A. Appendix A - Specifications

This appendix lists the specifications for the ST-237 CCD camera.

CCD	Texas Instruments TC237
Active Area	4.7 x 3.6 mm (.186" x .140")
Field of View	8.0 x 6.1 arc minutes at 80 inch focal length (8" F/10) 2/3° x 1/2° at 16 inch focal length
Pixels/Pixel Size	640 x 480 @ 7.4 microns square
Read Noise	15e- RMS
Dark Current	Typically 1e-/p/s at -5°C
Full Well Capacity	CCD : 30,000 e- A/D : 17,000 e- with Photons/ADU set at 4.1
Cooling	Single Stage Thermoelectric, Selectable Setpoint
A/D Converter	12 Bit, 22 KHz Pixel Rate
Power Requirements	12 VDC at 1.2 Amps
Telescope Port	4 Open Drain Outputs
Communications Port	Interfaces to PC Parallel Port
Electronic Shutter	.01 to 3600 seconds
Mechanical Shutter	Rotary Shutter Wheel
Color Filter Wheel	Available as Option
Weight of Optical Head (less cable)	Approximately 1 pound
Size of Optical Head	3.25" diameter by 3" deep
F# throughput of Filter Wheel	f/2 - f/30

A.1 DC Power Jack

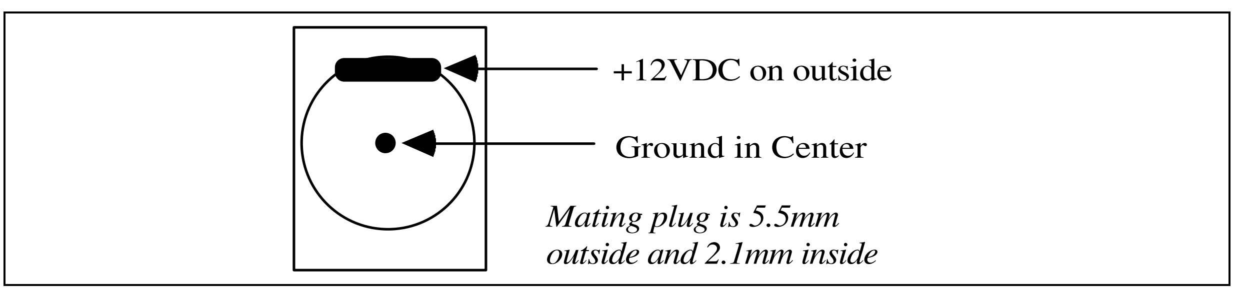
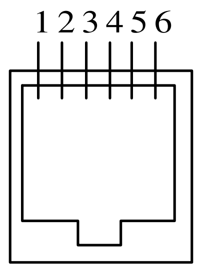


Figure A.2 - DC Power Jack

A.1 Communications Port

Pins 2 - 5	Data 0 through Data 3 to Camera
Pins 6,7	Address 0, 1 to Camera
Pin 9	Strobe to Camera
Pins 15,13,12,10,11	Data 0 through Data 4 from Camera
Pins 18 - 25	Data Ground
Shell	Chassis Ground

A.1 Telescope Port



1 = +RA (Right)
2 = +DEC (Up)
3 = -DEC (Down)
4 = -RA (Left)
5 = Ground
6 = No Connect

Figure A.3 - Telescope Port

Note that the four outputs are active-low, open-drain outputs without internal pull-ups and are capable of sinking 250 mA DC to ground when activated. They have a breakdown voltage of 45V, a typical on resistance of 1.3 and an avalanche energy of 75 mJ for driving inductive loads.