

HIGH SPEED GLOBAL SHUTTER SCIENTIFIC CMOS CAMERA



VISIBLE
400 - 1000 nm



High speed interface



Very low noise



Optimized size/speed/pitch



SDK compatible with μ Manager,
LabVIEW, MatLab, Python...

AVAILABLE IN 3 VERSIONS:
0.5 MP, 1.7 MP OR 7.1 MP

GiGE
VISION



APPLICATIONS

ASTRONOMY:

Adaptive Optics
Solar astronomy

LGS WAVEFRONT SENSING:

Space Debris Tracking
AO assisted Satellite tracking
Space situational awareness

RESEARCH:

Particle velocimetry
Rayleigh thermometry

LIFE SCIENCES:

Fluorescence microscopy
Super resolution microscopy
Cell motility studies
Ion imaging / Physiology

CoaXPRESS INTERFACE

MAIN FEATURES

Data interface : CoaXPRESS 2.0 (CXP-12)
GenICam compatible

SENSOR SPECIFICATIONS	C-BLUE One 0.5 MP	C-BLUE One 1.7 MP	C-BLUE One 7.1 MP
Back illuminated stacked sensor			
Sensor size	816 x 624 pixels	1608 x 1104 pixels	3216 x 2208 pixels
Pixel pitch	9 μm	9 μm	4.5 μm
Sensor format	1/1.7" Monochrome CMOS	1.1" Monochrome CMOS	1.1" Monochrome CMOS
Sensor diagonal	9.2 mm	17.6 mm	17.6 mm
Shutter architecture	Global shutter	Global shutter	Global shutter
Peak quantum efficiency	> 70 %	> 70 %	> 70 %

CAMERA PERFORMANCES (TYPICAL VALUES)			
Image Full well capacity (Low gain, 0 dB)	94 ke ⁻	94 ke ⁻	23 ke ⁻
Readout Noise (in 12 bits, High gain, 24 dB, at 50 μs)	2.35 e ⁻ typ.	2.33 e ⁻ typ.	1.38 e ⁻ typ.
Dark Current at 10°C sensor temperature	1.39 e ⁻ /p/s	0.96 e ⁻ /p/s	0.24 e ⁻ /p/s

CAMERA SPECIFICATIONS				
Analog gain		0 to 24 dB	0 to 24 dB	0 to 24 dB
Quantization A/D		8, 12 bits	8, 12 bits	8, 12 bits
Quantization with HDR (High Dynamic Range)		14 bits	14 bits	14 bits
Maximum speed in full frame	8 bits	1594 fps	662 fps	207 fps
	12 bits	941 fps	481 fps	134 fps
	14 bits (HDR)	509 fps	256 fps	68 fps
Maximum speed in 2x2 binning full frame	8 bits	n/a	n/a	418 fps
	12 bits	n/a	n/a	261 fps
	14 bits (HDR)	n/a	n/a	134 fps
Minimum integration time	8 bits	5.80 μs	6.15 μs	7.07 μs
	12 bits	6.42 μs	6.64 μs	8.22 μs
	14 bits (HDR)	6.42 μs	6.64 μs	8.22 μs

COOLING

Stabilization with ΔT° of 25°C between case and sensor (typ. 0°C for 25°C environment)
Optional liquid cooling plate
Operating temperature: -10°C to 50°C

ADDITIONAL FEATURES

Optical interface: C-Mount / CS-Mount
Synchronization: <ul style="list-style-type: none"> • Internal • External
Power requirement (typical): < 15W
Software: <ul style="list-style-type: none"> • Graphical User Interface: First Light Vision • Software Development Kit: [C, C++, C#, Python, MatLab] / LabVIEW / μManager / Halcon

FRAME RATE TABLE IN COAXPRESS INTERFACE

		Quantization								
		C-BLUE One 0.5MP			C-BLUE One 1.7MP			C-BLUE One 7.1MP		
		Mono 8	Mono 12	Mono 14	Mono 8	Mono 12	Mono 14	Mono 8	Mono 12	Mono 14
Lines	16	7 366	5 150	4 377	3 997	3 457	3 043	3 545	2 864	2 416
	32	6 725	4 608	3 648	3 721	3 169	2 623	3 171	2 494	1 933
	64	5 729	3 806	2 736	3 270	2 716	2 056	2 620	1 983	1 381
	128	4 416	2 824	1 824	2 632	2 113	1 435	1 944	1 406	878
	256	3 033	1 862	1 094	1 893	1 462	895	1 282	889	508
	512	1 863	1 108	608	1 212	905	510	762	512	276
	624	1 594	941	509	1 047	776	429	648	432	230
	1104	-	-	-	662	481	256	393	258	134
	2208	-	-	-	-	-	-	207	134	68

Cropping granularity: 16 lines & 8 columns
(The number of columns does not affect acquisition speed)

GigE VISION INTERFACE



MAIN FEATURES

Data interface : High speed SFP+ 10 Gigabit interface with Ethernet or Fiber
GigE Vision
GenICam compatible

SENSOR SPECIFICATIONS	C-BLUE One 0.5 MP	C-BLUE One 1.7 MP	C-BLUE One 7.1 MP
Back illuminated stacked sensor			
Sensor size	816 x 624 pixels	1608 x 1104 pixels	3216 x 2208 pixels
Pixel pitch	9 µm	9 µm	4.5 µm
Sensor format	1/1.7" Monochrome CMOS	1.1" Monochrome CMOS	1.1" Monochrome CMOS
Sensor diagonal	9.2 mm	17.6 mm	17.6 mm
Shutter architecture	Global shutter	Global shutter	Global shutter
Peak quantum efficiency	> 70 %	> 70 %	> 70 %

CAMERA PERFORMANCES (TYPICAL VALUES)			
Image Full well capacity (Low gain, 0 dB)	94 ke ⁻	94 ke ⁻	23 ke ⁻
Readout Noise (in 12 bits, High gain, 24 dB, at 50µs)	2.35 e ⁻ typ.	2.33 e ⁻ typ.	1.38 e ⁻ typ.
Dark Current at 10°C sensor temperature	1.39 e ⁻ /p/s	0.96 e ⁻ /p/s	0.24 e ⁻ /p/s

CAMERA SPECIFICATIONS			
Analog gain	0 to 24 dB		
Quantization A/D	8, 12 bits		
Quantization with HDR (High Dynamic Range)	14 bits		
Maximum speed in full frame	8 bits	1594 fps	
	12 bits 12 bits packed	941 fps	343 fps 458 fps
	14 bits (HDR)	509 fps	256 fps 68 fps
Maximum speed in 2x2 binning full frame	8 bits	n/a	
	12 bits 12 bits packed	n/a	n/a n/a
	14 bits (HDR)	n/a	n/a To be measured
Minimum integration time	8 bits	5.80 µs	
	12 bits 12 bits packed	6.42 µs 6.42 µs	7.30 µs 6.72 µs
	14 bits (HDR)	6.42 µs	6.64 µs 8.22 µs

COOLING
Stabilization with ΔT° of 25°C between case and sensor (typ. 0°C for 25°C environment)
Optional liquid cooling plate
Operating temperature: -10°C to 50°C

ADDITIONAL FEATURES
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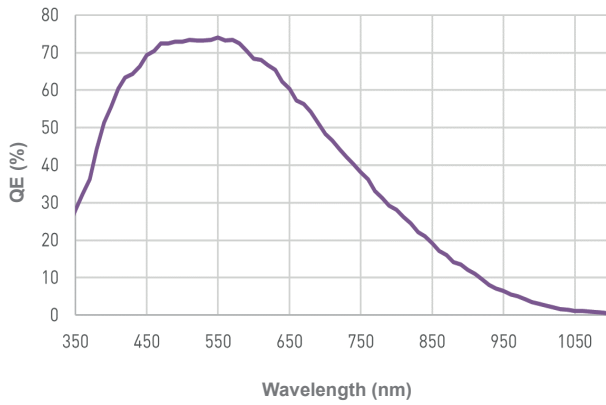
FRAME RATE TABLE IN GigE VISION INTERFACE

		Quantization											
		C-BLUE One 0.5MP				C-BLUE One 1.7MP				C-BLUE One 7.1MP			
		Mono 8	Mono 12	Mono 12 packed	Mono 14	Mono 8	Mono 12	Mono 12 packed	Mono 14	Mono 8	Mono 12	Mono 12 packed	Mono 14
Lines	16	7 366	5 150	5 150	4 377	3 997	3 457	3 457	3 043	3 545	2 864	2 864	2 416
	64	5 729	3 806	3 806	2 736	3 270	2 716	2 716	2 056	2 620	1 983	1 983	1 381
	256	3 033	1 862	1 862	1 094	1 893	1 462	1 462	895	1 282	720	889	508
	624	1 594	941	941	509	1 047	607	776	429	576	300	400	230
	1104	-	-	-	-	662	343	458	256	333	171	227	134
	2208	-	-	-	-	-	-	-	-	169	85	114	68

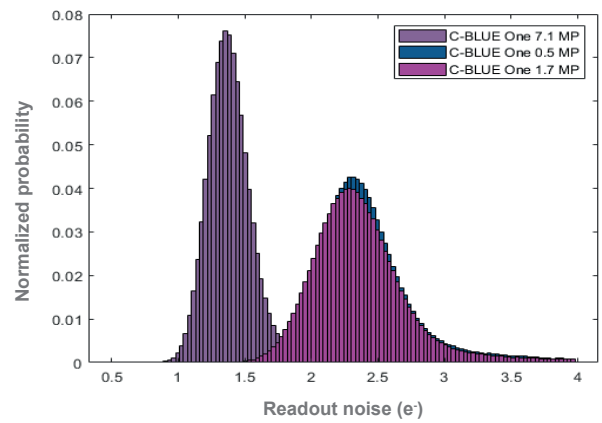
Cropping granularity: 16 lines & 8 columns
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OTHER FEATURES

QUANTUM EFFICIENCY



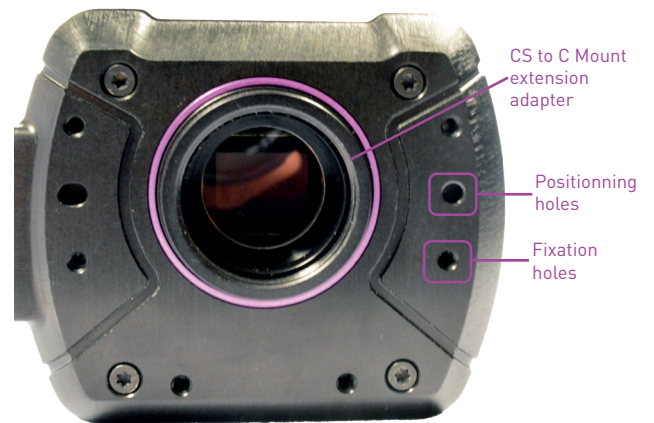
READOUT NOISE DISTRIBUTIONS



BACK VIEW



FRONT VIEW



Size and weight : H64.1 x W76.2 x L154.3 mm, 1.1 kg
15W max

OPTIONAL COOLING PLATE SIDE VIEW



Cooling plate size (excl. connectors) : H20 x W60 x L153.3 mm

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