ENGLISH VERSION

iDS

uEye®

uEye®RE

Your imagination is our challenge

uEye® – It´s so easy

The uEye® family

uEye® stands for a family of extremely compact, low-cost cameras for professional use in industry, medicine and security technology. Through the use of the widespread USB technology, the cameras can be interfaced with a vast variety of systems without problems.

Modern sensorics

uEye® cameras are equipped with a range of high-quality CCD and CMOS sensors. The wide range of products includes several models with VGA or Wide VGA resolution and a maximum of 87 full frames per second, as well as high-resolution megapixel cameras. Most models are available with color or monochrome sensors.

1288
EMVA Standard Compliant

Features at a glance

- Universal use with PC, notebook, IPC and embedded systems with USB 2.0
- Monochrome and color models
- Resolutions from VGA (640 x 480) to 5 megapixels (2560 x 1920)
- High-quality CCD and CMOS sensors
- Memory models with 4 MB memory and USB 1.1 compatibility
- Up to 87 full frames/sec., over 1000 frames/sec. with AOI
- One universal driver and one SDK for the entire camera family
- Camera control and power supply via the USB bus
- Universal input, optically separated, suitable for triggering
- Digital output, optically separated, suitable for flash control
- Ultra compact housing with C-mount lens connector
- Powerful SDK for Windows 2000/XP/Vista and Linux
- DirectDraw support, ActiveX, TWAIN and Direct Show (WDM) drivers
- Interfaces for popular image processing software available: e.g. Common Vision Blox, HALCON, LabView, Neurocheck, etc.

uEye® Solutions for...

Automation
and quality assurance

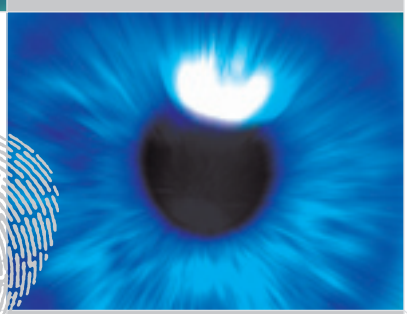
Industry

Implement quick and simple solutions in automation and quality assurance. The changeover from analog to digital technology is facilitated by an SDK which has been modeled on our frame grabbers. The demo programs included with the cameras make them fast and easy to integrate into your own applications.

Analysis
and documentation

Medicine

Our uEye® offers cutting edge sensors for visualization, medical imaging and microscopy. Its USB interface allows optimum connection to notebooks, embedded PCs, or computers in medical practices. The power supply via the USB bus supports compliance with medical regulations.



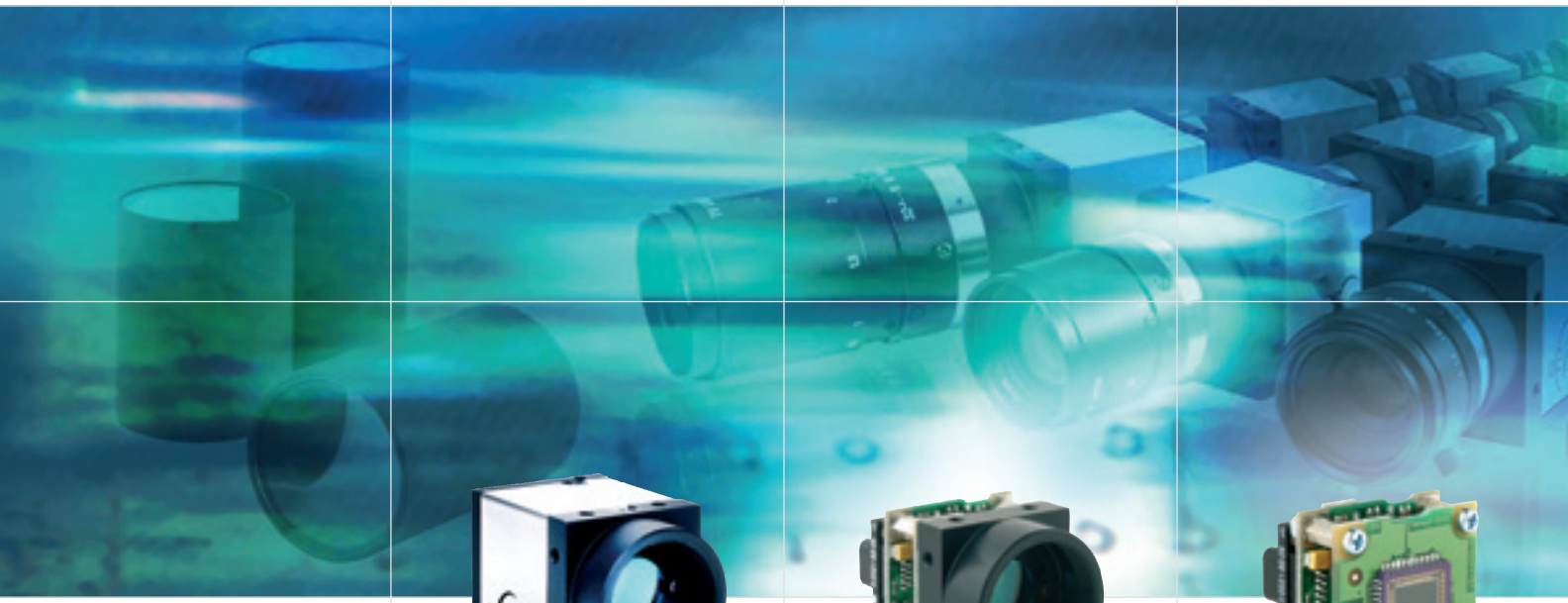
Comparing
and archiving

Security technology

Size and versatile possibilities of application are prerequisite for use in compact mobile and stationary systems. High-resolution sensors ensure accuracy in detail. Image acquisition in the near-infrared area is possible, as is the intermediate storage of individual images in the camera.

For possible applications of our products please visit:
www.ids-imaging.com/casestudies

uEye® Housing Variants



Standard uEye® camera
with C-mount
32 x 34 x 27.4 - 41.5 mm
(W x H x D)

uEye® OEM 1 board level
camera with C-mount
30 x 30 x 27.4 - 41.5 mm
(W x H x D)

uEye® OEM 2 board level
camera without lens mount
30 x 30 x 11 - 24 mm
(W x H x D)

The right outfit for any occasion

The uEye® series offers different sturdy housing variants. The uEye® models come with a standard mini-B type USB port. In addition connection is possible via a screw-mounted micro D-sub connector which also carries the optically decoupled I/O signals.

The uEye® cameras are available in a metal housing or as OEM variants with a C-mount front flange. For special applications the unit can be supplied as a board-level camera and, in addition, special project-related designs are also possible. Contact us!

Standard USB and screw-mounted
D-sub micro with USB and I/O

uEye® Accessories

uEye® RE – Made for Rough Environments

The RE variants feature an extremely rugged design. 41 x 41 x 40.5 - 70.5 mm (W x H x D)

The RE variants of the uEye® cameras are extremely rugged and offer an extended area of application. In conjunction with the optional lens tubes they meet the requirements of protection classes IP 65 and IP 67. The USB and the I/O signals are connected via two connectors of the same protection class. The uEye® RE is thus particularly suited for "harsh environments." The uEye® RE accessories are also consistently designed to suit the application possibilities of these cameras.

uEye® RE connectors for USB and I/O: Consistently robust

Complementary accessories

A wide choice of cables in various lengths and designs, industrial strength USB hubs, active extension cables and USB interfaces round off your uEye® camera equipment. The range of accessories is completed by cables of the conventional, screw-connection and drag-chain compatible type. For the uEye® RE models, drag-chain cables are available even beyond the USB standard – in lengths up to 10 m.

Angled cables reduce overall design depth

Industrial strength accessories

With the lens tubes, the uEye® RE cameras meet the requirements of protection classes IP 65 and IP 67

The Second Half of the Camera

The two parts of a uEye® camera: Hardware and a comprehensive software package

Individual integration

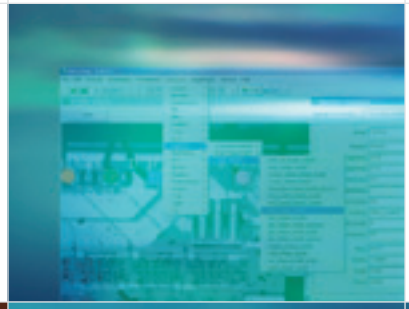
The decision on how your uEye® camera is to be integrated into your system is up to you alone. Our prices include a comprehensive software package with drivers for Windows and Linux. Interfaces for various image processing packages, standard drivers such as Direct Show (WDM) as well as our Software Development Kit (SDK) allow individual integration within a very short time.

Future proof

The modular uEye® concept is also continued into our software: All necessary drivers are only loaded into the camera after it has been connected. With regularly released updates the functionality can thus be enhanced even for already installed cameras.

To ensure that our cameras are not larger than necessary, data is further processed, or post-processed, in the PC.

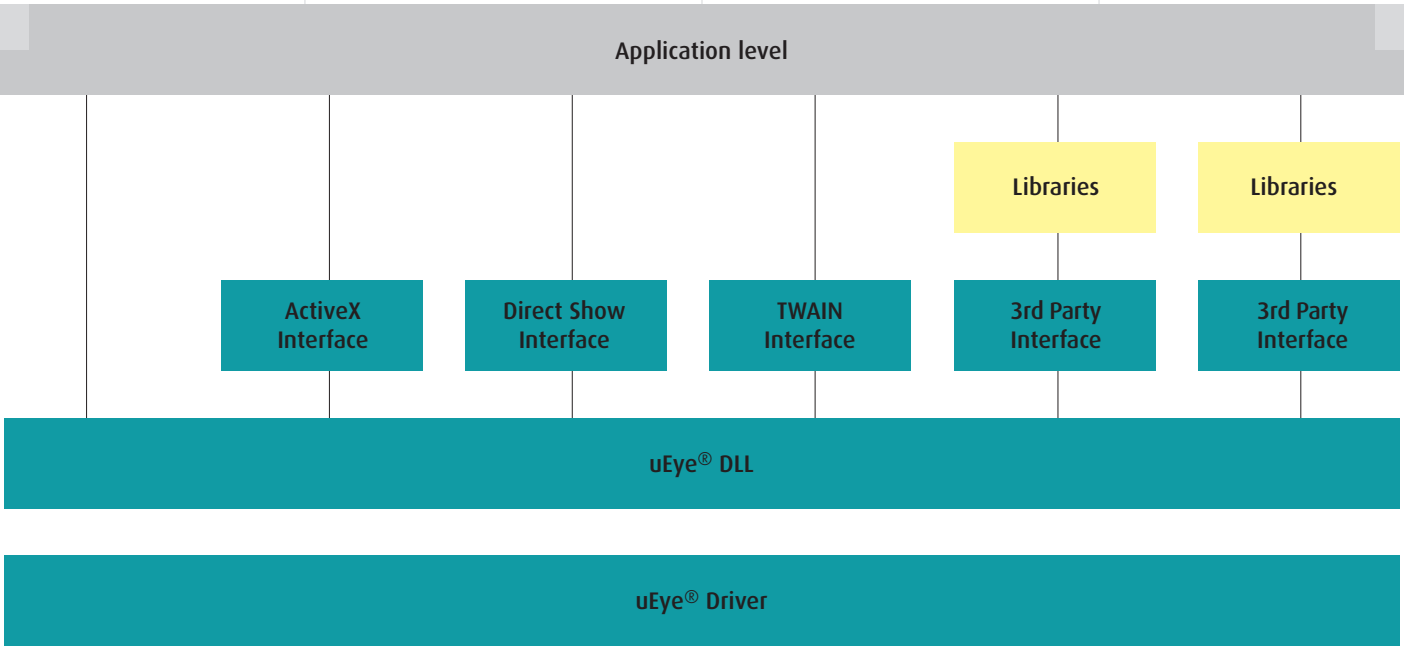
Easy Integration
Thanks to Comprehensive Software



The uEye® SDK offers over 100 functions

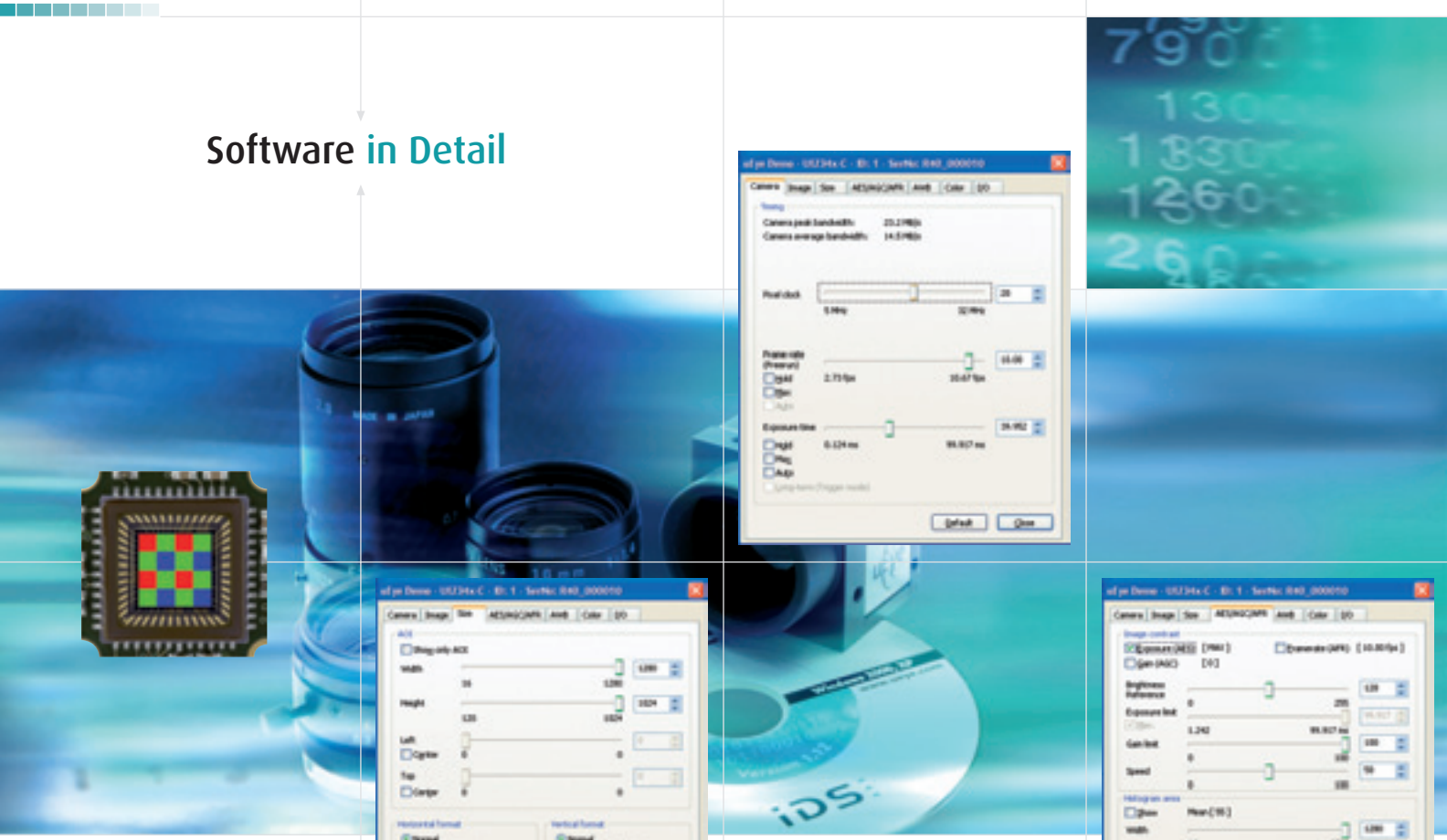
Over 20 demos provided in source code facilitate integration

Interface variety gives you good cards for quick integration



- Components of the uEye® software package

Software in Detail



Sample programs and the uEye® demo program in source code serve as a programming model and allow quick integration

Bandwidth Management

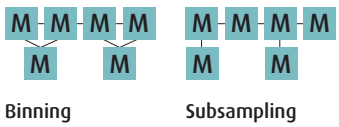
The USB bus allows dynamic bandwidth assignment to each connected device. This means that one camera alone can use the entire bus. With additional cameras connected, the bandwidth can be divided up as required. For this purpose the uEye® USB cameras offer a freely selectable pixel clock. Long-term exposure as well as the acquisition of up to 1,000 frames per second are also possible.

Color Rendering

The color sensors provide a mosaic of color filters (Bayer filters), which serve as the basis for calculating the color information for each pixel. The color variants of the uEye® cameras transmit the same amounts of data to the PC as the monochrome models. If desired, the uEye® driver processes such raw data into RGB, Y8 or YUV images by various interpolation methods.

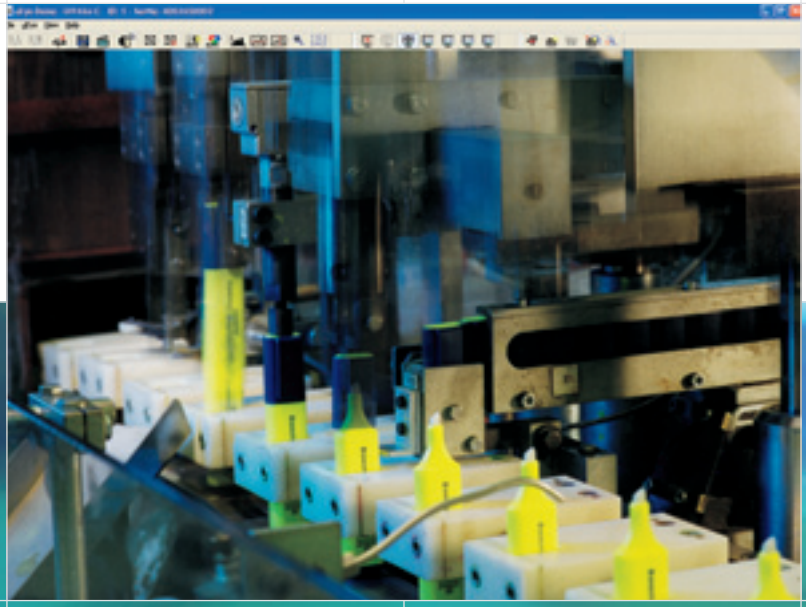
Binning/Subsampling

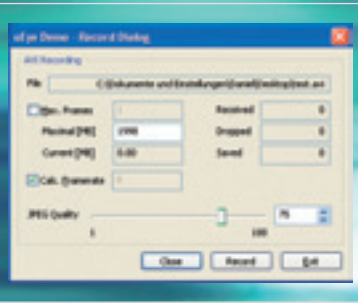
These two processes are used for reducing the resolution and increasing the frame rate. In the case of binning, several pixels are combined and transmitted to the PC; in subsampling, individual pixels are skipped during read-out. With both methods, the field of view remains identical.



Area of Interest (AOI)

With this function, the uEye® reads out only a selected part of the sensor area. This increases the possible frame rate of the camera: At half the frame height, e.g., uEye® CCD cameras are 60–80% faster and uEye® CMOS cameras almost 100% faster!





Finding the right settings and acquiring the first image without a line of code – with the help of the uEye® demo program

Flexible Camera Integration

With over 100 functions the uEye® Software Development Kit (SDK) gives you all the possibilities to integrate the camera under C++, C# and VB. Basic camera functions enable you to control camera timing, frame size and image representation. More than 20 demo programs, provided in source code, facilitate your first steps in programming.

uEye® Demo

With the uEye® demo material supplied, you will have your first pictures on your uEye® camera in no time at all. The program enables you to perform comprehensive measurements even before you start your own programming, and it makes it easy for you to compare different cameras and settings. Results can be stored as individual images or as an AVI sequence.

Auto Features

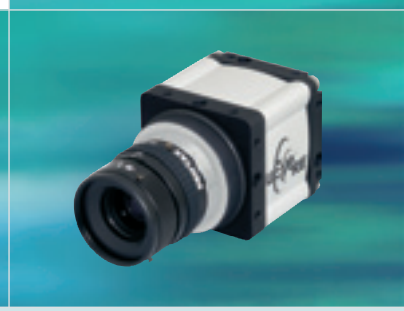
To facilitate working with the uEye® camera under changing lighting conditions, the uEye® software offers three automatic image control functions: Auto Exposure, Auto Gain and Auto White Balance. Following selectable control criteria, the camera driver adjusts exposure times and signal amplification on the sensor (hardware gain) and performs the white balance for the relevant color temperature of the light.

The CPU has time for more important things

Thanks to the efficient programming of the drivers, the uEye® cameras run at a very low processor load. With high-performance PC hardware, the CPU load during image acquisition by the uEye® (monochrome) will generally remain below 10%; even color conversion through the software (RGB) will hardly ever cause loads above 20%.

All uEye®-Models at a Glance



Sensor Technology	CMOS	CMOS	CMOS	CMOS	CMOS	CMOS
Model (Color)	UI-1220-C	UI-1410-C	-	UI-1450-C	UI-1460-C	UI-1480-C
Model (Mono)	UI-1220-M	UI-1410-M	UI-1540-M	-	-	-
Resolution (h x v)	752 x 480	640 x 480	1280 x 1024	1600 x 1200	2048 x 1536	2560 x 1920
Resolution Category/Pixel Class	WVGA	VGA	SXGA/1.3 MP	UXGA/2 MP	SUXGA/3.3 MP	QSXGA/5 MP
Sensor Size	1/3"	1/3"	1/2"	1/2"	1/2"	1/2"
Shutter	Global	Rolling	Rolling	Rolling	Rolling	Rolling/Global Start
Max. fps in Freerun Mode at full resolution	87 fps	35 fps	25 fps	18 fps	11 fps	6 fps
Max. fps in SW Trigger Mode at 1 ms exposure	78 fps	17 fps	23 fps	16 fps	10 fps	5 fps
Exposure Time in Freerun Mode	80 µs - 5,5 s	56 µs - 630 ms	35 µs - 980 ms	45 µs - 1,25 s	57 µs - 1,75 s	81 µs - 680 ms
Exposure Time in Trigger Mode	80 µs - 5,5 s	56 µs - 630 ms	35 µs - 980 ms	45 µs - 1,25 s	57 µs - 750 ms	81 µs - 680 ms
AOI Modes	H² + V²	H + V²	H² + V²	H² + V²	H² + V²	H² + V²
AOI with 320 x 240 Pixels (CIF)	215 fps	68 fps	232 fps	242 fps	220 fps	126 fps
Subsampling Modes	-	H + V²	H² + V² (Color)	H² + V²	H² + V²	H² + V²
Subsampling Factors	-	x2	x2, x4	x2, x4	x2, x4	x2, x4
Resolution, fps	-	320 x 240, 68 fps	640 x 512, 79 fps 320 x 256, 219 fps	800 x 600, 60 fps 400 x 300, 177 fps	1024 x 768, 37 fps 512 x 384, 113 fps	1280 x 960, 19 fps 640 x 480, 53 fps
Binning Modi	H + V² (Mono)	-	-	-	H² + V²	H² + V²
Binning Methode	H + V: Average	-	-	-	H: Sum V: Average	H: Sum V: Average
Binning Factors	x2, x4	-	-	-	x2, x4	x2, x4
Resolution, fps	368 x 240, 162 fps 176 x 120, 286 fps	- -	- -	- -	1024 x 768, 30 fps 512 x 384, 79 fps	1280 x 960, 15 fps 640 x 480, 23 fps
Mono: Maximum Gain	4x	25,2x	12x	-	-	-
Color: Maximum Gain RGB/Master	5x (SW)/4x	5x/5x	-	12x/–	7,25x/12x	6,5x/12x
Additional Gain Boost with Factor	1,6x	2x	1,5x	1,4x	2x	1,6x
Sensor Model	MT9V032	KAC-9618/28	MT9M001	MT9D001	MT9T001	MT9P031
Pixel Clock	5 - 40 MHz	5 - 14 MHz	5 - 43 MHz	5 - 43 MHz	5 - 43 MHz	5 - 43 MHz
Pixel Pitch in µm	6,0	7,5	5,2	4,2	3,2	2,2
Full Well Capacity	30.000 e-		40.000 e-	30.000 e-	20.000 e-	15.000 e-
Optical Size	4,51 x 2,88 mm	4,80 x 3,60 mm	6,66 x 5,32 mm	6,72 x 5,04 mm	6,55 x 4,92 mm	5,63 x 4,22 mm
Aspect Ratio	14:9	4:3	5:4	4:3	4:3	4:3
Exact Real Diagonal	5,4 mm, 1/3,0"	6,0 mm, 1/2,7"	8,5 mm, 1/1,9"	8,4 mm, 1/1,9"	8,2 mm, 1/2,0"	7,0 mm, 1/2,3"
Current Consumption at 5 V	100 - 130 mA	80 - 110 mA	130 - 170 mA	100 - 140 mA	90 - 130 mA	90 - 130 mA
Regulations	CE class A, CE class B, FCC (depending on model)					

² = Use increases frame rate

Delivery includes

uEye® camera installation CD for Windows XP, 2000 and Linux, complete with drivers, demo programs, program examples, tools and documentation

System requirements

PC system with 1.5 GHz, 256 MB RAM; operating system: Windows 2000 with SP4 / Windows XP with SP2, Linux Kernel 2.6; USB 2.0 interface

CCD UI-2210-C UI-2210-M	CCD UI-2310-C UI-2310-M	CCD UI-2410-C UI-2410-M	CCD UI-2220-C UI-2220-M	CCD UI-2230-C UI-2230-M	CCD UI-2240-C UI-2240-M	CCD UI-2340-C UI-2340-M	CCD UI-2250-C UI-2250-M
640 x 480 VGA	640 x 480 VGA	640 x 480 VGA	768 x 576 CCIR	1024 x 768 XGA	1280 x 1024 SXGA/1.3 MP	1360 x 1024 XGA-2/1.4 MP	1600 x 1200 UXGA/2MP
1/2" Global	1/4" Global	1/3" Global	1/2" Global	1/3" Global	1/2" Global	1/2" Global	1/1.8" Global
75 fps 66 fps	75 fps 65 fps	75 fps 66 fps	52 fps 47 fps	30 fps 27 fps	15 fps 14 fps	17 fps 16 fps	12 fps 12 fps
40 µs - 630 ms 40 µs - 10 min.	40 µs - 640 ms 40 µs - 10 min.	40 µs - 640 ms 40 µs - 10 min.	50 µs - 770 ms 50 µs - 10 min.	66 µs - 1 s 66 µs - 10 min.	83 µs - 1,46 s 83 µs - 10 min.	78 µs - 1,46 s 78 µs - 10 min.	94 µs - 1,57 s 94 µs - 5 s
H + V² 122 fps	H + V² 140 fps	H + V² 111 fps	H + V² 97 fps	H + V² 78 fps	H + V² 43 fps	H + V² 44 fps	H + V² 47 fps
- - -	V² (Color) x2 640 x 240, 131 fps	- - -	- - -	- - -	- - -	V² (Color) x2 1360 x 512: 28 fps	V² (Color) x2, x4 1600 x 600: 22 fps 1600 x 300, 37 fps
V² (Mono) V: Sum x2, x4 640 x 240, 133 fps 640 x 120, 220 fps	V² (Mono) V: Sum x2, x4 640 x 240, 131 fps 640 x 120, 206 fps	V² (Mono) V: Sum x2, x4 640 x 240, 133 fps 640 x 120, 215 fps	V² (Mono) V: Sum x2, x4 768 x 288, 90 fps 768 x 144, 143 fps	V² (Mono) V: Sum x2, x4 1024 x 384, 53 fps 1024 x 192, 85 fps	V² (Mono) V: Sum x2, x4 1280 x 512, 23 fps 1280 x 256, 31 fps	V² V: Sum x2 (Color+Mono), x4 (Mono) 1360 x 512, 28 fps 1360 x 256, 42 fps	V² (Mono) V: Sum x2, x4 1600 x 600, 22 fps 1600 x 300, 37 fps
20,7x 4x/12x 2x (Mono)	12,2x 4x/7,3x 2x (Mono)	18x 4x/12x 2x (Mono)	14x 4x/8,9x 2x (Mono)	10,4x 4x/7,5x 2x (Mono)	13,6x 4x/8,9x 2x (Mono)	15,6x 4x/9,6x 2x (Mono)	13,7x 4x/8,9x 2x (Mono)
ICX414 5 - 30 MHz	ICX098 5 - 30 MHz	ICX424 5 - 30 MHz	ICX415 5 - 30 MHz	ICX204 5 - 30 MHz	ICX205 5 - 30 MHz	ICX267 5 - 32 MHz	ICX274 5 - 30 MHz
9,9 32.000 e- 6,34 x 4,75 mm 4:3 7,9 mm, 1/2,0"	5,6 20.000 e- 3,58 x 2,69 mm 4:3 4,5 mm, 1/3,6"	7,4 24.000 e- 4,74 x 3,55 mm 4:3 5,9 mm, 1/2,7"	8,3 25.000 e- 6,37 x 4,78 mm 4:3 8,0 mm, 1/2,0"	4,65 12.000 e- 4,76 x 3,57 mm 4:3 6,0 mm, 1/2,7"	4,65 12.000 e- 5,95 x 4,76 mm 5:4 7,6 mm, 1/2,1"	4,65 12.000 e- 6,32 x 4,76 mm 4:3 7,9 mm, 1/2,0"	4,4 9.000 e- 7,04 x 5,28 mm 4:3 8,8 mm, 1/1,8"
170 - 260 mA	160 - 230 mA	170 - 230 mA	170 - 250 mA	150 - 230 mA	190 - 290 mA	190 - 290 mA	230 - 340 mA

uEye® and uEye® RE cameras with CCD/CMOS sensors and USB port

- Universal use with PC, notebook, IPC and embedded systems with USB 2.0
- Resolutions from VGA (640 x 480) to 5 megapixels (2560 x 1920)
- High-quality CCD and CMOS sensors
- Memory models with 4 MB memory and USB 1.1 compatibility

Other IDS products

- Camera accessories
- Lenses
- Frame grabbers
- Software

Your imagination is our challenge

IDS Imaging Development Systems GmbH
Dimbacher Straße 6
74182 Obersulm/Germany
Phone +49(0)7134/96196-0
Fax +49(0)7134/96196-99
sales@ids-imaging.com

www.ids-imaging.com