ASCENT

Apogee Instruments Inc.

PRELIMINARY

High Performance Cooled CCD Camera System
ASCENT A1007

The Ascent A1007 has a spectroscopic format back-illuminated CCD with very high quantum efficiency, especially in the ultraviolet.

- Spectroscopy

- 1024 x 122 array, 12 x 12 micron pixels
- 32 Mbyte SDRAM image buffer
- Programmable 16-bit digitization speeds up to 250 kpixels/sec
- USB 2.0 interface: no plug in cards or external controllers
- Programmable, intelligent cooling to 40°C below ambient
- Binning up to 4 Horizontal x CCD height
- 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)
- Precision time delayed integration (TDI) and kinetics mode readout
- Optional internal vane or external electromechanical shutter
- Optional C-mount, 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

Actual Size of Camera

CCD SPECIFICATIONS

CCD	Hamamatsu S10141-1007
Array Size (pixels)	1024 x 122
Pixel Size	12 x 12 microns
Imaging Area	12.3 x 1.46 mm (18 mm2)
Imaging Diagonal	12.4 mm
Video Imager Size	0.77”
Linear Full Well (typical)	75K electrons
Dynamic Range	>81 dB
QE at 230 nm	68%
QE at 400 nm	58%
Peak QE (600-650 nm)	89%
Anti-blooming (nominal)	none

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

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Specifications subject to change without notice.

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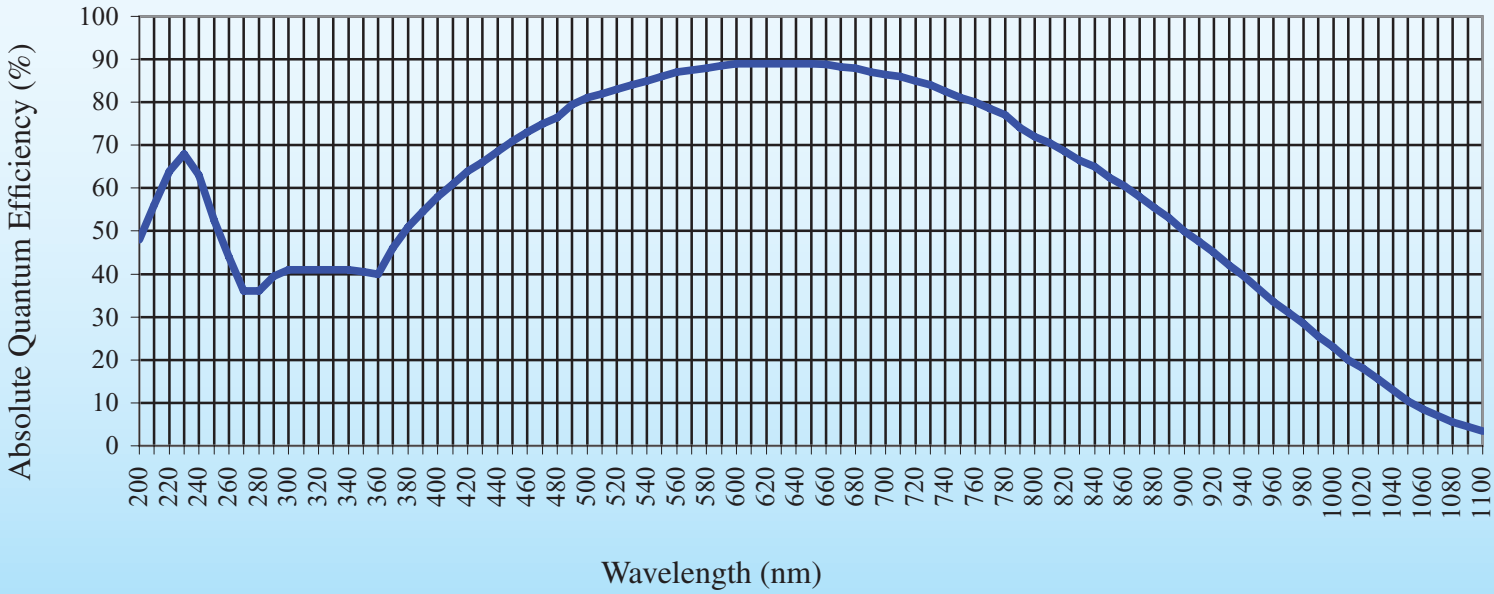
Camera System Performance

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 at up to 250 kpixels/sec
System Noise (typical)	15 e^- RMS at 250 kHz
Pixel Binning	1 x 1 to 4 x 122 on-chip
Exposure Time	Minimum 100 milliseconds using 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 40°C below ambient temperature.
Dark Current (typical)	2 e^-/pixel/sec. (-20°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 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.
Shutter	Optional internal vane or external electromechanical shutter.
Remote Triggering	LVTTL input allows exposure to start within 25 microseconds of rising edge of trigger

CCD SENSITIVITY



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