



Scientific Instruments

Advanced Scientific Imaging Technology

ELECTRA

CCD Camera

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Revision 1.1 dated August 2, 2004

ELECTRA CCD Camera

Preliminary Datasheet

Rev. 1.1 August 2004

Electra

The DTA Electra is the new, very versatile DTA CCD camera, able to perform high sensitivity and fast image downloading at a low cost.

These are the attractive specifications:

- USB connection to the PC.
- Powered by a 13.8 V (for battery operation)
- Back- and front-illuminated sensors (by Kodak and e2v technologies).
- Full-Frame and, sooner available, Interline architecture.
- Fast 16 bit A/D Converter at variable gain.
- Slow 16 bit A/D Converter for high dynamic range.
- Deep cooling with big double stage Peltier (> 50 °C DT)
- Large fan, with programmable rotational running (optimised with your application)
- Advanced user port for automation and camera synchronization
- Compact size.
- Reduced weight and dimensions.

Among the main application fields: Biology, Astronomy, Plasma Physics, Semiconductor Physics.



Warning: we can't sell this camera for any X-Ray application's field due to an exclusivity agreement we have undertaken with one of our customers.

Electra

Electra is thought as a modular camera: you can fit your system to your requirements adding the 230/115 V Power Supply, the electromechanical shutter and the lens adapter (all the available types are reported on the “Options” table, page 7).

Here below the version with the shutter (on the left) and the shutter with the lens adapter (on the right).



SPECIFICATIONS

MODEL	CCD	ARRAY FORMAT (HxV)	PIXEL (HxV) μm	SIZE (HxV) mm	FWC ke-	DARK CURRENT e-/pixel-s @ -5°C	QE @ 450, 550, 650 nm	FILL FACTOR %
EL-260E	KAF-0261E	512x512	20x20	10.2x10.2	500	12.5	35, 55, 58	100
EL -400LE	KAF-0401LE	768x512	9x9	6.9x4.6	100	0.5	20, 35, 42	70
EL -400E EL -400ME	KAF-0402E KAF-0402ME	768x512	9x9	6.9x4.6	100	0.5	35, 55, 68 55, 67, 82	100
EL-1000E	KAF-1001E	1024x1024	24x24	24.5x24.5	500	17.2	40, 70, 63	100
EL- 1402E EL- 1402ME	KAF-1402E KAF-1402ME	1320x1035	6.8x6.8	8.98x7.04	45	0.5	40, 55, 65 58, 77, 80	100
EL -1600E EL -1600LE	KAF-1602E KAF-1602LE	1536x1024	9x9	13.8x9.2	100 50	0.6 0.5	40, 50, 60 20, 35, 42	100 70
EL- 3011F EL- 3011B	CCD30-11F CCD30-11B	1024x256	26x26	26.6x6.7	500	11 43	21, 43, 45 82, 81, 76	100

*“E” stands for Enhanced (ITO) version, “ME” is the version with Micro lenses.
The values concerning Quantum Efficiency, Full Well Capacity and Dark Current have to be considered as typical.*

SPECIFICATIONS

MODEL	CCD	ARRAY FORMAT (HxV)	PIXEL (HxV) μm	SIZE (HxV) mm	FWC ke ⁻	DARK CURRENT e ⁻ /pixel-s @ -5°C	QE @ 450, 550, 650 nm	FILL FACTOR %
EL- 3200E EL- 3200ME	KAF-3200E KAF-3200ME	2184x1472	6.8x6.8	14.85x10.26	55	0.5	40, 52, 65 60, 75, 82	100
EL-4200E	KAF-4202E	2032x2044	9x9	18.29x18.40	100	0.5	12, 35, 35	100
EL- 4210F EL- 4210B	CCD42-10F CCD42-10B	2048x512	13.5x13.5	27.6x18.48	100	4.4 11	8, 32, 45 84, 82, 76	100
EL- 4710F EL- 4710B	CCD47-10F CCD47-10B	1024x1024	13x13	13.3x13.3	100	4.4 11	8, 24, 40 82, 81, 76	100
EL -5000CE	KAF-5101CE	2614x1966	6.8x6.8	17.8x13.4	40	0.5	31, 34, 31	68
EL-6000E EL-6000LE	KAF-6303E KAF-6302LE	3072x2048 3072x2034	9x9	27.65x18.48	100 50	0.5	40, 55, 64 9, 15, 13	100 70
EL-7700F EL-7700B	CCD7700F CCD7700B	512x512	24x24	12.3x12.3	300	8.5 29.5	8, 31, 45 82, 81, 76	100

"C" stands for coloured sensor, "E" for Enhanced (ITO) version, "ME" for Micro lenses, "F" means front-illuminated, "B" back-illuminated. The values concerning Quantum Efficiency, Full Well Capacity and Dark Current have to be considered as typical.

Interline cameras sooner available:

SPECIFICATIONS

MODEL	CCD	ARRAY FORMAT (HxV)	PIXEL (HxV) μm	SIZE (HxV) mm	FWC ke ⁻	DARK CURRENT e ⁻ /pixel-s @ -5°C	QE @ 450, 550, 650 nm	FILL FACTOR %
EL- 340	KAI-0340SM	640x480	7.4x7.4	5.87x4.71	40	0.5	45, 42, 35	60
EL-1003	KAI-1003M	1024x1024	12.8x12.8	13.1x13.1	170	0.5	32, 30, 24	60
EL-1010	KAI-1010M	1008x1018	9x9	9.1x9.2	> 50	0.5	20, 25, 22	60
EL- 1020	EL- 1020M	1000x1000	7.4x7.4	7.4x7.4	40	0.5	36, 33, 25	60
EL- 2001	KAI-2001M	1600x1200	7.4x7.4	13.38x9.52	40	0.5	35, 42, 45	60
EL- 2020	KAI-2020	1600x1200	7.4x7.4	13.38x9.52	40	0.5	56, 46, 30	60
EL-2093	KAI-2093M	1920x1080	7.4x7.4	14.2x8.0	40	0.5	36, 33, 26	60
EL-4010	KAI-4010M	2048x2048	7.4x7.4	16.67x16.05	40	0.5	50, 46, 30	60
EL-4020	KAI-4020M	2048x2048	7.4x7.4	16.67x16.05	40	0.5	35, 42, 45	60

"M" stands for Micro lenses

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Electra

Readout speed	500 kpixel/s	Dimensions	160X130X100 mm
A/D Converter	Settable: 12, 14, 16 bit	Max total noise ³ (Typ)	5/40 e ⁻
Partial CCD reading	Programmable	Binning	from 1x1 to 8x8 or arbitrary
Interface	USB 1.1/2.0	Mount	42x0.75 or C
Spectral response	350-1000 nm	Auxiliary port	Yes
Cooling	Double stage Peltier > 50 °C ΔT	Shutter ³	Electromechanical/Electronic
Exposure Time ¹	From 0.001 to 9999 s	CCD temperature control	± 0.1 °C
Settable gains	64	BIAS Control	9 bit
Optical window ²	BK7 with 2 AR	Weight	1400 g

¹ The minimum exposure time depends on the sensor's type (full-frame or interline sensor). For full-frame sensors, it depends also on the shutter's type and if you use our Power Supply.

² With double coating. On request, it can mount coating and/or double coating windows with non parallel faces and windows in Beryllium with an X-ray scintillator screen.

³ According to sensors.

Backfocus

Shutter	CCD Camera Model	Backfocus (mm)	Minimum Exposure Time (ms)
No shutter	All models	6	
EV-25	EL-260E, EL-400E/LE/ME, EL-1400E/ME, EL-1600E/LE, EL-3200E/ME, EL-4710F/B, EL-7700F/B	29	5
EV-35	EL-4200E, EL-5000CE, EL-6000E/LE, EL-3011F/B, EL-4210F/B	29	20
EV-45	EL-1000E	31.5	50

The standard system includes:

- assembled unit in light alloy with threaded 42x0.75 input;
- 1.8 m USB link cable;
- software for image grab and processing under Windows 95/98/Me/2000/XP;
- case, manual with test report and 24 months of warranty.

OPTIONS

EV25	Electromechanical shutter, dia. 25 mm	TTC	Adapter from 42x0.75 to C mount
EV35	Electromechanical shutter, dia. 35 mm	XTE	¼ " mounting post
EV45	Electromechanical shutter, dia. 45 mm	PSW	230/115 V Power Supply
NIK-C	Adapter for Nikon lens	BPA	Battery Power Supply adapter
MIN-C	Adapter for 42x1 mm lens		