



2 Wavelength Integrating Nephelometer (2-WIN)

Helping scientific researchers, industrial facilities, and government agencies obtain precision air quality data.



The 2-WIN is able to continuously monitor dust, particulate, and visibility both indoors and outdoors, even in extreme conditions. It can also help identify particulate sources. The 2-WIN is ideal where accurate particulate and dust measurement is necessary in research programs, industrial facilities, or government assessments.

APPLICATIONS:

- Ambient dust monitoring
- Air Quality Index / PM estimate
- Smoke monitoring
- Source apportionment
- Measurements of light scattering
- Industrial process measurements
- Ångström exponent calculations
- Solar power plant efficiency



Research Programs:

By measuring total scattering from aerosols, an in-depth analysis of their optical properties and their effect on the global energy balance can be obtained. Particle sizes in the air is a key piece of information in the study of aerosols optical properties. Multi-wavelength Nephelometry enables the measurement of the scattering Ångström exponent which is inversely related to particle size in the sample air.

While the time series of the scattering coefficient represents the measured particle concentration, the corresponding Ångström exponent shows the average (mode) diameter of the measured particle distribution. The Ambilabs® Nephelometer has the ability to deliver this information in real time, adding the possibilities for speciation of different aerosol groups, or particle size fractions.



(Above) On 6/23/15, the Ångström Exponent (green) decreases, revealing the coarse particle influence from a Sahara Dust event in Atlanta, GA. Collocated PM measurements show a corresponding increase in PM10 concentration (yellow). The red scattering coefficient (635 nm) follows mostly the PM2.5 concentration and can be scaled with a user defined factor to get a PM2.5 estimate. The 1 minute Nephelometer data show the exceptional time resolution of the instrument.



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Industrial Facilities:

Processes in the workplace may result in particulate being dispersed into the air in various forms. Monitoring the impacts of these air impurities including dust, particulate, and visibility is an important component of the assessment of risks of health. With the 2-WIN's LED patented light source technology, manufacturers can now facilitate these measurements easily. This technology ensures that large facilities are accurately measuring industrial process emissions.



Wildfires:



The 2-WIN Nephelometer determines particulate concentrations by measuring the total scatter from wildfire-derived aerosols. Particulate matter is the principal pollutant of concern during and after wildfires. The sizes of the particles affect their potential to cause further health effects. Optional sharp-cut cyclones can be used to select the sample flow for PM2.5 size fractions.

Government agencies and tribal communities play a vital role in studying the consequences of wildfires in their communities.



OPTIONAL FEATURES:

- External pump control
- Naphion dryer inlet to avoid losses of volatile particles
- Solar power and battery
- Roof flange and rain cap with insect screens
- Calibration kit and wall mount bracket
- Weatherproof enclosure



- Includes patented lightsource technology;
US Patent #7,671,988 B2
- Easy automatic calibration ensures repeatability of measurement
- Automatic optical reference calibration
- High powered LED light source increases measurement accuracy
- Single light source and detector used for all wavelengths
- Facilitates a wide measuring range (0 to 20,000 Mm⁻¹)
- Compact and portable; approx. 12 kg.
- QA parameters available like "cleaning indicator" (wall count) and "lamp intensity drift" (shutter count)
- Operating voltage: 100-250V AC (50 or 60 Hz) & 11-14V DC
- Internal sample heater with temperature or RH control, which can be enabled by the user to eliminate effects of humidity RH: <30% to <90%
- Fully automatic zero check or adjust, automatic span check or automatic zero and span check available in intervals of 1, 3, 6, 12, 24 hours or weekly
- Fully integrated package including: internal sample pump, sample heater, internal calibration valves, zero air pump, and data logger
- Low power internal 12V sample heater
- Long lasting LED light source
- No consumables