

## Multi-Gas Module: Criteria pollutant and traffic emissions monitoring made simple

The Clarity Multi-Gas Module expands the capabilities of the Node-S, enabling real-time measurement of CO, O<sub>3</sub>, NO<sub>2</sub>, NO, and NO<sub>x</sub> — five key pollutants that impact air quality and public health. Whether monitoring urban pollution, industrial emissions, or transportation corridors, this compact, all-in-one sensor provides high-quality data without the complexity of multiple instruments.

Designed for effortless deployment, the Multi-Gas Module features a weatherproof, UV-resistant enclosure and modular mounting for quick installation on both vertical and horizontal poles. With Clarity's plug-and-play Add-On Module design, the Multi-Gas Module leverages the solar-powered operation and built-in cellular connectivity of the Node-S — even when paired with the Wind Module as pictured here.



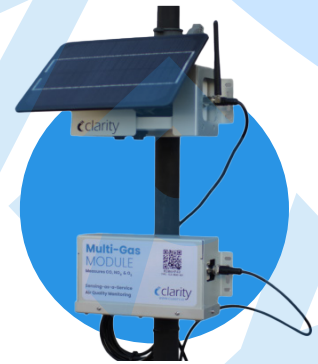
### Measure more criteria pollutants

The Multi-Gas Module streamlines data collection and expands your monitoring capabilities with Carbon Monoxide (CO), Ozone (O<sub>3</sub>), Nitrogen Dioxide (NO<sub>2</sub>), Nitric Oxide (NO), and Nitrogen Oxide (NO<sub>x</sub>) measurements all in one device — all measurements can be retrieved via Clarity Dashboard and API.



### Identify wildfire, traffic, and smog trends

Designed for diverse applications, the Multi-Gas Module enhances monitoring of wildfire smoke, traffic emissions, and smog formation. Distinguish wildfire smoke from urban pollution using the CO-to-PM<sub>2.5</sub> ratio, identify traffic pollution hotspots through NO and NO<sub>2</sub> levels, and track O<sub>3</sub> non-attainment and smog formation with joint NO<sub>2</sub> and O<sub>3</sub> measurements.



### Solar-powered and always connected

The Multi-Gas Module runs directly off the Node-S power system, meaning it can leverage the native solar power and cellular connectivity of the Node-S. Measurements are automatically transmitted to the Clarity Cloud, eliminating the need for complex infrastructure or manual data retrieval.

# Multi-Gas Module | Technical Specifications

## Air Quality Measurements

| PARAMETER       | TECHNOLOGY                  | RANGE        | RESOLUTION | ACCURACY                      |
|-----------------|-----------------------------|--------------|------------|-------------------------------|
| CO              | Electrochemical cell sensor | 0 - 10 ppm   | 0.01 ppm   | $R^2 > 0.8$<br>RMSE < 0.1 ppm |
| O <sub>3</sub>  | Electrochemical cell sensor | 0 - 3000 ppb | 1 ppb      | $R^2 > 0.5$<br>RMSE < 8 ppb   |
| NO <sub>2</sub> | Electrochemical cell sensor | 0 - 3000 ppb | 1 ppb      | $R^2 > 0.5$<br>RMSE < 8 ppb   |
| NO              | Electrochemical cell sensor | 0 - 3000 ppb | 1 ppb      | $R^2 > 0.6$<br>RMSE < 7 ppb   |
| NO <sub>x</sub> | Electrochemical cell sensor | 0 - 3000 ppb | 1 ppb      | $R^2 > 0.6$<br>RMSE < 8 ppb   |

## Data Flow

|   |  |
|---|--|
| <b>Measurement Frequency (Adjustable)</b> | Default: Once every 15 minutes (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>Communication Protocol</b>             | RS-485, Clarity Add-On Module protocol   |
| <b>Device to Cloud Communication</b>      | Global cellular 2G/ 3G/ 4G SIM card and service included via companion Node-S  |

## Operating Conditions

|                              |   |
|------------------------------|---|
| <b>Operating Temperature</b> | -10°C to 40°C   |
| <b>Operating Humidity</b>    | 15% to 85%  |
| <b>UV Exposure</b>           | UV-resistant, weatherproof housing with aluminum solar radiation shield |

## Power

|                          |  |
|--------------------------|--|
| <b>Power Consumption</b> | 20 mWh energy consumption at default measurement frequency<br>50 mW maximum power dissipation  |
| <b>Power Source</b>      | Powered by Add-On Module port of companion Clarity Node-S <ul style="list-style-type: none"><li>40 minutes of sunlight per day is required for continuous operation.</li><li>Can operate for 14 days without sun when the battery is fully charged</li></ul> |

## Dimensions

|                   |                                     |
|-------------------|-------------------------------------|
| <b>Dimensions</b> | 232 mm (W) x 114 mm (H) x 68 mm (W) |
| <b>Weight</b>     | 0.138 kg                            |

