

Aurora 4000

Polar nephelometer

The Aurora 4000 is the only commercially available polar nephelometer in the world. The polar nephelometer goes beyond simple integrated nephelometers and allows much more detailed measurements.

Simultaneously using integrated nephelometry (to measure standard particle scatter) and polar nephelometry (to break down the scattering into four sectors 40°, 70°, 99° and 128°), the Aurora 4000 allows a greater insight into light scattering.

This unique feature allows the analysis of parameters involved in climate studies such as the particle phase function used in global radiation balance measurements.

Furthermore it is relevant for general air quality studies such as pollution sources comparison, providing real-time indicators of changes in particle composition.



Increased accuracy

- Automatic optical reference calibration
- Enhanced high powered LED light-source increases measurement accuracy
- Facilitates a wide measuring range ($\sigma_{sp} < 0.03 \text{ Mm}^{-1}$ to $> 2000 \text{ Mm}^{-1}$)

Ease of use

- Compact and portable
- Span calibration with FM-200
- Internal sample heater enabled the elimination of humidity effects (RH: $< 40\%$ to $< 90\%$)
- Automatic zero check or adjust, automatic span check or automatic zero & span check available in intervals of 1, 3, 6, 12, 24 hrs or weekly.
- Data downloader and firmware upgrade software supplied on CD

Low cost of ownership

- Internal 12V heater eliminates the need for expensive external inlet heater
- Long lasting LED light source

**ECOTECH**WORLD CLASS
environmental
MONITORING

Specifications

Parameter:	Light scattering coefficient (σ_{sp}) at (450, 525 or 635nm)
Ranges:	<0.3 to >2 000 Mm ⁻¹
Lower Detectable limit:	<0.3 Mm ⁻¹ (60 second averaged data)
Secondary Measurements:	Sample air temperature, chassis temperature, relative humidity and sample pressure
Intensity Function:	10-170°
Polar Sectors:	40°, 70°, 99°, 128° ($\pm 15^\circ$ for all)
Flow rate:	≈5 l/min
Operating Temperature:	0 to 45°C
Operating RH:	10 to 95%
Optics:	Reference brightness measurement
Light source:	Stable LED light source
Wavelength:	525nm polar 450nm & 635nm (integrating)
Operating Voltage:	12 VDC (including 110-240 VAC 50/60 Hz power converter) (60 watts with heater active)
Dimensions:	170mm x 700mm x 215mm (L x W x H)
Weight:	11.4kg

Communications/Data logging

Outputs:	4 analogue outputs (2 voltage & 2 current) and RS 232 multidrop serial port
Filtering:	Kalman (digital adaptive filter), Moving average (30 seconds) or no filter
Stored Parameters:	Date & Time, σ_{sp} (635, 525 or 450), Air temp, Enclosure temp, RH, Pressure, Status
Capacity:	Maximum of 45 days of 5 minute averages, or 10 days of 1 minute averaged data

Options

- Additional sample tube
- Roof flange kit
- Rain cap with insect screen
- Gas Calibration kit
- Wall mount bracket

Applications

- Studies on Backscatter and forward scatter
- Global radiation balance studies
- Particulate monitoring studies including extra data on particulate characterization

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