

UAV-CDP

Unmanned Aerial Vehicle Cloud Droplet Probe



Outcome

The Unmanned Aerial Vehicle Cloud Droplet Probe (UAV-CDP), is a compact, lightweight and low power optical spectrometer which allows researchers to study the microphysics of individual hydrometeors in clouds while mounted on UAV platforms. These aircraft are become increasing popular, as they enable researchers access to difficult to reach areas and cost significantly less than fixed wing aircraft. The UAV-CDP uses state of the art technology to size particles over a wide range of conditions, providing researchers with data to help advance weather forecast models and to better understand climate change.

Overview

The UAV Cloud Droplet Probe (UAV-CDP) is designed to measure cloud droplet size distributions from $2\mu\text{m}$ to $50\mu\text{m}$. The UAV-CDP and an appropriate data system can also calculate other parameters including particle concentrations, Effective Diameter (ED), Median Volume Diameter (MVD), and Liquid Water Content (LWC).

The state-of-the-art electronics and optics that offer flexibility to the UAV-CDP user in a variety of applications. The miniaturized and streamlined housing allows mounting flexibility that can be quickly adapted to many commercial unmanned aerial vehicle designs.

Applications

- Unmanned aircraft icing studies
- Atmospheric and cloud research
- Hurricane and storm research
- Agriculture and industrial spray characterization
- Weather modification

Advantages

The UAV specific CDP design version offers low weight, high impact strength, exceptionally low power consumption, a remote enable feature, and a solar reflective coating to allow for extended performance in warmer environments as well as a conductive surface to prevent damage to the instrument from electrostatic discharge while in use. The UAV-CDP allows users to gather data across a wide range of platforms, including aircraft, towers, UAVs, and spray rigs.



Product Specifications

UAV-CDP Specifications:

- Technique: Light-scattering probe with 30 bins
- Particle size range: 2 μ m – 50 μ m
- Typical sample area: 0.24 mm²
- Air speed range: 10 - 250 m/sec
- Sampling frequency: Selectable, 0.04 sec to 20 sec¹
- Refractive index: non-absorbing, 1.332
- Light collection angles: 4°-12°
- Laser: 658 nm, up to 50 mW

Environmental Operating Conditions:

- Temperature: 0°C to 40°C
- Altitude: 0-15,000 meters
- Relative humidity: 0-100%
- IP54 rated

Data System and Power Requirements:

- Data system interface: RS-232 or RS-422 serial interface
- Software: Particle Analysis Data Software (PADS), included
- Data Rate: Selectable, 0.04-20 sec
- Power requirements:
 - System: 18VDC to 28VDC
 - System enable line: 3VDC to 15VDC

Weight:

- Probe: 850g
- Probe dimensions:
 - 23.5cmL x 15.2 cmW x 21.6cm H

Available Accessories

- Data system
- Science Care Program
- 1 and 2 Year Extended Warranty
- Lifecycle Care Program

The Droplet Guarantee

Droplet understands how the versatility and performance of an instrument can impact your research, career, and the world we live in. As you strive to provide a better understanding of our planet, we guarantee to be here to support you through your journey.

Whether you are establishing your first laboratory or are a tenured researcher; we have a team of scientists, engineers, and technical staff available to assist with application questions, technical support, data analysis, and training.



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