

Zephyr® Air Quality Sensor

Product Datasheet

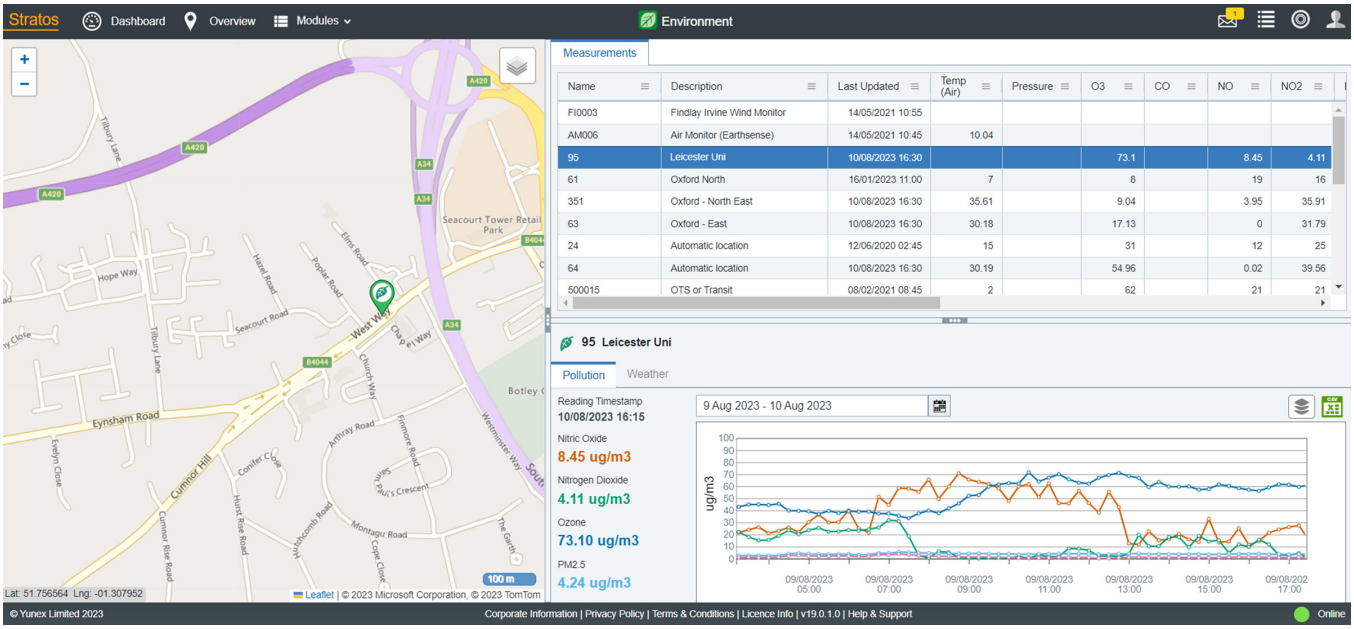
YUNEX TRAFFIC

Overview

Poor air quality in towns and cities is an ever-increasing problem with road transport contributing to urban pollution where 9 out of 10 people in the UK are exposed to high levels of harmful pollutants in the air. Through partnership with EarthSense, the Zephyr® air quality sensor is fully integrated with the Yunex Traffic signal controller and traffic management systems allowing for air quality to be monitored in real time.

Dynamic strategies can be implemented through the Stratos traffic management platform to empower authorities to make meaningful and timely interventions based on reliable pollution data and prevailing air quality levels.

The Zephyr® sensor is a high specification, compact air quality monitor which measures a range of pollutants as well as recording indicative temperature and humidity to present a truly 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 (NO_2, NO, O_3, PM_1, $PM_{2.5}$, PM_{10}) 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, H_2S, SO_2) 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 Yunex Traffic, which is much smaller and uses a 24V power supply.

Quick and easy installation

The Zephyr® sensor 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

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

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 a variety of 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 Specification

Power Supply	Sensor: 12-32V DC via IP68 connector System: 24V DC IP65 supply Suitable for installation with Yunex Traffic ELV signals (ELV compliant) Solar panel option for unpowered sites
Dimensions	235mm x 160 mm x 114mm
Operating Temperature	-20°C to 45°C
Location Sensing	High sensitivity GNSS – GPS, GLONASS, Galileo and Beidou
Internal Storage	8MB Micro SD Card (up to 16 million measurements)
Data Handling	GSM, Amazon Web Services
Communications	GSM
Data Access	MyAir® web app or direct API access

Cartridge Options

Standard Cartridge

Measurement	Estimated Accuracy	Range
NO2	±5µg/m3	0-20,000µg/m3
NO	±5µg/m3	0-20,000µg/m3
O3 using MOS & EC sensors	±5µg/m3	0-20,000µg/m3
PM_1	±5µg/m3	0-20,000µg/m3
$PM_{2.5}$	±5µg/m3	0-20,000µg/m3
PM_{10}	±5µg/m3	0-20,000µg/m3
Temperature pressure & relative humidity up to 95%		

Enhanced Cartridge

Measurement	Estimated Accuracy	Range
CO	±0.3 ppm	0-500ppm
H_2S	±5µg/m3	0-20,000µg/m3
SO_2	±8µg/m3	0-20,000µg/m3

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