South Coast

Our innovation is openness

Praxis/Urban: air quality monitor

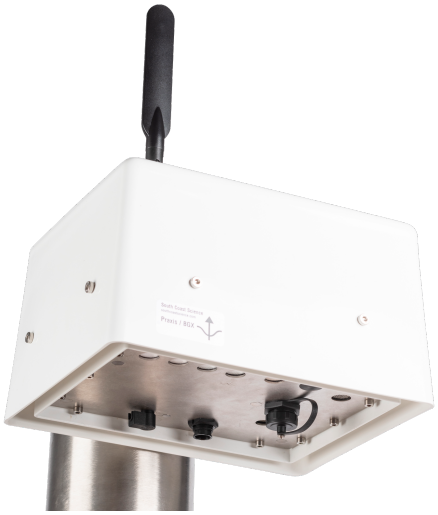
The South Coast Science Praxis/Urban offers an out-of-the-box solution for urban air quality monitoring. The Praxis/Urban answers both the challenge of capturing accurate data in variable climate conditions and the need for fine grained air quality monitoring networks.

Indicative air quality monitoring ...

- Alphasense optical particle counter (OPC-N3): **PM_1**, **$PM_{2.5}$** and **PM_{10}**.
- Alphasense electrochemical sensors: **CO**, **H_2S**, **NO**, **NO_2**, **O_3**, **SO_2 and CO_2**.
- Photoionisation detection (PID): **VOCs**.
- Temperature, humidity **(T/rH)** and barometric pressure **(p)** sensors.
- **High frequency sampling**: up to 2 samples per second.
- **Up to 2 hours operation** in event of external power loss.
- **Enclosure designed for ultra-low RF noise** and harsh climate.

… in practice

- **Ultra low noise** sensing for gases (ppb) and particulates ($\mu g/m^3$).
- **Support for multiple analysis techniques** including any sampling rate and real-time access.
- **High density air quality network** using low-cost, individually baselined devices.
- **Open source device firmware** for highly customisable sensing, data delivery and analysis.
- **Remote Diagnostics,** over-the-air software update and data-correction upgrade*



The South Coast Science ‘Praxis/Urban’ was designed in consultation with the UN Environment Programme

About South Coast Science

South Coast Science has its roots in environmental science and is a specialist in air quality monitoring. In collaboration with Alphasense, leader in environmental gas sensors, South Coast Science develops and builds precision monitoring equipment engineered for deployment of high density air quality networks.

Praxis/Urban Specifications

Sensing

- Alphasense analogue front-end (AFE) supporting up to four A4 electrochemical sensors, or three electrochemical sensors plus PID. NDIR for CO2 sensing via separate interface.
- Ultra low-noise circuitry maximises repeatability of electrochemical sensing.
- Particulate monitoring uses Alphasense OPC-N3 particle counter.
- Sensirion temperature and relative humidity sensor.
- NXP barometric pressure sensor.
- Data correction refined through co-location with government reference equipment.

Communications

- Wired: ethernet via waterproof RJ45 connector.
- Wireless: 4G cellular modem.
- Wi-Fi option available upon request.
- GPS receiver.
- *Remote diagnostics (available where our data infrastructure is used).

Platform

- Runs Debian Linux operating system for robust operation and ease of integration with other sensor systems.
- AM335x ARM Cortex-A8 through BeagleBone Black or BeagleBone Black industrial.
- Real-time clock with battery backup. Time synchronisation is via GPS receiver, network time protocol or real-time clock, as available.

Data infrastructure

- Sense data messaging, control messaging and data storage using Amazon Web Services (AWS) or customer's own infrastructure.
- Local microSD data storage.

General

- 7 to 24 V DC input.
- Environment operating range: -10 to 50°C.
- Measures 250 x 200 x 147 mm.
- Weighs 4kg.

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