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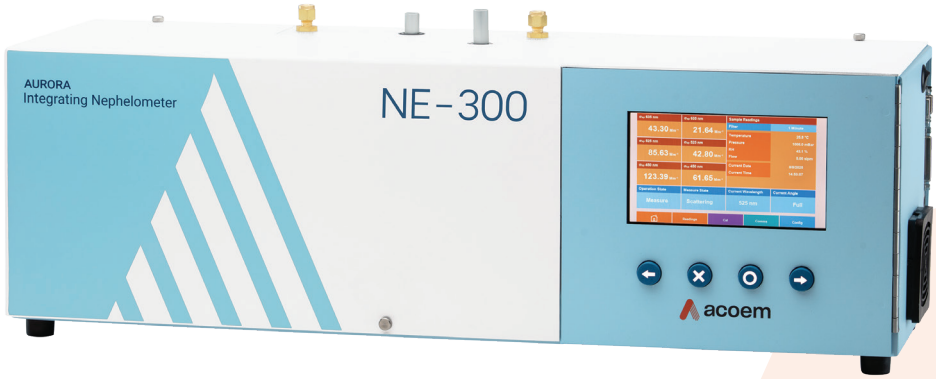

Aurora™ NE-300

3 Wavelength Integrating Nephelometer with backscatter functionality

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

The Acoem Aurora NE-300 contributes to this measurement by reporting both the integrated full and backscatter coefficients at 3 wavelengths.

Using a LED light source, the Aurora NE-300 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 Aurora NE-300 includes backscatter measurements that allows both standard integrating measurements of 7 - 173° and also the backscatter 90 - 173°.

Benefits

- New, more powerful microprocessor for improved signal processing, operation speed, reliability & future expandability
- Real-time remote monitoring with on-board data logging & practically unlimited data collection
- Enhanced connectivity with network TCP/IP port, micro-SD card, USB port & RS232
- 7″ full-colour touchscreen display with an intuitive menu system
- Quick access to instrument cell & filters for easier maintenance and service when required
- Seamless integration of internal ball valves ensures sample isolation during calibration
- Internal sample pump & flow sensor for accurate flow control with the option for volumetric flow control
- Improved calibration process with span & zero gas following the same path into the cell as the ambient sample
- Simplified automatic calibration using internal valves, ideal for remote locations
- Fully programmable span check, zero check, span adjust, zero adjust or full calibration
- Internal sample pump & flow sensor for accurate flow control with the option for volumetric flow control
- Internal sample heater with temperature or RH control, you can enable to eliminate the effects of humidity
- 24 VDC operation (120 W max with supplied mains power supply)
- Fully integrated data logging of all parameters with storage to either USB or SD card for many years
- Increased light source intensity & reduced truncation angle, lower instrument noise & decreased wall scattering from internal reflections compared to previous generation Aurora 3000
- LED light source is guaranteed not to fail within 3 years, & often exceeds 5 years lifetime
- LED light source uses the same light path for each wavelength ensures consistency of measurement, eliminating the need for multiple PMTs & band pass filters maximising light intensity
- Storage & automatic backup of configuration & calibration files
- Suitable for high-altitude applications.

Features

- High-powered LED light source increases measurement accuracy
- Single light source & detector used for all wavelengths
- Heat generated by the light source is reduced by using high efficiency LEDs & fans, minimising changes in sample RH
- Easy automatic calibration ensures repeatability of measurement
- Automatic optical reference calibration
- Facilitates a wide measuring range (0 to 20,000 Mm^{-1}).

Applications

- Backscatter & forward scatter studies
- Scattering enhancement factor (e.g. in combination with the Acoem Aerosol Conditioning System ACS™ 1000)
- Scattering Angstrom exponent calculations
- Determination of single scattering albedo.

Affordable excellence

- Fully automatic zero & span calibrations
- Low power internal 24 V sample heater
- Long-lasting LED light source
- No bandpass filters to be replaced.

Options

- Ambient Temperature & RH sensor for volumetric flow control
- Roof flange, inlet extensions & rain cap with insect screen
- Gas calibration kit & wall mount bracket
- Annual service kit
- Aerosol dryer
- 20 lpm mass flow control option & external pump.

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:	< 0.1 Mm^{-1} full and back scatter (60 second averaged data)
Secondary measurements:	Sample temperature, pressure & relative humidity (RH) (Multiple raw instrument parameters)
Intensity function:	Full scatter: 7 - 173° Backscatter: 90 - 173°
Flow rate:	3 - 9 slpm with internal pump & flow sensor 5 - 17 slpm with external pump & MFC option
Operating temperature:	- 20 to 45 °C
Operating RH:	10 to 95 %
Calibration:	Span gas available for CO_2, SF6, 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:	24 VDC (Incl. 110 - 240 VAC 50 / 60 Hz power supply) (120 W maximum)
Dimensions:	260 x 730 x 240 mm
Weight:	14.2 kg
Altitude:	2000 m (15,000 m with 24 VDC operation).

Communications & data storage

Outputs:	25 pin external I/O (4 analog inputs, 6 analog outputs, 4 digital inputs & outputs)
Interfaces:	2 x RS232, USB, TCP/IP
Data averaging:	1 second to 1 day
Filtering:	Kalman (digital adaptive filter), moving average, rolling average or no filter
Stored parameters:	Date & time, σ_{sp} (450, 525 & 635 nm), sample temperature, pressure & RH, over 300 raw instrument parameters
Capacity:	Minimum 32 GB SD card or USB key (> 10 years with 1 minute averaging)
Data collection:	Complimentary Airodis™ demo analysis software provided.

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