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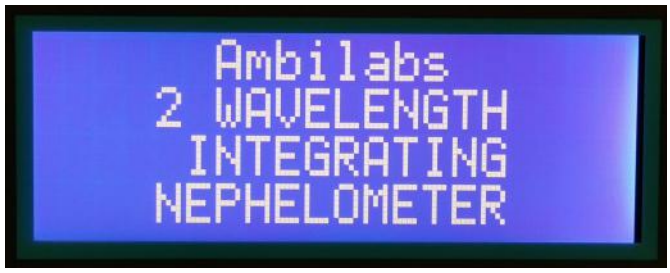
# **2-WIN:** 2 Wavelength Integrating Nephelometer

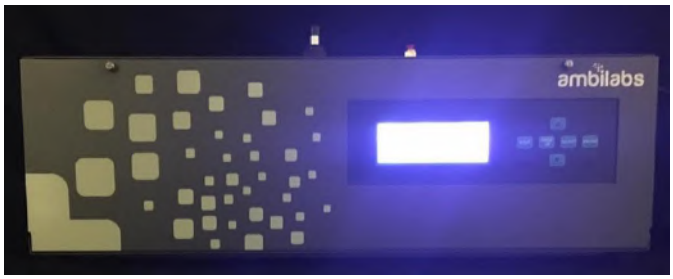
**Helping scientific researchers, industrial facilities, and government agencies obtain precision air quality data**


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



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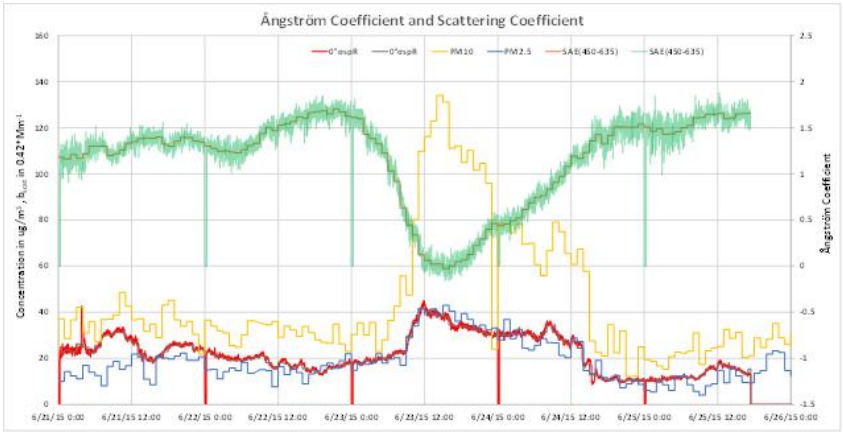
# Research Programs

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.




## Ångström Exponent Usage

(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 $PM_{10}$ concentration (yellow). The red scattering coefficient (635 nm) follows mostly the $PM_{2.5}$ concentration and can be scaled with a user defined factor to get a $PM_{2.5}$ estimate. The 1 minute Nephelometer data show the exceptional time resolution of the instrument .

**BENEFITS:**

- 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
- QA parameters available like “cleaning indicator” (wall count) and “lamp intensity drift” (shutter count)
- 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
- Very low cost of ownership
- No consumables

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# Industrial Facilities

Processes in the workplace may result in particulate being dispersed into the air in various forms. Monitoring these air impurities including dust, particulate, and visibility impacts is an important component of the assessment of risks of health, and with minimal operational maintenance requirements in results in industrial process measurements. 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 $PM_1$, $PM_{2.5}$, or $PM_{10}$ size fractions. Government agencies and tribal communities play a vital role in studying the consequences of wildfires in their communities.

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Ambilabs is a leading provider of air, environmental, and process monitoring solutions. We provide expertise, engineering, software, instrumentation and turn-key solutions directly to researchers, government agencies, and industrial facilities obtaining valid, and precise information concerning air quality.

We provide the highest quality systems for monitoring particulate concentrations, ambient visibility and source apportionment, and vital pollutants to researchers, government agencies and industrial facilities.

## OPTIONAL FEATURES:

- **External Pump Control**
- **Naphion Dryer inlet to avoid losses of volatile particles**
- **Solar power and battery option**
- **Roof flange kit and rain cap with insect screens**
- **Calibration kit and wall mount bracket**
- **Weatherproof enclosure**