



**PRELIMINARY**

# Alta U2000C

## High Performance Cooled CCD Camera System



The Alta U2000 uses a 2-megapixel color interline sensor with high quantum efficiency and twice the dynamic range of similar Sony sensors. Low noise and small pixels are ideal for OEMs, biological sciences, microscopy, and fundus imaging.

- 1600 x 1200 array, 7.4 x 7.4 micron pixels
- 10 MHz 12-bit and 1 MHz 16-bit digitization
- 32Mbyte camera memory
- Fast image sequences separated by as little as 1 microsecond
- USB 2.0 interface: no plug in cards or external controllers
- Programmable, intelligent cooling to 50C below ambient
- Binning up to 10 Horizontal x 1200 Vertical
- Subarray readout and fast sequencing modes
- Precision time delayed integration readout
- 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 and MaxIm DL/CCD software included with every system
- Field upgradeable firmware
- Self-test capability with integrated light source and data simulators
- Fused silica windows
- Runs from single 12V supply with input voltage monitor
- Compact enclosure
- Programmable status indicators

Imaging area  
(actual size)



- Fluorescence microscopy
  - Bioarray readers
  - Optical testing
- Laser beam analysis
  - Astronomy

### CCD Specifications

<b>CCD</b>	Kodak KAI-2001CM
<b>Array Size (pixels)</b>	1600 x 1200
<b>Pixel size</b>	7.4 x 7.4 microns
<b>Imaging area</b>	11.84 x 8.88 mm (105.1 mm <sup>2</sup> )
<b>Imaging diagonal</b>	14.80 mm
<b>Linear Full Well (typ.)</b>	40,000 e <sup>-</sup>
<b>Dynamic Range</b>	65 dB (at 20 MHz)

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

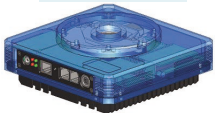
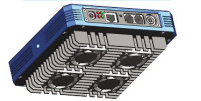
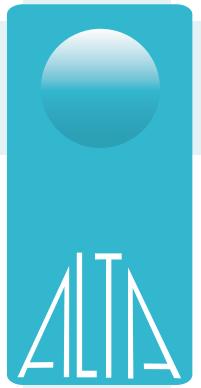


**Apogee**  
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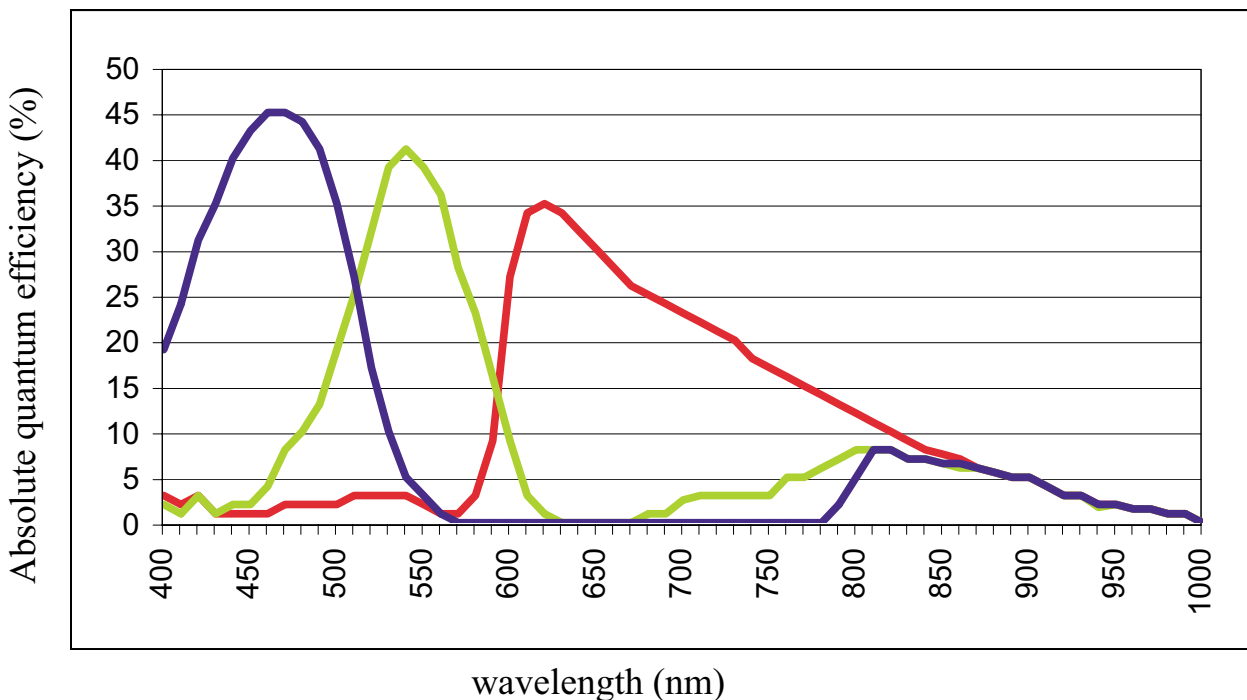
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## Camera System Performance



<b>PC Interface</b>	USB 2.0
<b>Digital resolution</b>	12 bits at 10 MHz and 16 bits at 1 MHz
<b>System Noise (typ.)</b>	2 LSB at 10 MHz (programmable gain); 7 e <sup>-</sup> RMS at 1 MHz
<b>Pixel Binning</b>	1x1 to 10 x 1200 on-chip
<b>Exposure Time</b>	50 microseconds to 183 minutes (2.56 microsecond increments)
<b>Image Sequencing</b>	1-65535 image sequences under software control
<b>Frame Sizes</b>	Full frame, subframe, focus mode
<b>Cooling</b>	Thermoelectric cooler with forced air. Maximum cooling 50° C below ambient temperature
<b>Temperature Stability</b>	±0.1° C
<b>Dark Current (typ.)</b>	0.1 e <sup>-</sup> /pixel/sec (-30° C)
<b>Camera Head</b>	Aluminum, blue and black anodized. 6" x 6" x 2.1" (15 x 15 x 5.3 cm) Weight: 2.7 lb. (1.2 kg)
<b>Mounting</b>	3.5" bolt circle. C-mount (1" 32 tpi thread). Optional Nikon or Canon lens mount.
<b>Back focal distance</b>	0.69 " (1.75 cm)
<b>Operating Environment</b>	Temperature: -22° to 27° C. Relative humidity: 10 to 90% noncondensing
<b>Cable length</b>	Standard: 5m.
<b>Power</b>	40W maximum power with cooling maximum. Power supplied by AC/DC "brick" supply with international AC input plug. Alternate 12V input for user's source.
<b>Shutter</b>	Electronic
<b>Remote Triggering</b>	LVTTL input to camera allows exposure start within 25 microseconds of rising edge of trigger

### CCD Sensitivity



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