

IMAP

AirPhoton Inverse Multi-Angle Polarimeter

The IMAP measures polarized scattered light from a laser at 8 discrete angles ranging from 5 to 170 degrees. This is done via a pair of optical fibers positioned at each of these angles. The fibers transmit the scattered light from the sample chamber to a camera module that collects the light for processing and analysis



Capabilities

- Complete size distribution measurement every 5min.
- Particle mass
- Full phase function
- The real refractive index of the particles
- Sphericity factor

Suggested use

We suggest IMAP for in-depth understanding of particulate properties. Given its unique combination of aerodynamic and optical sizing can be used to connect satellite and ground based measurements for air quality research.

Specifications

- Instrument size: 86 cm x 38 cm x 32cm
- Inlet height: 110 cm
- Flow rate: 2 to 16 LPM (Alaric AE102-2)
- Data: Saved to internal hard drive. Real-time access via Ethernet, RS2323 and RS485.
- Calibration: Built-in clean reference cycle.
- Gas calibration: CO2 and clean air every 3-6 months depending on operating conditions.
- Power: Mains AC power. 120 or 240-Volt systems (50 and 60Hz). 600 W maximum load. A 5-Amp circuit breaker is included that also acts as the on-off switch.
- Time resolution: 1 min averaging (recommended); 15 sec averaging (minimum).
- Angular ranges measured: 8 View angles centered at 5° (unpol.), 10.6°, 31.8°, 52.9°, 95.3°, 116.5°, 137.6°, 158.8°.
- Instantaneous field of view < 7.5°.
- Wavelengths: (3) 450 nm, 520 nm and 638 nm.
- Polarization orientations: 2 Parallel and perpendicular to the scattering plane.
- Size measurements: Independent optical and aerodynamic size measurements.
 - Aerodynamic: 4 Size bins selected up to PM10 (possible every 5min)
 - Optical: Continuous function from 0.05 to 15um (possible every 1 min)