High Performance Cooled CCD Camera System
ALTA U42

The Alta U42 has a back-illuminated full frame 4-megapixel CCD with exceptionally high quantum efficiency. The standard midband coating has the highest peak in the visible; the optional broadband coating has somewhat higher QE in the near UV but lower QE across the visitble. (See the U42-UV for the non-MPP UV-enhanced version.)

Imaging Area of CCD

- 2048 x 2048 array, 13.5 x 13.5 micron pixels
- 2 MHz 12-bit and 700 kHz 16-bit digitization
- 32Mbyte camera memory
- USB 2.0 interface: no plug in cards or external controllers
- Programmable, intelligent cooling to 45°C below ambient
- Binning up to 8 Horizontal x 2048 Vertical
- Subarray readout and fast sequencing modes
- Precision time delayed integration (TDI) and kinetics mode 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 included with every system
- Field upgradeable firmware
- Fused silica windows
- Runs from single 12V supply with input voltage monitor
- Compact enclosure
- Programmable status indicators

- Astronomy
- Radiology
- Optical testing
- Non-destructive testing

CCD SPECIFICATIONS

CCD	E2V CCD42-40
Array Size (pixels)	2048 x 2048
Pixel Size	13.5 x 13.5 microns
Imaging Area	27.6 x 27.6 mm (764 mm2)
Imaging Diagonal	39.1 mm
Video Imager Size	2.44”
Linear Full Well (typical)	100K electrons
Dynamic Range	82 dB
QE at 400 nm	52% (MB); 75% (BB)
Peak QE (550 nm)	>90%
Anti-blooming	none

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

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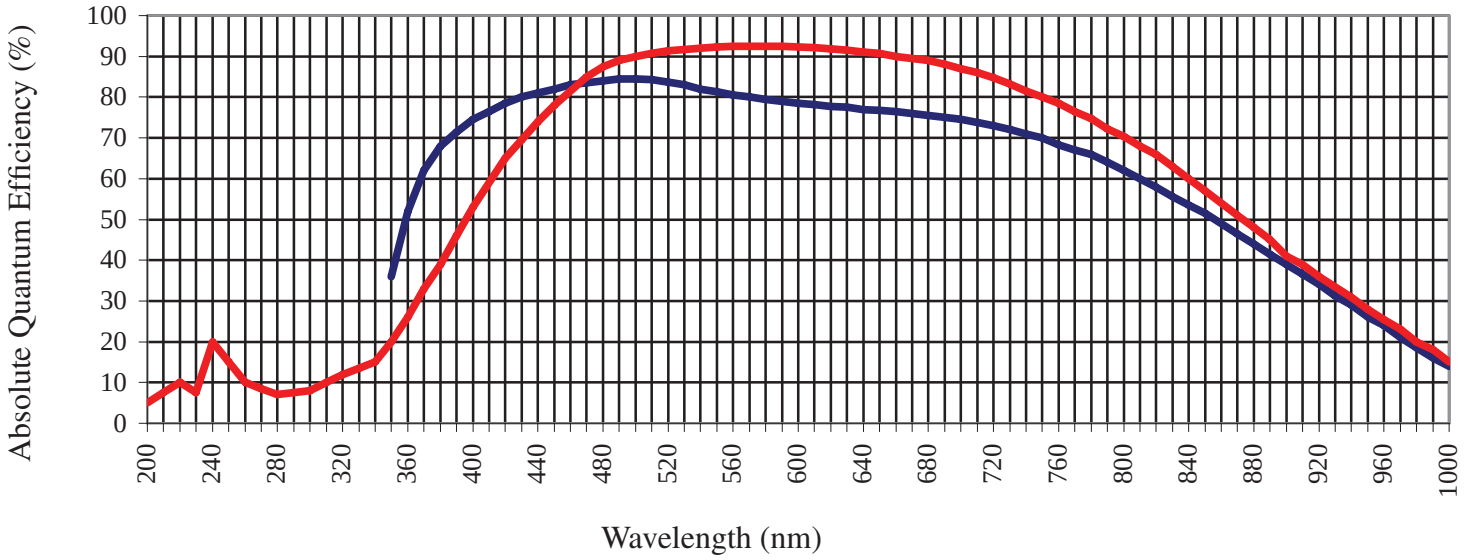
ALTA U42
Camera System Performance

PC Interface	USB 2.0
Max. Cable Length	5 meters between hubs; 5 hubs maximum (max. total of 30m)
Digital Resolution	16 bits at 700 kHz and 12 bits at 2 MHz
System Noise (typical)	10 e^- RMS at 700 kHz and 2 counts at 2 MHz
Pixel Binning	1x1 to 8 x 2048 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 45°C below ambient temperature
Dark Current (typical)	1 e^-/pixel/sec (-25°C)
Temperature Stability	± 0.1°C
Camera Head Size	D2. Low profile: D6. 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. 2" 24 tpi thread. Optional Nikon F-mount or Canon FD mount.
Back Focal Distance	Standard: 1.020" (25.91 mm). Low profile: 0.455" (11.56 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: Melles Griot 43mm. 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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