

High Performance Cooled CCD Camera System ALTA U4000 & U4000C



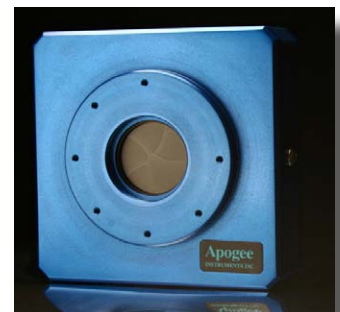
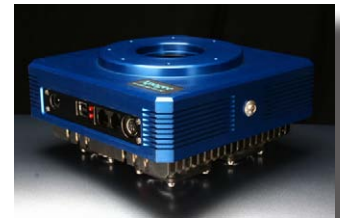
The Alta U4000 and U4000C have a 4-megapixel interline transfer sensor with high quantum efficiency and twice the dynamic range of similar Sony sensors. Low noise and small pixels are ideal for OEM applications, biological sciences, and fundus imaging. The U4000 uses the monochrome Kodak KAI-4022M CCD; the color version uses the KAI-4022CM (see page 2 for quantum efficiency curve.)

Imaging Area of CCD



- Bioarray readers
- Fluorescence microscopy
- Fundus imaging

- 2048 x 2048 array, 7.4 x 7.4 micron pixels
- 5 MHz 12-bit digitization and 1 MHz 16-bit digitization
- 32 Mbyte camera memory
- USB 2.0 interface: no plug in cards or external controllers
- Programmable, intelligent cooling to 50-55°C below ambient
- Binning up to 8 Horizontal x 2048 Vertical
- Subarray readout and fast sequencing modes
- Programmable fan speed for low / zero vibration
- Two serial port outputs for control of peripheral devices
- General purpose programmable I/O port
- External triggering and strobe controls
- ActiveX drivers included with every system
- Field upgradeable firmware
- Fused silica windows
- Runs from single 12V supply with input voltage monitor
- Compact enclosure
- Programmable status indicators



CCD SPECIFICATIONS

CCD	Kodak KAI-4022M or CM
Array Size (pixels)	2048 x 2048
Pixel Size	7.4 x 7.4 microns
Imaging Area	15.2 x 15.2 mm (230 mm ²)
Imaging Diagonal	21.4 mm
Video Imager Size	1.34"
Linear Full Well (typical)	40K electrons
Dynamic Range	77 dB
QE at 400 nm	45% (U4000)
Peak QE (500 nm)	55% (U4000)
Anti-blooming (nominal)	300X

For complete CCD specifications, including cosmetic grading, see data sheet from manufacturer.



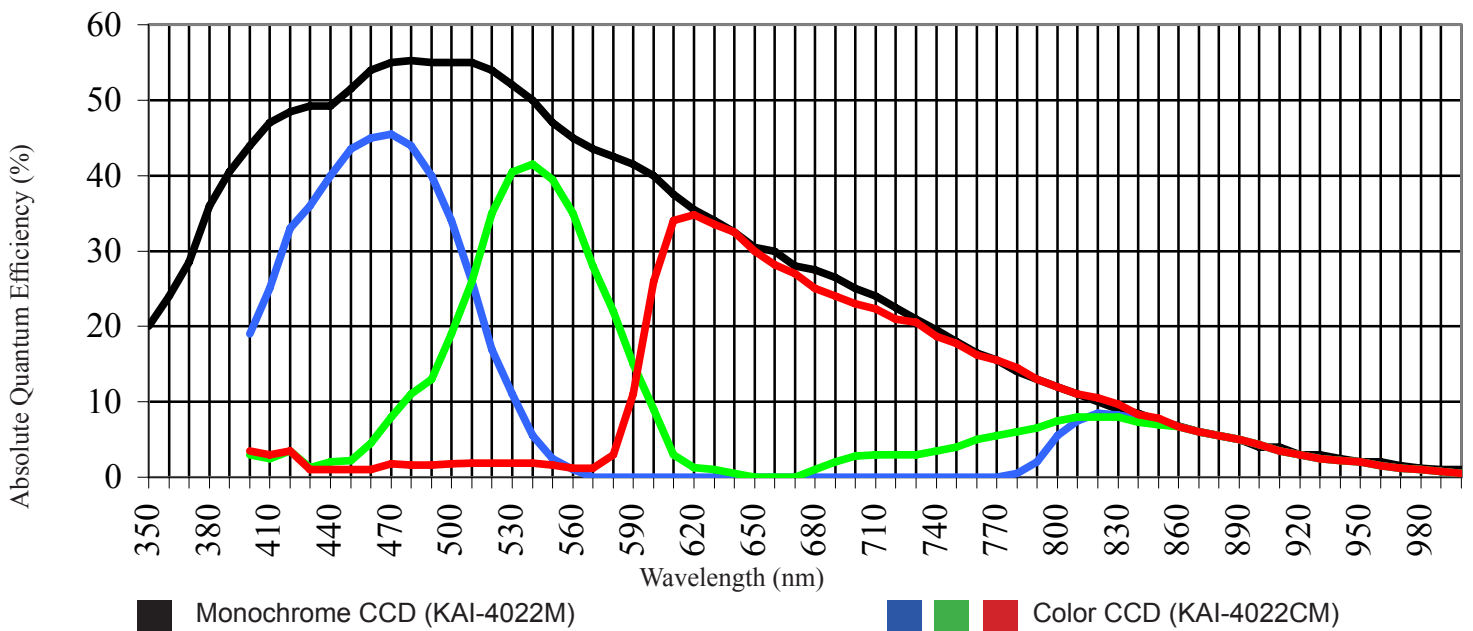
151 N. Sunrise Ste 902
Roseville CA 95661 USA
tel 916 218 7450
fax 916 218 7451
www.ccd.com



ALTA U4000 & U4000C Camera System Performance

PC Interface	USB 2.0
Max. Cable Length	5 meters between hubs; 5 hubs maximum (max. total of 30m)
Digital Resolution	16 bits at 1 MHz and 12 bits at 5 MHz
System Noise (typical)	7 e ⁻ RMS at 1 MHz and 2 counts at 5 MHz
Pixel Binning	1x1 to 8 x 2048 on-chip
Exposure Time	1 millisecond to 183 minutes (2.56 microsecond increments)
Image Sequencing	1 to 65535 image sequences under software control
Frame Sizes	Full frame, subframe, focus mode
Cooling (typical)	Thermoelectric cooler with forced air. Maximum cooling 50-55°C below ambient temperature
Dark Current (typical)	0.01 e ⁻ /pixel/sec (-30°C)
Temperature Stability	± 0.1°C
Camera Head Size	D02 without shutter. Low profile: D06. Option: D02 with Melles Griot 43mm shutter. Aluminum, hard blue anodized. 6" x 6" x 2.5" (15 x 15 x 6.35 cm) Weight: 3.1 lb. (1.4 kg)
Mounting	3.5" bolt circle. 2" 24 tpi thread. Optional Nikon F-mount or Canon FD or EF/EOS mount.
Back Focal Distance	Standard: 1.025" (2.60cm). Low profile: 0.460" (1.17 cm). [optical]
Operating Environment	-22° to 27°C. Relative humidity: 10 to 90% non-condensing.
Cable Length	Standard: 15 ft (4.5m)
Power	40W maximum power with shutter open and cooling maximum. AC/DC "brick" supply with int'l AC input plug (100-240V, 50-60 Hz). Alternate 12V input from user's source.
Shutter	Standard: Electronic shutter (no electromechanical shutter). Low profile: no shutter.
Remote Triggering	LVTTL input allows exposure to start within 25 microseconds of rising edge of trigger

CCD SENSITIVITY



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