



Sensitive CCD Imaging Modules

Highest sensitivity is provided by excellent low-level noise electronics under use of proved sensor technology. The sensitive CCD Imaging Modules offer the optimal solution for system integrators requiring highest performance in systems for digital imaging applications, even in Electron Microscopy.

Easy to integrate

- Software development kit (SDK)
- WIN/ MAC/ Linux
- LabView driver
- ActiveX Control
- USB 2.0/ IEEE 1394a/ b FireWire

Benefits

- Large pixels for high sensitivity
- High quantum efficiency
- IR imaging capability
- Binning
- Advanced cooling
- Dynamic grey scale leveling
- Overlapping read out



Digital Imaging

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Specifications

Imaging module type	IM 0.45	IM 1.4C/ 1.4M	IM 1.4C ^{cool} / 1.4M ^{cool}	IM 11C/ 11M
Image sensor	1/2" CCD progressive scan	2/3" CCD progressive scan	2/3" CCD progressive scan	Interline progressive scan CCD
Sensor type	Sony ICX415	Sony ICX285	Sony ICX285	KODAK KAI-11002
Sensor size [H x V]	7.48 mm x 6.15 mm	8.8 mm x 6.6 mm	8.8 mm x 6.6 mm	36.07 mm x 24.05 mm "35 mm format"
Active pixels [H x V]	782 x 582 pixel	1360 x 1024 pixel	1360 x 1024 pixel	4008 x 2672 pixel
Digitization	12 Bit	12 Bit	14 Bit	14 Bit
Color/ Monochrome	Color/ Monochrome	Color/ Monochrome	Color/ Monochrome	Color/ Monochrome
Sensor resolution [max]	768 x 576 pixel [0.5 Mpix]	1360 x 1024 pixel [1.4 Mpix]	1360 x 1024 pixel [1.4 Mpix]	4008 x 3672 pixel [10 Mpix]
Pixel size	8.3 µm ²	6.45 µm ²	6.45 µm ²	9.0 µm ²
Pixel clock	29.5 MHz	12 MHz / 24.5 MHz	12 MHz / 24.5 MHz	12 MHz / 24 MHz
ROI	Arbitrary position and size			
Dynamic range	68 dB	65 ... 67 dB	67 ... 69 dB	64 dB
Read out noise [typical]	< 4 LSB ¹⁾	~ 4 LSB ¹⁾	~ 4 LSB ²⁾	3 LSB (RMS)
Exposure times	50 µs ... 270 s	200 µs ... 180 s	200 µs ... 300 s	0.120 ms ... 50 min
Analog gain	1x ... 8x	1x ... 8x	1x ... 8x	1x ... 8x
Max. frame rate [image size]	50 fps [782 x 582 pixel]	13 fps [1360 x 1024 pixel]	13 fps [1360 x 1024 pixel]	4 fps [4008 x 2672 pixel]
Image resolution Binning:	no	2x ... 5x	2x ... 5x	2x ... 8x
Cooling	no	no	yes	no
Digital interface	USB 2.0	USB 2.0/ FireWire a	FireWire a	FireWire a/ b
Optical connection	C-Mount (0.5x TV pref.)	C-Mount (0.63x TV pref.)		F-Mount
IR –cut –of filter	Hoya CM500 S [IR Cut-Off bei 650 nm]			
Trigger In/ Out	Synchronization with external devices; configurable via control software			
Voltage supply	USB powered	USB/ FireWire powered	FireWire powered	FireWire powered
Power consumption	≤ 2.4 W	≤ 2.5 W 6 W	approx. 6 W	approx. 8 W
Dimensions sensor board	51 x 51 mm [with C-Mount]	51 x 51 mm [USB] 72 x 62.3 mm [FireWire] [with C-Mount]	78 x 72 mm [with C-Mount]	60 x 44 x 30 mm
Dimensions interface board	55 x 46 mm	55 x 46 mm [USB] 85 x 70 mm [FireWire]	85 x 70 mm	108 x 60 x 50 mm
Cable length [sensor - interface board]	77 mm	77 mm 127 mm	127 mm	120 mm
Ambient conditions	Temperature: +5 °C ... +55 °C / Humidity: 5 % ... 80 %, not condensing			
Stock conditions	Temperature: -20 ... +70 °C			
Weight	220 g [with C-Mount]	220 g [USB] 300 g [FireWire] [with C-Mount]	approx. 450 g [with C-Mount]	approx. 400 g
Software	Software Development Kit (SDK) [PC/ MAC/ Linux], ActiveX Control, LabView			
Hardware requirements	PC: MS WIN 2000/ XP/ Vista Mac: OS X 10.4 or higher 3 GHz CPU, 1 GB RAM, 64 MB graphics, USB 2.0 or Firewire a/ b			

¹⁾ 12 Bit transfer | ²⁾ 14 Bit transfer

It is our policy to constantly improve the design and specifications. Accordingly, the details represented herein cannot be regarded as final and binding.



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