Siemens Mobility has exclusively partnered with air quality experts EarthSense to provide an integrated air quality measurement system for traffic management applications.

**Tackling a health challenge**
Poor air quality in towns and cities is an ever-increasing problem with road transport contributing to urban pollution. In the UK, 9 out of 10 people are exposed to high levels of harmful pollutants in the air. By fully integrating the Zephyr® air quality sensor with the Siemens Mobility traffic signal controller and traffic management systems, air quality can be measured and monitored in real time. This will allow authorities to make meaningful and timely interventions through Siemens Mobility’s Stratos traffic management system, implementing strategies based on reliable pollution data and prevailing air quality levels. Offered as a managed service, Zephyr® is a high specification, compact air quality sensor, which measures a range of pollutants, as well as temperature and humidity, to capture a true and accurate picture of the ambient air quality.

**Advanced air pollution monitoring**
Using innovative and advanced technology, the Zephyr® sensor incorporates a replaceable cartridge system and an active sampling process to measure pollutants in real-time. The unit uses its built-in fan to draw air in and measure it, providing an accurate insight into the surrounding air quality. The measurement interval for each sensor can be configured and is typically set between 1 and 60 minutes.

Measuring a wide range of pollutants (NO₂, NO, O₃, PM₁₀, PM₂.₅, PM₁) as well as temperature and humidity, the Zephyr® unit comes with two available cartridge slots. An optional enhanced cartridge allows for the measurement of further pollutants (CO, H₂S, SO₂) for more advanced and specialist applications.

Two variants of the Zephyr® are available; the standard Zephyr® unit, which can be solar-powered with a battery backup and the ZephyrS® variant, exclusive to Siemens Mobility, which is much smaller and uses a 24V power supply.

**Quick and easy installation**
Whilst the Zephyr® is an advanced sensor, installation and setup of the unit is quick and easy. It has the flexibility to be retrofitted at any traffic signal site where a pole...
is available and will take an average of 2-3 hours to install. The unit is banded to the pole with no requirement for drilling holes except for cable entry into the signal aspect. Setup is carried out via a single button with confirmation from a sequence of LEDs.

**Versatile power options**

In order to provide a rich source of air quality data, the ability to locate the Zephyr® at any road network location is key and as a result, several power supply options have been developed to support connection to LV, ELV and third-party controllers. For ELV installations, the power is sourced from a rack-mounted PSU mounted within the controller cabinet. For LV sites, the supply comes from either a rack-mounted or signal aspect mounted PSU.

**An end-to-end solution**

Sourcing air quality information is only a part of an overall solution to tackling air pollution. Implementing dynamic and reactive traffic management strategies can help to achieve goals of cleaner air and Siemens Mobility is equipped to provide this end-to-end solution. Each Zephyr® sensor can be connected to the Stratos traffic management platform’s Environment Module with the data ultimately being used to inform other strategies through newly supported air quality triggers. Fault management and asset tracking are also a key part of the solution, with each sensor listed in InView as part of a new asset list.

**Technical Specifications:**

**Power Supply:**

- Sensor: 12V to 32V DC via IP68 connector
- System: 24V DC IP65 supply
- Suitable for installation within Siemens ELV traffic systems (ELV compliant)
- Solar panel operation option for unpowered sites (Zephyr® unit fitted with internal battery)

**Dimensions:**

235mm (h) x 160mm (w) x 114mm (d)

**Operating Temperature:**

-20°C to +45°C

**Location Sensing:**

High sensitivity GNSS - GPS, GLONASS, Galileo and Beidou

**Internal Storage:**

8GB Micro SD Card (up to 16 million measurements)

**Data Handling:**

GSM, Amazon Web Services

**Communications:**

GSM, Wi-Fi*, Bluetooth*

* reserved for future use

**Data Access:**

MyAir® web app or direct API access

**Approvals:**

CE Approved, RoHS Compliant

---

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Estimated Accuracy</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO₂</td>
<td>±5µg/m³</td>
<td>0-20,000µg/m³</td>
</tr>
<tr>
<td>NO</td>
<td>±5µg/m³</td>
<td>0-20,000µg/m³</td>
</tr>
<tr>
<td>O₃ using MOS &amp; EC sensors</td>
<td>±8µg/m³</td>
<td>0-20,000µg/m³</td>
</tr>
<tr>
<td>PM₁</td>
<td>±5µg/m³</td>
<td>0-20,000µg/m³</td>
</tr>
<tr>
<td>PM₂.₅</td>
<td>±5µg/m³</td>
<td>0-20,000µg/m³</td>
</tr>
<tr>
<td>PM₁₀</td>
<td>±5µg/m³</td>
<td>0-20,000µg/m³</td>
</tr>
</tbody>
</table>

Temperature, pressure & relative humidity up to 95%

---

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Estimated Accuracy</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>±0.3 ppm</td>
<td>0-500ppm</td>
</tr>
<tr>
<td>H₂S</td>
<td>±5µg/m³</td>
<td>0-20,000µg/m³</td>
</tr>
<tr>
<td>SO₂</td>
<td>±8µg/m³</td>
<td>0-20,000µg/m³</td>
</tr>
</tbody>
</table>

---

Siemens Mobility Limited

Sopers Lane, Poole, Dorset, BH17 7ER

Tel: +44 (0) 1202 782000

Email: sales.stc@siemens.com

siemens.co.uk/traffic

© Siemens Mobility Limited 2020. All rights reserved.