguar VGA 100
Array Type	640 x 512 Indium Gallium Arsenide, InGaAs	
Pixel Pitch	15 micron	
Spectral Band	0.9 to 1.7 micron	
Array size	640 x 512	
Array Cooling	TEC	
Noise	35 e-	
Dark Current	<0.15 pA	
Optical Fill Factor	100%	
Dynamic Range	> 70 dB	
Analog Output	PAL/NTSC	
Digital Output	12/14-bit Camera Link	12/16-bit Camera Link
Digital Frame Rate	Up to 300 Hz max in full frame, > 5000 with windowing	Up to 100 Hz max in full frame, > 1000 with windowing
Input Voltage	9 to 24 VDC	
Power requirement	< 4 W* (with TEC off in low power mode)**	< 1.5 W* (with TEC off in low power mode)**
Size without lens		
with exterior case	107mm x 147mm x 37mm	57mm x 57mm x 64mm
without exterior case	60mm x 60mm x 35mm	45mm x 45mm x 35mm
Weight without lens		
with exterior case	350 g	265 g
without exterior case	160 g	120 g
Operating Temperature Range	-40°C to +60°C	
Non-Operating Temperature Range	-40°C to +85°C	
Scene Range	Dim moonless night to bright daylight	
Environmental Specifications	MIL-STD-810G	
EMC	MIL-STD-461	
Camera Control	SDK or GUI	
Image Processing	Digital zoom, windowing, Onboard Image Optimization (BPR, AGC, NUC, Sharpen, De-noise, AGC/LAP)	

Analinear

Python Series

Python is a versatile and ultra-compact LWIR core offering a comprehensive suite of features including Camera Link, Gige, USB 3.0 or CMOS digital outputs.

Python's exceptional sensitivity coupled with advanced digital imaging enhancement allows for a new reference point when it comes to sharpness and clarity of infrared images. Additionally, It's standard 60 Hz frame rate provides best image quality for faze moving objects in a low power and compact package.

SPECIFICATIONS

	Python
Array Type	640 x 480 a-Si Microbolometer
	384 x 288 a-Si Microbolometer
Pixel Pitch	17 micron
Spectral Band	8.0 to 14.0 micron
NETD/ Performance	< 50 mK @ f/1.0
Analog Output	30/25 Hz (NTSC/PAL)
Digital Output	Camera Link
14 or 8-bit	GigE/USB 3.0/3.3V parallel CMOS/Serial LVDS
Digital Frame Rate	60/50 Hz (NTSC/PAL) max
Input Voltage	4 to 5.5 VDC
	6 to 12 VDC for Camera Link, GigE, USB 3.0 Options
Power Requirements	< 1.2 W
	< 1.6 W for Camera Link Option
	< 2.7 W forGigE or USB 3.0 Option
Time to Image	<4 seconds
Size without lens	1.6" x 1.6" x 1.1"
	1.6" x 1.6" x 1.6" for Camera Link Option
	1.6" x 1.6" x 1.8" for GigE Option or USB 3.0 Option
Weight without lens	50 g
	150 g for Camera Link Option
	170 g for GigE Option or USB 3.0 Option
Operating Temperature Range	-40°C to + 60°C
Non-Operating Temperature Range	-45°C to + 85°C
Scene Temperature Range	-40°C to + 150°C; -40°C to + 500°C
Environmental Specifications	Meets common application's Shock, Vibration, Humidity, Operation Altitude requirements
ROHS	Compliant
REACH, WEEE, Mil-Spec	Provided on request
Image Processing	2x,4x, 8x Digital zoom;Image Orientation; Digital Filtering (de-noising, sharpening, contrast enhancement); Built-in Self-Test; Image Optimization (BPR, NUC, AGC/LAP)
Camera Control	SDK or GUI
Digital Interface	Camera Link, GigE, USB 3.0, LVCMOS level, LVDS, UART, RS-232, external sync input/output

Ozray

MV, SWIR and LWIR Camera Provider


OZRAY has its headquarters in Korea (NIP Co., Ltd.), and sells, develops and produces overseas.

NIP Co., Ltd., established in 1984, is a Machine Vision Solution Company which has been developed along with the history of Korean Machine Vision System.

Ozray company provides Machine Vision Component and Technology Service which belongs to Camera, Interface, Library, and Optics, and has tried for the base expansion in academic and industrial circles such as provision of Acquisition and Analysis Solution of Image Data Signal, development of Nuro OCR and View Analyzer etc. And we deliver the cutting-edge vision technology and know-how to customers through the knowledge education business and practical technology support.



Ozray



deneb series

DE 160 / 384 / 640

LWIR Camera for accurate temperature measurement

POINT

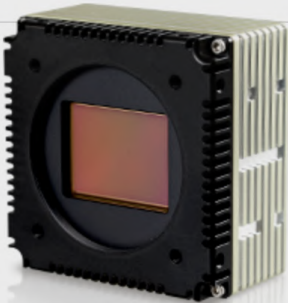
- Optimal adaptive ambient temperature compensation algorithm
- Shutterless operation
- Various lens support (FOV)
- Temperature measurement for all valid pixels
- Various video output interface

DENEB LWIR Camera

Model	DE160F60IP	DE384F60IP	DE640F60IP			
Sensor	Uncooled LWIR	Uncooled LWIR	Uncooled LWIR			
Resolution	160 x 120	384 x 288	640 x 480			
Pixel size	17 x 17µm	17 x 17µm	17 x 17µm			
Wavelength range	8~14µm	8~14µm	8~14µm			
NETD (300K, 30Hz, F/1)	< 60mK	< 60mK	< 60mK			
Frame rate	60Hz	60Hz	60Hz			
Interface	Internet Protocol	Internet Protocol	Internet Protocol			
Operating temperature	-10 ~ 50°C	-10 ~ 50°C	-10 ~ 50°C			
Lens	F.L	Angle	F.L	Angle	F.L	Angle
	3.85mm	59.4°	3.85mm	142.5°	12.6mm	50°
	8mm	19.7°	8mm	47.3°	15.7mm	40°
	12.5mm	12.5°	12.5mm	25°	22.2mm	28.3°
	22.2mm	7°	22.2mm	16.9°		
Product size	45 x 45 x 62.3mm		45 x 45 x 62.3mm		45 x 45 x 62.3mm	

High Resolution / High Speed CMOS Camera for Machine Vision

The Pollux Camera of high sensitivity, and excellent picture provides perfection in the field of image processing standard application. It is a Compact Gige Camera Series with high definition, with which cost reduction is available by simply being connected with C-mount with small and precise Pixels and various interfaces of high speed and high resolution are also available.



LWIR Camera which measures precise temperature

The LWIR Camera of DENEb Series developed by NIP is an un-cooled micro-bolometer detector based long wavelength thermal imaging Camera, and supports the optimum thermal image and the temperature measuring function of excellent accuracy.



Highly Sensitive SWIR Camera which sees the invisible area.

Human eye senses the visible ray area of electromagnetic spectrum. The InGaAs Sensor Camera developed by OZRAY acquires the image in the wavelength of 900~1700nm within the area of Near-IR. The popular PA320F300TCL is an excellent product that can satisfy the time efficiency and economical cost required in industrial manufacturing process by acquiring high speed image. Developed in an uncooled type Line scan camera can reduce heat with low power consumption and expect high sensitivity.



Myutron

High End Optics

Myutron design, develop, and manufacture optical component such as lens, prism, and illumination for machine vision.

Myutron goal is to provide the best product which meet customer's requirement for machine vision application.

japan Quality



Myutron



Machine Vision Lenses

Fixed Focal Length



Line Sensor



Macro



Telecentric



Security Lenses

Zoom Lenses



Vari Focal Length



Fixed Focal Length



SWIR Fixed Focal Length





Asia Optical

Asia Optical always believes in creative design of optical components to bring human beings to the new state of high-tech life. Therefore, Asia Optical keeps expanding its operation and aims to lead technological trend.



ShalomEO

Optical Components For Versatile Applications

Hangzhou Shalom EO is a leading supplier of crystals, optics, OEM components products, a wide range of the products are offered:

- Crystals, optics and components for laser systems and applications;
- IR lenses, windows and optics for thermal imaging cameras and applications;
- Scintillation crystals and components for X-ray, nuclear ray detection;
- SAW crystals and wafers, Sapphire and other crystal and optics products for semiconductor, industrial, medical, scientific and research applications.



HSI

High-Performance Cable Assemblies You Can Rely On

High Speed Interconnects (HSI) is a leading American company which extrudes and assembles high-performance coaxial cable, exceeding today's signal integrity requirements. HSI's low-loss, low-capacitance, phase-stable, coaxial interconnect solutions are available in a variety of cable constructions, which include circular and micro coaxial connector terminations down to 0.3 mm pitch; and fine wire, direct-to-board terminations down to 0.175 mm.



VP90

Flexible, Micro-Coaxial and Coaxial Cables

The Ultimate Flexible Solution is Here.

High Speed Interconnects ("HSI") is your high-performance, flexible, micro-coaxial and coaxial cable assembly manufacturer. HSI's flexible cable assemblies incorporate proprietary membranes and films, which deliver exceptional insertion loss, phase stability, capacitance, and velocity of propagation. Our flexible coaxial cables are intended to be pack-aged as discrete, ribbonized, or bundled configurations and terminated to a variety of circular connectors (SMA, MMCX, SMP), micro-coaxial connectors down to 0.3 mm pitch, and micro-miniature pitches down to 0.175 mm.

HSI has established an entire team, manufacturing center and proven technology platform which strives to exceed today's most stringent signal integrity requirements. Use the performance data below to create a baseline for your next high-performance coaxial cable assembly.

FEATURES:

- Ultra-low Insertion Loss
- Exceptional Phase Stability
- Low Capacitance
- Tunable Impedance
- Velocity of Propagation up to 90%

CAPABILITIES:

- Extrusion of Flexible, Micro-Coaxial and Coaxial Cable Assemblies
 - Fine-wire Termination Down to 0.175 mm Pitch
 - Single, Discrete, Ribbonized, Multi-conductor Packaging
 - Twinax, Triax Twisted, Shielded Pairs, Shielded Parallel Pairs, Differential Pairs, and Other Multi-conductor Solutions

INET Electronics & Trade LTD.

Complete System Hardware & Software Solution

Thank you