JENOPTIK

Imaging Modules
Perfect Digital Imaging

Optoelectronic Systems

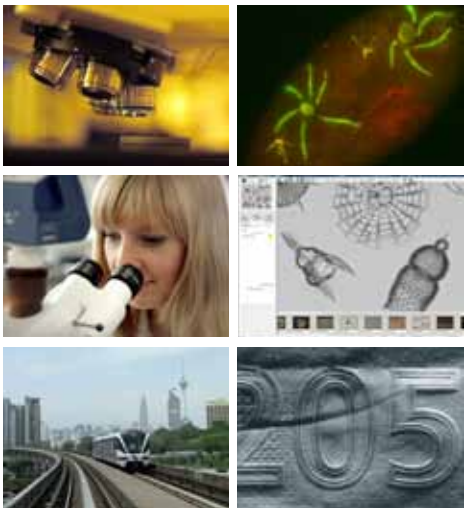
OEM & Custom Imaging Modules
Made in Germany - on duty worldwide

Jenoptik OEM & Custom Imaging Modules provide the performance needed to meet the demanding requirements in scientific and industrial applications - at most competitive prices.

Besides a large range of standard dual-board imaging modules Jenoptik continuously provides cost-effective high volume solutions to fit both your application and budgetary requirements. Customization with respect to small hard- and software adjustments up to complete made-to-spec imaging solutions will be performed in a timely manner.
Our imaging modules come with USB 2.0, USB 3.0, FireWire or custom interfaces.

Best imaging modules
for system integrators requiring highest performance

Benefits
- Small, customizable footprint
- Single-board or dual-board solutions
- Suitable for scientific and industrial applications
- High resolution
- Low-noise imaging
- High-speed imaging
- High quantum efficiency
- Ease of system integration



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

CMOS Imaging Modules
Best cost effectiveness

Specifications

Imaging module type	IM 3.15 USB	IM 3.15	IM 5.0 C USB / IM 5.0 M USB
Image sensor	1/2" CMOS	1/2" CMOS	1/2.5" CMOS
Sensor type	Micron MT9T001P12STC	Micron MT9T001P12STC	Micron MT9P001I12STC
Active sensor size [H x V]	6.55 mm x 4.92 mm	6.55 mm x 4.92 mm	5.70 mm x 4.28 mm
Active pixels [H x V]	2048 x 1536 pixel	2048 x 1536 pixel	2592 x 1944 pixel
Digitization	10 bit	10 bit	12 bit
Color / Monochrome	Color	Color	Color / Monochrome
Sensor resolution [max]	2048 × 1536 pixel [3.15 Mpix]	2048 × 1536 pixel [3.15 Mpix]	2592 × 1944 pixel [5.0 Mpix]
Pixel size	3.2 µm²	3.2 µm²	2.2 µm²
Pixel clock	48 MHz [USB]	36 MHz [FireWire]	48 MHz
Dynamic range	58 dB	58 dB	66 dB
Read out noise [typical]	< 1 LSB [10-Bit-Transfer]	< 1 LSB [10-Bit-Transfer]	< 4 LSB [12-Bit-Transfer]
Exposure times	100 µs ... 3 s	50 µs ... 3 s	150 µs ... 3 s
Analog gain	1x ... 4x (SDK)	1x … 20x	1x ... 5x (SDK)
Max. frame rate [image size] typical via USB 2.0	9 fps [2048 x 1536 pixel] 35 fps [1024 x 768 pixel]	10 fps [2048 x 1536 pixel] 26 fps [1024 x 768 pixel]	5,5 fps [2592 x 1944 pixel] 17 fps [1296 x 972 pixel]
Binning	2x, 3x	2x, 3x	2x, 4x
Cooling	no	no	no
Digital interface	USB 2.0	IEEE1394a FireWire	USB 2.0
Optical connection	C-Mount (0.5×/0.63× TV pref.)		
IR cut-off filter	Hoya CM500 S [IR cut-off at 650 nm]		
Trigger In / Out	yes	no	yes
Voltage supply	USB powered	FireWire powered	USB powered
Power consumption	approx. 2 W	approx. 2.5 W	approx. 1.8 W
Dimensions sensor board	51 mm x 51 mm [with C-Mount]		
Dimensions interface board	55 mm x 46 mm	70 x 75 mm [FireWire]	55 mm x 46 mm
Cable lenght [sensor - interface board]	77 mm	127 mm [FireWire]	77 mm
Ambient conditions	Temperature: +5 °C ... +35 °C / Humidity: 5 % ... 80 %, not condensing		
Stock conditions	Temperature: -20 °C ... +70 °C		
Weight	approx. 220 g [with C-Mount]		
Software	Software Development Kit (SDK) [PC for all cameras / Mac & Linux support only for Firewire-cameras]		
Drivers	available drivers are listed at www.jenoptik.com/progres-drivers		
Hardware requirements	recommended hardware requirements are mentioned at www.jenoptik.com/progres-system-requirements		

CCD Color Imaging Modules

Excellent color reproduction & image quality

Specifications

Imaging module type	IM 3.2	IM 5.0	IM 7.1
Image sensor	1/1.8" CCD	2/3" CCD	1/2.5" CCD
Sensor type	SONY ICX252	SONY ICX282	SONY ICX629
Active sensor size [H x V]	7.58 mm x 6.54 mm	9.04 mm x 7.86 mm	5.71 mm x 4.29 mm
Active pixels [H x V]	2080 x 1542 pixel	2580 x 1944 pixel	3072 x 2300 pixel
Digitization	12 bit	12 bit	12 bit
Color / Monochrome	Color	Color	Color
Sensor resolution [max]	2080 x 1542 pixel [3.2 Mpix]	2580 × 1944 pixel [5.0 Mpix]	3072 × 2300 pixel [7.1 Mpix]
Pixel size	3.45 µm²	3.4 µm²	1.86 µm²
Pixel clock	12 MHz	12 MHz / 18 MHz	32 MHz
Dynamic range	61 dB	61 dB | 60 dB	60 dB
Read out noise [typical]	3 LSB [12-Bit-Transfer]	4 LSB [12-Bit-Transfer]	4 LSB [12-Bit-Transfer]
Exposure times	270 µs ... 180 s	90 µs ... 180 s	170 µs ... 5 s
Analog gain	1x ... 12x (SDK)	1x ... 16x (SDK)	1x ... 16x (SDK)
Max. frame rate [image size] typical via USB 2.0	6 fps [2080 x 1542 pixel] 12 fps [1040 x 770 pixel]	6 fps [2580 x 1944 pixel] 21 fps [646 x 488 pixel]	18 fps [1228 x 920 pixel]
Binning	2x ... 5x (SDK)	2x ... 5x (SDK)	4x (SDK)
Cooling	optional	optional	no
Digital interface	IEEE1394a FireWire	IEEE1394a FireWire	IEEE1394a FireWire
Optical connection	C-Mount (0.5×/0.63× TV pref.)		
IR cut-off filter	Hoya CM500 S [IR cut-off at 650 nm] | Optional: clear glass		
Trigger In / Out	no	no	yes
Voltage supply	FireWire powered	FireWire powered	FireWire powered
Power consumption	approx. 6 W	approx. 6 W	approx. 6 W
Dimensions sensor board	51 mm x 51 mm [with C-Mount]		
Dimensions interface board	70 x 75 mm	70 x 75 mm	70 x 75 mm
Cable lenght [sensor - interface board]	127 mm	127 mm	127 mm
Ambient conditions	Temperature: +5 °C ... +55 °C / Humidity: 5 % ... 80 %, not condensing		
Stock conditions	Temperature: -20 °C ... +70 °C		
Weight	approx. 270 g [with C-Mount]		
Software	Software Development Kit (SDK) [WIN / MAC / Linux]		
Drivers	available drivers are listed at www.jenoptik.com/progres-drivers		
Hardware requirements	recommended hardware requirements are mentioned at www.jenoptik.com/progres-system-requirements		

Sensitive CCD Imaging Modules

Best color reproduction, highest performance & highest sensitivity

Specifications

Imaging module type	IM 1.4C / 1.4M | 1.4 C USB / 1.4 M USB	IM 1.4C^{cool} / 1.4M^{cool}	IM 11C / 11M (optional with housing)
Image sensor	2/3˝ CCD progressive scan	2/3˝ CCD progressive scan	35 mm format
Sensor type	Sony ICX285	Sony ICX285	KODAK KAI-11002
Active sensor size [H x V]	8.8 mm x 6.6 mm	8.8 mm x 6.6 mm	36.07 mm x 24.05 mm
Active pixels [H x V]	1360 x 1024 pixel	1360 x 1024 pixel	4008 x 2672 pixel
Digitization	14 | 12 bit[1)]	14 bit	14 bit
Color / Monochrome	Color / Monochrome	Color / Monochrome	Color / Monochrome
Sensor resolution [max]	1360 × 1024 pixel [1.4 Mpix]	1360 × 1024 pixel [1.4 Mpix]	4008 × 2672 pixel [10.7 Mpix]
Pixel size	6.45 µm²	6.45 µm²	9.0 µm²
Pixel clock	12 MHz / 24.5 MHz	12 MHz / 24.5 MHz	12 MHz / 24 MHz
Dynamic range	65 ... 67 dB	67 ... 69 dB	64 dB
Read out noise [typical]	6 LSB [14 Bit Transfer] ~ 4 LSB [12 Bit Transfer][1)]	6 LSB [14 Bit Transfer]	3 LSB [14 Bit Transfer]
Exposure times	94 µs ... 180 s | 20 µs ...180s[1)]	94 µs ... 300 s	0.120 ms ... 50 min
Analog gain	1x ... 8x | 1x … 14x[1)] (SDK)	1x ... 8x (SDK)	1x ... 8x (SDK)
Max. frame rate [image size] typical via USB 2.0	13 fps [1360 x 1024 pixel] 51 fps [680 x 512 pixel] 15 fps [1360 x 1024 pixel][1)] 26.5 fps [680 x 512 pixel][1)]	13 fps [1360 x 1024 pixel] 51 fps [680 x 512 pixel]	4 fps [4008 x 2672 pixel]
Binning	2x ... 10x | 2x ... 8x[1)] (SDK)	2x ... 10x (SDK)	2x ... 8x (SDK)
Cooling	no	yes	no
Digital interface	FireWire a | USB 2.0	FireWire a	FireWire a FireWire b on request
Optical connection	C-Mount (0.5×/0.63× TV pref.)		F-Mount
IR cut-off filter	Hoya CM500 S [IR cut-off at 650 nm] | Optional: clear glass		
Trigger In / Out	yes	yes	yes
Voltage supply	FireWire | USB powered	FireWire powered	FireWire powered
Power consumption	approx. 5 W | 2.5 W[1)]	approx. 8 W	approx. 8 W
Dimensions sensor board	72 x 62.3 mm | 51 x 51 mm[1)]	78 x 72 mm	60 x 44 x 30 mm
Dimensions interface board	85 x 70 mm | 55 x 46 mm[1)]	85 x 70 mm	108 x 60 x 50 mm
Cable lenght [sensor - interface board]	127 mm | 77 mm[1)]	127 mm	120 mm
Ambient conditions	Temperature: +5 °C ... +55 °C / Humidity: 5 % ... 80 %, not condensing		
Stock conditions	Temperature: -20 °C ... +70 °C		
Weight	approx. 300 g | 220 g[1)]	approx. 450 g	approx. 400 g
Software	Software Development Kit (SDK) [PC for all cameras / Mac & Linux support only for Firewire-cameras]		
Drivers	available drivers are listed at www.jenoptik.com/progres-drivers		
Hardware requirements	recommended hardware requirements are mentioned at www.jenoptik.com/progres-system-requirements		

[1)] Specification only for USB

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