



# High Performance Cooled CCD Camera System ASCENT<sup>®</sup> A16000

The Ascent<sup>®</sup> A16000 has a 16-megapixel interline transfer sensor with high quantum efficiency. The camera is available with a monochrome sensor (A16000) or color (A16000C) 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.

Imaging Area  
of CCD

- Fundus Imaging
- Chemiluminescence
- Fluorescence
- Astrophotography

- 4872 x 3248 array, 7.4 x 7.4 micron pixels
- 32 Mbyte SDRAM image buffer
- Programmable 16-bit digitization speeds up to 16 Mpixels/sec
- Single or dual channel readout
- Video focus mode
- USB 2.0 interface: no plug in cards or external controllers
- Programmable, intelligent cooling to 30°C below ambient
- Binning up to 8 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
- Fused silica window
- Optional Nikon F-mount or 2" slip fit adapter
- Single 6V supply
- Compact enclosure: 20 oz. (0.57 kg)



## CCD SPECIFICATIONS (from CCD manufacturer)

CCD	Kodak KAI-16000
Array Size (pixels)	4872 x 3248
Pixel Size	7.4 x 7.4 microns
Imaging Area	36 x 24 mm (866 mm <sup>2</sup> )
Imaging Diagonal	43.3 mm
Video Imager Size	2.7"
Linear Full Well (typical)	40K electrons
Dynamic Range	74 dB
QE at 400 nm (mono)	47%
Peak QE (480 nm)	56%
Anti-blooming (nominal)	300X

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



AFW50-7S Filter wheel with adapter plate

Part Numbers	
A16000 grade 1 (mono)	A1D-16000M1-FS
A16000 grade 2 (mono)	A1D-16000M2-FS
A16000C grade 1 (color)	A1D-16000C1-FS
A16000C grade 2 (color)	A1D-16000C2-FS



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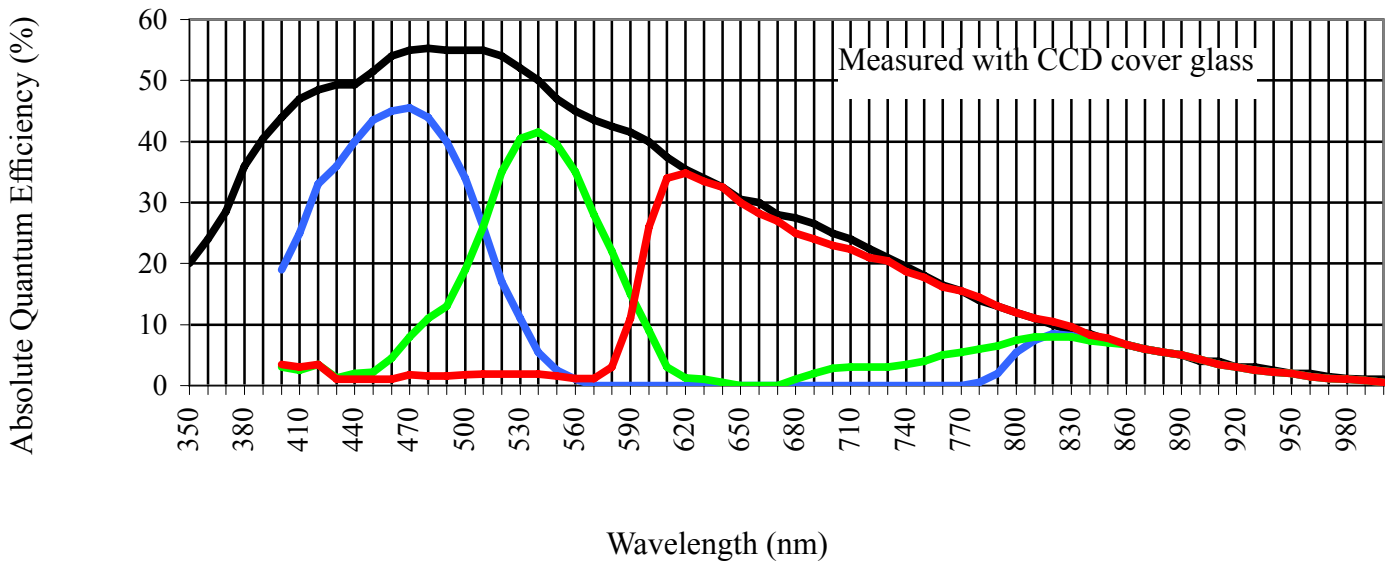


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## Camera System Performance

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: 3.3 and 8 Mpixels/sec (single channel); 16 Mpixels/sec (dual 8 MHz) (software selectable)
System Noise (typical)	6 e <sup>-</sup> RMS at 3.3 MHz; 7 e <sup>-</sup> RMS at 8/16 MHz
Pixel Binning	1 x 1 to 8 x 3248 on-chip
Exposure Time	Minimum 100 microseconds; 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)	0.15 eps (-5°C)
Temperature Stability	± 0.1°C
Camera Head Size	Aluminum. 3.2" x 4.7" x 1.3" (8.1 x 11.9 x 3.3 cm) Weight: 1.25 lb. (0.57 kg)
Mounting	1.5" x 2.5" bolt pattern, 6-32 thread. Optional C-mount (1" 32 tpi thread), 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.
Remote Triggering	LVTTL input allows exposure to start within 25 microseconds of rising edge of trigger

### CCD SENSITIVITY



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