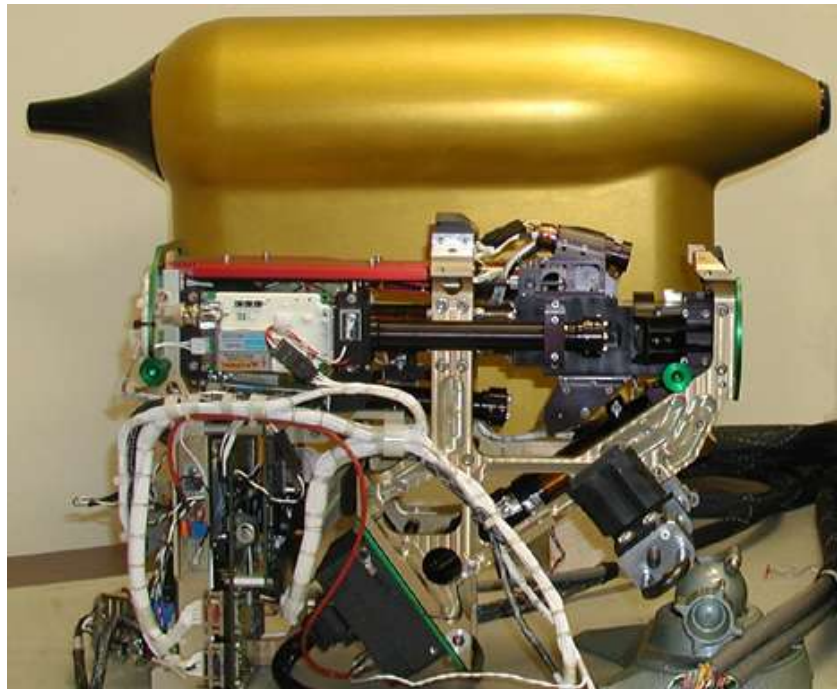


## Cloud Particle Imager (CPI)

### CPI V2.0 and V2.5 Specifications 9/21/2011



- The CPI records high-resolution (2.3 micron pixel size) digital images of particles that pass through the sample volume at speeds up to 200 m/s. CCD camera flashes up to 74 frames per second (fps) for version 2.0 and nearly 400 fps for version 2.5. Each frame can potentially image more than 25 particles per frame.
- Real time image processing crops particle images from the full frame, eliminating blank space and compressing data by >1000:1
- CPI is designed for unmanned use, with AI parameters to optimize performance without supervision.
- 1024 x 1024 image area
- 2.3  $\mu\text{m}$ / pixel size resolution
- 8 bit grey scale (256 levels)
- Dual beam PDS triggers laser when particle is in focus
- Max. PDS sample volume is  $(.23)^2 \times 10,000 \times .707 = 372 \text{ cc/sec}$  at  $V = 100 \text{ m/sec}$
- Sensor Head operates up to 60,000 feet altitude
- Heaters are temperature controlled and user can change set point in flight

## CPI V2.0 and V2.5 Power Requirements

Input	Voltage	Frequency	Power	Usage
Computer (in cabin)	115 VAC - 240 VAC	50-60 Hz	400 W	Data System Power
Probe AC1	115 VAC	50-60 Hz or 400 Hz	950 W	Internal Heaters
Probe AC2	115 VAC	50-60 Hz or 400 Hz	770 W	Pylon Heaters
Probe Electronics	28 VDC	DC	80 W	Sensor Electronics

### CPI Probe Electrical Interface Requirements:

**Power:**

5 conductors (2-AC and 2-return 1-frame)  
2 conductors (+28v, Gnd)

**Signaling:**

12 conductors (5 twisted pair & 2 gnd for 422 and diff. camera signaling)

**Camera Data:**

V2.0 : 2 fiber optic cables or 26 conductors (camera connection)

V2.5 : 4 fiber optic cables or 52 conductors (camera connection)

### Weights & Size:

**Probe:** 36 lbs; 26" x 14.5" x 6.5"  
(16.3 kg; 65 cm x 36 cm x 16 cm)

**Data system:** 50 lbs; 19" x 22" x 7"  
(23 kg; 48 cm x 56 cm x 18 cm)

# CPI Mechanical Specifications:

