



ASCENT

Apogee Instruments Inc.

PRELIMINARY

High Performance Cooled CCD Camera System ASCENT A16000

The Ascent A16000 has a 16-megapixel interline transfer sensor with high quantum efficiency. The camera is available with a monochrome sensor (M version) or color sensor with a Bayer mosaic. Low noise and small pixels are ideal for OEM applications, biological sciences, and fundus imaging. This camera is compatible with Apogee's FW50 filter wheel or Optec's IFW.

- Astronomy
- Astrophotography
- Fluorescence microscopy
- Luminance testing

- 4872 x 3248 array, 7.4 x 7.4 micron pixels
- 32 Mbyte SDRAM image buffer
- Programmable dual channel 16-bit digitization speeds up to 10 MHz per channel
- USB 2.0 interface: no plug in cards or external controllers
- Programmable, intelligent cooling to 30°C below ambient
- Binning up to 4 Horizontal x 3248 Vertical
- Subarray readout and fast sequencing modes
- Programmable offset and gain
- External triggering and strobe controls
- ActiveX drivers included with every system
- Field upgradeable firmware
- BK7 windows (optional fused silica)
- Optional external electromechanical shutter
- Optional Nikon F-mount or 2" slip fit adapter
- Single 6V supply with input voltage protection system
- Compact enclosure: 23 oz. (0.65 kg)
- Programmable status indicators

Imaging Area of CCD



CCD SPECIFICATIONS

CCD	Kodak KAI-16000M (mono) or MC (color)
Array Size (pixels)	4872 x 3248
Pixel Size	7.4 x 7.4 microns
Imaging Area	36 x 24 mm (866.5 mm ²)
Imaging Diagonal	43.3 mm
Video Imager Size	2.7"
Linear Full Well	30K electrons (typical)
Dynamic Range	60 dB
QE at 400 nm	Mono: 38%
Peak QE (460 nm)	Mono: 47%
Anti-blooming	300X (nominal)

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

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Actual Size of Camera



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 Roseville CA 95661 USA
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<http://www.ccd.com>



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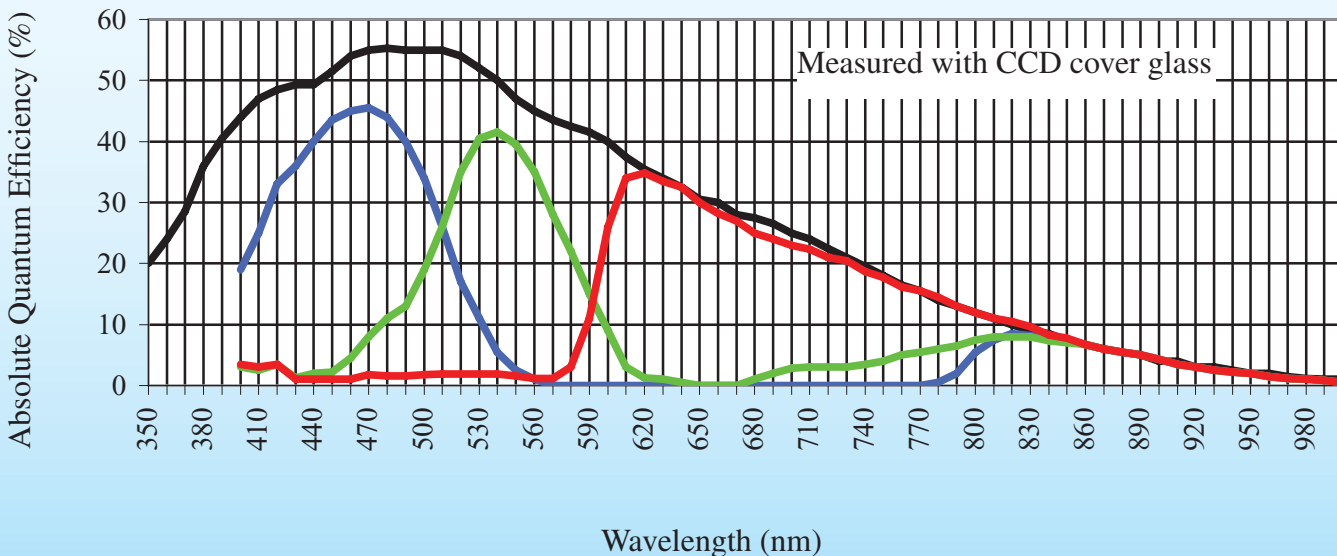
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ASCENT A16000 Camera System Performance



PC Interface	USB 2.0
USB2 Cable	Std.: 5m. Extensions: 5 meters between hubs; 5 hubs maximum (max. total of 30m) Wide variety of extenders available, including fiber optics to 10 km.
Digital Resolution	16 bits at up to 10 MHz per each of two channels (programmable speeds)
System Noise (typical)	15 e ⁻ RMS at 1.5 MHz
Pixel Binning	1 x 1 to 4 x 3248 on-chip
Exposure Time	Minimum 100 microseconds (no vane shutter); max.183 minutes
Image Sequencing	1 to 65535 image sequences under software control
Frame Sizes	Full frame, subframe, focus mode
Cooling (typical)	Thermoelectric cooler. Maximum forced air cooling 30°C below ambient temperature.
Dark Current (typical)	Photodiode: 1 e ⁻ /pixel/sec. Storage diode: 10 e ⁻ /pixel/sec. (-10°C)
Temperature Stability	± 0.1°C
Camera Head Size	Aluminum. 3.2" x 5.7" x 1.3" (8.1 x 14.5 x 3.3 cm) Weight: 1.4 lb. (0.65 kg)
Mounting	1.5" x 2.5" bolt pattern, 6-32 thread. Optional Nikon F-mount or 2" slip-fit adapters.
Back Focal Distance	Standard: 0.32" (0.81 cm). [optical]
Operating Environment	-30°C to 35°C. Relative humidity: 10 to 90% non-condensing.
Op.Sys.Support	Windows, Linux, Mac OSX
Power	20W maximum power with internal shutter open and cooling maximum. AC/DC "brick" supply with int'l AC input plug (100-240V, 50-60 Hz). Alternate 6V input from user's source.
Shutter	Standard: Electronic. Optional external electromechanical shutter.
Remote Triggering	LVTTTL input allows exposure to start within 25 microseconds of rising edge of trigger

CCD SENSITIVITY



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