High Performance Cooled CCD Camera System
ALTA U2000 & U2000C

The Alta U2000 and U2000C have a 2-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 U2000 uses the monochrome Kodak KAI-2020M CCD; the color version uses the KAI-2020MC (see page 2 for quantum efficiency curve.)

Imaging Area of CCD

- 1600 x 1200 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°C below ambient
- Binning up to 8 Horizontal x 1200 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

- Bioarray readers
- Fluorescence microscopy
- Fundus imaging

CCD SPECIFICATIONS

CCD	Kodak KAI-2020M (mono) or MC (color)
Array Size (pixels)	1600 x 1200
Pixel Size	7.4 x 7.4 microns
Imaging Area	11.8 x 8.9 mm (105.1 mm2)
Imaging Diagonal	14.8 mm
Video Imager Size	0.93”
Linear Full Well	40K electrons (typical)
Dynamic Range	74 dB
QE at 400 nm	47% (U2000)
Peak QE (480 nm)	56% (U2000)
Anti-blooming (nominal)	300X

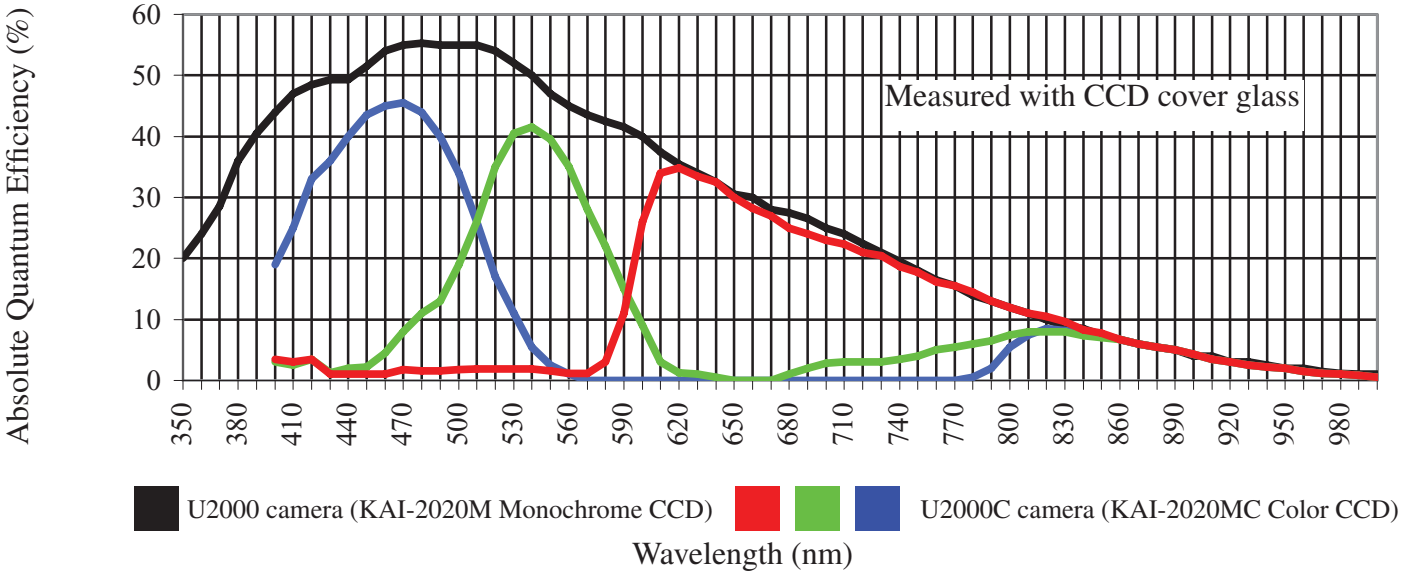
For complete CCD specifications, including cosmetic grading, see data sheet from manufacturer.

Apogee
INSTRUMENTS INC
1020 Sundown Way, Ste 150
Roseville CA 95661 USA
tel 916-218-7450
fax 916-218-7451
http://www.ccd.com

ALTA U2000 & U2000C
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)	8 e^- RMS at 1 MHz and 15 e^- RMS at 5 MHz
Pixel Binning	1x1 to 8 x 1200 on-chip
Exposure Time	30 milliseconds 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°C below ambient temperature
Dark Current (typical)	0.1 e^-/pixel/sec (-30°C)
Temperature Stability	± 0.1°C
Camera Head Size	D3. Low profile: D5. 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. C-mount (1" 32 tpi thread). Optional Nikon F-mount or Canon FD mount.
Back Focal Distance	Standard: 0.679" (17.25 mm). Low profile: 0.449" (11.40 mm). [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: no shutter (optional). 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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