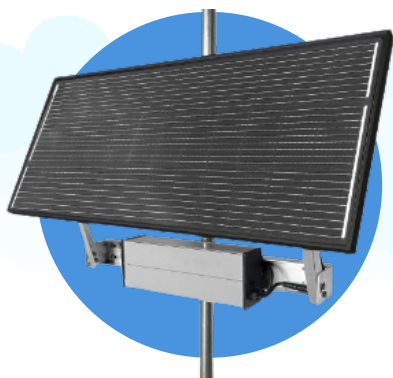


# Identify air pollution sources with the Black Carbon Module

The Black Carbon Module is based on **microAeth® Black Carbon measurement technology from AethLabs**, and integrates seamlessly into Clarity networks.

Designed to be mounted on street poles and fence lines, the Black Carbon Module requires minimal upkeep and rare on-site inspections. Output black carbon concentration data help determine what's driving this harmful component of particulate matter in your area.

Real-time, 5-wavelength spectrum measurements based on the optical signatures of various combustion sources such as diesel, woodsmoke, and biomass provide insight into the composition of light-absorbing carbonaceous particles. **DualSpot® loading compensation method** corrects for optical loading effects and provides additional info about aerosol optical properties.



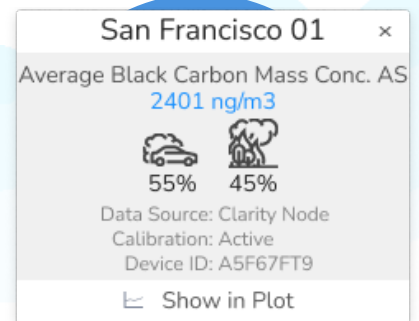
## SOLAR-POWERED OR LINE POWER

Purchase a Clarity external solar power system to power your Black Carbon Module off-grid, with the option to use hard line power where available.



## LOW MAINTENANCE

Long-term continuous sampling for up to a year depending on the sampling environment conditions and instrument settings. 2 replacement tapes are provided free of charge every year.



## SOURCE APPORTIONMENT

With the 5 wavelengths and the DualSpot® loading compensation method, the Black Carbon Module can help you determine the sources of particulate matter air pollution in your area — so you can take action.



# Black Carbon Module Technical Specifications

## AIR QUALITY MEASUREMENTS

PARAMETER	TECHNOLOGY	RANGE	RESOLUTION	OUTPUT DATA
<b>Black Carbon (BC) Concentration</b> (ng/m3)	<ul style="list-style-type: none"> <li>AethLabs 5 Wavelength Absorption Analysis (880 nm, 625 nm, 528 nm, 470 nm, 375 nm)</li> <li>DualSpot® loading compensation method</li> </ul>	0-1 mg/m3	1 ng/m3	<ul style="list-style-type: none"> <li>BC Concentration — All Sources</li> <li>BC Concentration — Biomass</li> <li>BC Concentration — Fossil Fuel</li> <li>BC Concentration — IR, Red, Green, Blue, UV</li> <li>% ratio of biomass/fossil fuel (percentage)</li> </ul>

## DATA FLOW

<b>Measurement Frequency</b>	- Default: Once every 3 minutes (non-adjustable)
<b>Data Retrieval from Cloud</b>	<ul style="list-style-type: none"> <li>Clarity Dashboard (Web App)</li> <li>RESTful APIs (Programmatic Access)</li> </ul>
<b>Device to Cloud Communication</b>	Global cellular 2G / 3G / 4G SIM card and connectivity provided by companion Clarity Node-S at no additional cost.

## OPERATING CONDITIONS

<b>Operating temperature</b>	-10 – 45° C
<b>Operating humidity</b>	Non-condensing
<b>UV Exposure</b>	UV resistant via solar shield

## POWER

<b>Externally Powered</b>	- Black Carbon Module and companion Node-S must be plugged into an outlet or additional solar power system.
<b>Electrical Power or Solar Power System Required</b>	
<b>Operation with Optional Solar Power System</b>	<ul style="list-style-type: none"> <li>40 minutes of sunlight per day required for continuous operation.</li> <li>Can operate for 14 days without sun when battery is fully charged.</li> </ul>

## DIMENSIONS

<b>Black Carbon Module</b>	25.4 cm (W) x 29.2 cm (H) x 14.4cm (D) <b>Weight:</b> 11 lbs / 5 kg
<b>Optional Solar Power System</b>	<b>Solar Panel:</b> 838.2 mm (W) x 736.6 mm (H) x 25.4 mm (D) <b>Battery:</b> 533.4 mm (W) x 139.7 mm (H) x 101.6 mm (D) <b>Total Weight:</b> 48.5 lbs / 22 kg

## MOUNTING & DEPLOYMENT

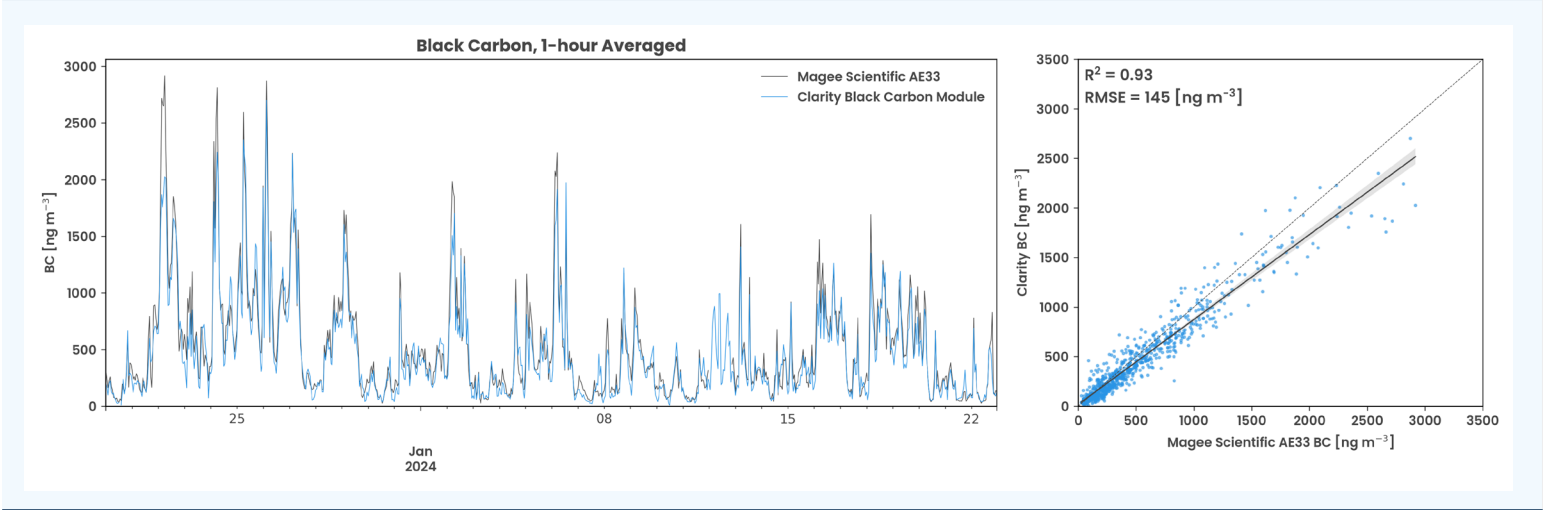
<b>Connect to Node</b>	Plug Module into Clarity Node-S; Node-S will reset and automatically recognize the module .
<b>Black Carbon Module Siting</b>	Install device in an open area with unobstructed air flow where ambient BC concentration can be evaluated — see our siting guide on Knowledge Base for more info.
<b>Mounting</b>	Use provided mounting brackets to affix to a pole or another secure foundation.



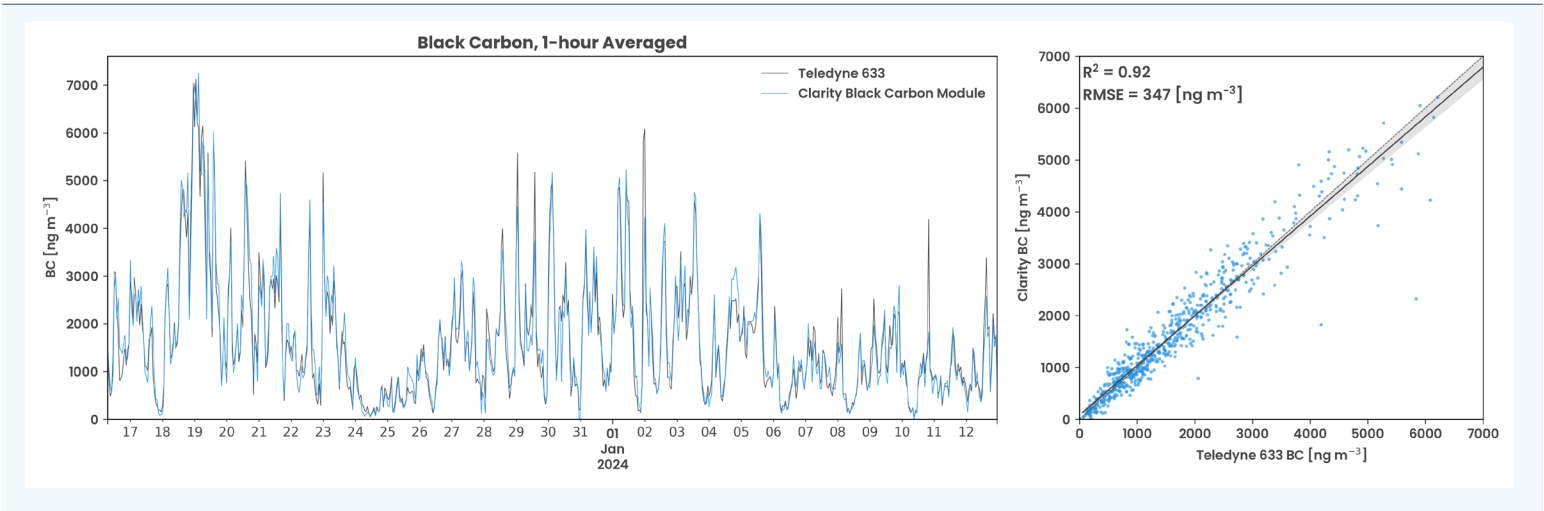


# Black Carbon Module Collocation Performance Results

BERKELEY, CA, USA



DENVER, CO, USA



BROWARD COUNTY, FL, USA

