



# Aurora™ NE-100

## Integrating Nephelometer

Easy to use and maintain, the Acoem Aurora NE-100 delivers affordable excellence for aerosol light scattering, visibility and particulate monitoring.

It uses a single wavelength for scattering coefficient visibility measurements at one of three user-specified wavelengths.

By collaborating with globally renowned atmospheric research institutes, Acoem provides the scientific community with the most advanced commercially available nephelometers.

The Aurora NE-100 is equipped with a three wavelength light source. Any one of the following wavelengths can be selected:

- 450 nm (blue) for fine & ultra fine particulates (wood fires, automobiles)
- 525 nm (green) for visibility
- 635 nm (red) for large particulates (e.g. pollen, sea salt). Note: If using the 635 nm wavelength, Acoem recommends adding the wide bandwidth PMT option for minimal noise.

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## Benefits

- New, more powerful microprocessor enhances signal processing, operation speed, reliability & future expandability
- Real-time remote monitoring with on-board data logging provides 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 system
- Quick access to instrument cell & filters for easier maintenance & service when required
- Seamless integration of internal ball valves ensures sample isolation during calibration
- Improved calibration process with span & zero gas following the same path into the cell as the ambient sample
- Internal sample heater with temperature or RH control, which you can enable to eliminate the effects of humidity
- Internal sample pump & flow sensor for accurate volumetric flow control
- Simplified automatic calibration using internal valves, ideal for remote locations
- Fully programmable span check, zero check, span adjust, zero adjust or full calibration
- 24 VDC operation (100 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
- Free Airodis™ demo version supplied on USB or via internet
- Storage & automatic backup of configuration & calibration files
- Increased light source intensity & reduced truncation angle, lower instrument noise & decreased wall scattering from internal reflections compared to previous generation Aurora 1000
- LED light source is guaranteed not to fail within 3 years & often exceeds 5 years lifetime
- Heat generated by the light source is reduced by using high efficiency LEDs & fans, minimising changes in sample RH
- LEDs emit light at a specific wavelength eliminating the need for band pass filters.

## Applications

- Visibility measurements (airports, city pollution, AAQMS)
- Dust / sand storm monitoring & early detection networks
- Bushfire pollution monitoring & early detection networks
- PM<sub>2.5</sub> mass measurement correlation studies.

## Increased accuracy

- Automatic calibration
- Easy maintenance / cleaning of the measurement cell
- Long-lasting LED light source
- Intuitive software & maintenance
- Automatic optical reference calibration
- Facilitates a wide measurement range (0 to 20,000 Mm<sup>-1</sup>).

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## Affordable excellence

- Fully automatic zero & span calibrations
- No bandpass filters to be replaced
- Unique in its simplicity & practicality.

## Options

- Wide bandwidth PMT for 635 nm measurement
- Roof flange, inlet extensions & rain cap with insect screen
- Gas calibration kit
- Wall mount bracket.

## Specifications

<b>Measured parameters:</b>	Light scattering coefficient ( $\sigma_{sp}$ ) at (450 nm, 525 nm or 635 nm)
<b>Ranges:</b>	0.0 to 20,000 $Mm^{-1}$
<b>Lower detectable limit:</b>	< 0.1 $Mm^{-1}$ (Kalman Filtered Sigma)
<b>Secondary measurements:</b>	Sample temperature, pressure & relative humidity (RH) (multiple raw instrument parameters)
<b>Flow rate:</b>	3 – 9 slpm with internal pump & flow sensor
<b>Operating temperature:</b>	– 20 to 45 °C
<b>Operating RH:</b>	10 to 95 %
<b>Calibration:</b>	Span gas available for CO <sub>2</sub> , SF <sub>6</sub> , FM-200, R-12, R-22, R-134 or a user-defined gas
<b>Optics:</b>	Reference light source measurement
<b>Light source:</b>	Stable LED light source (US patent 7,671,988)
<b>Wavelength:</b>	450 nm (blue), 525 nm (green), 635 nm (red)
<b>Operating voltage:</b>	24 VDC (incl 110 – 240 VAC 50 / 60 Hz power supply)
<b>Dimensions:</b>	260 x 730 x 240 mm
<b>Weight:</b>	13.8 kg
<b>Altitude:</b>	2000 m (15,000 m with 24 VDC operation).

## Communications & data storage

<b>Outputs:</b>	25 pin external I/O (4 analog inputs, 6 analog outputs, 4 digital inputs & outputs)
<b>Interfaces:</b>	2 x RS232, USB, TCP/IP
<b>Filtering:</b>	Kalman (digital adaptive filter), moving average, rolling average or no filter
<b>Data average:</b>	1 second to 1 day
<b>Stored parameters:</b>	Date & time, $\sigma_{sp}$ (450, 525 & 635 nm), sample temperature, pressure & RH, over 100 raw instrument parameters
<b>Capacity:</b>	Minimum 32 GB SD card or USB key
<b>Data collection:</b>	Complimentary Airodis™ demo analysis software provided.

