Aurora™ 3000

3 Wavelength Integrating Nephelometer

Aerosolparticles in the atmosphere directly influence the Earth's radiative balance by absorbing and scattering the solarradiation, and indirectly, by changing the clouds microphysical properties.

The amount of sunlight reaching the Earth's surface, rather than being scattered back to space, is an important parameter to accurately model the influence of aerosol scattering on the Earth's radiative balance.

The Aurora 3000 (formerly known as the Ecotech Aurora 3000) provides this measurement by reporting both the integrated and backscattered coefficient.

Using a LEDlight source, the Aurora 3000 simultaneously measures at 450 nm (blue), 525 nm (green) and 635 nm (red) to enable wide and in-depth analysis of the interaction between light and aerosols.

The Acoem Aurora 3000 includes backscatter measurements that allows both standard integrating measurements of 9 - 170° and also the back scatter 90 - 170°.

APPLICATIONS

- Studies on backscatter & forward scatter
- Scattering enhancement factor (e.g. In combination with the Acoem Aerosol Conditioning System ACS1000)
- Scattering Ångstrøm exponent calculations
- Determination of single scattering albedo
- Easyintegration with the Acoem ACS1000.

FEATURES

- High powered LEDlight source increases measurement accuracy
- Single light source & detector used for all wavelengths
- Heat generated by the LEDlight source is a fraction of that generated by a flash lamp, minimising changes in sample RH
- Easyautomatic calibration, ensuresrepeatability of measurement
- Automatic optical referencecalibration
- Single light source & detector used for all wavelengths
- Facilitates a wide measuring range (0 to 20,000 Mm^{-1}).

BENEFITS

- Simplified automatic calibration using internal valves, ideal for remote locations
- Fully automatic zero check or adjust, automatic span check or automatic zero and span check available in intervals of 1, 3, 6, 12, 24 hrs or weekly
- Fully integrated package including internal sample pump, sample heater, internal calibration valves, zero air pump and data logger
- Internal sample heater with temperature or RHcontrol, which can be enabled by the user to eliminate the effects of humidity (RH: < 30 to < 90 %)
- 12 VDC operation (60 W max, 14 W nominal)
- Holds up to 33 days of 5 minute data averages, 6 days of 1 minute data, or every measurement cycle (3 seconds)
- Our LEDlight source is guaranteed not to fail within 3 years, & often exceeds 5 years life time
- An LEDlight source uses the same light path for each wavelength ensuring consistency of measurement, eliminating the need for PMTs & band pass filters maximising light intensity
- Remote control through serial interface
- Suitable for high altitude applications.

SPECIFICATIONS

Measured parameters:	Light scattering coefficient (σ_{sp}) at (450, 525 & 635 nm) Backscatter coefficient ($b\sigma_{sp}$) at (450, 525 & 635 nm)
Ranges:	0.0 to 20,000 Mm^{-1}
Lower detectable limit:	< 0.3 Mm^{-1} full and back scatter (60 second averaged data) (0.1 Mm^{-1} optional)
Secondary measurements:	Sample air temperature, enclosure temperature, sample relative humidity and sample pressure. (sample flow for MFC option)
Intensity function:	Full scatter 9 - 170°C Backscatter 90 - 170°C, parameterised by Müller et al, 2010
Flow rate:	≈5 SLPM with defaut blower (1 to 17 l/min for MFC option)
Operating temperature:	- 20 to 45 °C
Operating RH:	10 to 95 %
Calibration:	Span gas available for CO_2, SF_6, FM-200, R-12, R-22, R-134 or a user defined gas
Optics:	Reference light source measurement
Light source:	Stable LED light source (US patent 7,671,988)
Wavelength:	450 nm (blue), 525 nm (green), 635 nm (red)
Operating voltage:	12 VDC (incl 110 - 240 VAC 50/60 Hz power converter) (14 W nominal, 45 W with heater active)
Dimensions:	170 x 700 x 215 mm
Weight:	11.2 kg
Altitude:	2000 m (15,000 m with 12 V operation).

COMMUNICATIONS & DATA STORAGE

Outputs:	4 analog outputs (2 voltage & 2 current) & 2 x RS232 serial ports
Filtering:	Kalman (digital adaptive filter), moving average (30 seconds) or no filter
Stored parameters:	Date & Time, σ_{sp} (450, 525 & 635 nm), air temperature, enclosure temperature, RH, pressure instrument status, raw measure counts or measure ratios, sample flow for MFC option
Capacity:	Maximum of 33 days of 5 minute averages, or 6 days of 1 minute averaged data, 2000 lines of data if all measurement cycles (3 seconds)
Data Collection:	Airodis™ demo analysis software provided free.

LOWER COST OF OWNERSHIP

- Fully automatic zero & span calibrations
- Low power internal 12 V sample heater
- Long lasting low power LED light source
- No bandpass filters to be replaced.

OPTIONS

- MFC & automated ball valve
- Roof flange kit & rain cap with insect screen
- Gas calibration kit & wall mount bracket
- Exhaust tubing kit
- Aerosol dryer
- ACS1000 interfacing.

acoem

Official Distributor

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