

Air Quality

Alphasense Product Guide

Alphasense
AMETEK®



A product range specifically designed for Air Quality instruments

Our range of responsive gas and particulate sensors is supported by over 25 years of design and manufacture experience, and our sensors are suitable for a range of different applications in fixed or portable detection instruments. Every electrochemical sensor is performance tested and supplied with test data to aid calibration.



Electrochemical sensors for PPB measurement



Optical Particle Counters (OPC) for PM1, PM2.5, PM4.25, PM10



Photo Ionisation Detectors (PID) for VOC measurement



Non Dispersive Infra Red (NDIR) for CO2 and LEL/CH4

Air Quality applications

Indoor Air Quality



Growing awareness of the need to monitor and manage Indoor Air Quality is driving significant advances in systems and instrumentation. Alphasense Air Quality sensors are playing a key role in this growth, specifically in industrial & commercial applications where users require meaningful data (vs. any data) or where sensors are linked to control systems for Air Quality management and ventilation.

Dust monitoring



As our collective understanding of the risks associated with long-term dust exposure increases, the need for particulate monitoring also increases, from both a corporate responsibility and legislative perspective. Alphasense Optical Particle Counters deliver real-time measurement and accurate data comparable to devices costing much more, making high-accuracy particle counting (down to PM1) viable in a range of applications where it has until now been absent.

Cleanroom



With airborne contaminants having a detrimental effect on quality and yield, the production of high-tech components such as semiconductors, PCBs and optics requires the highest levels of cleanliness. Alphasense Air Quality sensors, with PPB level detection and zero cross-sensitivity to alcohol vapours, are well suited to cleanrooms. For particle monitoring, Alphasense OPCs deliver best-in-class performance at a price that allows for increased density of monitoring points.

Outdoor Air Quality



Accurately monitoring outdoor Air Quality is key for measuring both the short and long-term effects of pollution. The Alphasense range of electrochemical PPB sensors are the go-to sensor for manufacturers of outdoor Air Quality monitoring instruments, delivering high-quality data around the globe. Additionally, and not to be confused with other 'low-cost' devices, the Alphasense OPC range provides data comparable with that of reference instruments at a fraction of the cost, making accurate particle monitoring more viable in a variety of applications.

HVAC



As HVAC systems become more sophisticated and the direct impact of ventilation on wellness becomes more apparent, Air Quality and particulate monitoring are increasingly being integrated into HVAC systems. Alphasense sensors provide OEMs with the opportunity to detect more than 20 specific gases including Carbon Dioxide, Carbon Monoxide and Ammonia, as well as both PID and electrochemical VOC detection. The addition of Alphasense's OPCs to HVAC systems enable reference instrument level monitoring of PM1, PM2.5, PM4.25 and PM10 at a fraction of the price, ensuring HVAC systems enhance rather than endanger the lives they impact.

Industrial process



Whether it's to optimise production, protect workers or to ensure compliance with regulatory standards, many industrial processes now require gas monitoring down to PPB levels or dust monitoring down to PM1. Alphasense's range of PPM and PM sensors deliver industry leading response times and reliable data which can be integrated either directly onto customer hardware or via our range of support circuits and accessories.

Electrochemical sensors

We supply high-quality Oxygen, CO₂ and toxic gas sensors to many of the world's leading OEMs for the design and development of Air Quality monitoring instruments. Our electrochemical sensors are available in two different size formats to suit a range of diverse instruments and measure down to low PPB levels for Air Quality applications.

A4 Series



CO-A4 Carbon Monoxide



H₂S-A4 Hydrogen Sulphide



NO-A4 Nitric Oxide



NO₂-A43F
Nitrogen Dioxide



OX-A431 Ozone



SO₂-A4 Sulphur Dioxide



VOC-A4 VOCs

B4 Series



CO-B4 Carbon Monoxide



H₂S-B4 Hydrogen Sulphide



NO-B4 Nitric Oxide



NO₂-B43F
Nitrogen Dioxide



OX-B431 Ozone



SO₂-B4 Sulphur Dioxide



VOC-B4 VOCs

Non Dispersive Infra Red (NDIR)

Alphasense CO₂ and Methane infrared sensors are supplied in the industry standard miniature (20mm diameter) gas sensor housing. Patented optics give the best signal to noise ratio of any 20mm diameter NDIR and universal linearisation constants allow easy implementation. The on-board temperature sensor allows for software compensation, including ideal gas law correction.

IRM-AT



IRC-AT



IRC-A1



Optical Particle Counters (OPCs)

We have pioneered a range of Optical Particle Counters (OPCs) designed by aerosol scientists and engineered to deliver high-quality particle counts and sizing at affordable prices. The range has continuously evolved to offer the best quality, low-cost devices on the market, leading to our current offering: the OPC-N3 and OPC-R2.

OPC-N3



- Counts PM1, PM2.5 and PM10 (PM4.25 as an option)
- Measures from 0.35 μ m to 40 μ m (including pollen detection)
- Sorts into 24 software size bins
- Size = 75mm(l) x 63.5mm(h) x 60mm(w)

OPC-R2



- Counts PM1, PM2.5, PM10 (PM4.25 as an option)
- Measures from 0.30 μ m to 12.4 μ m
- Sorts into 16 software size bins
- Size = 72mm(l) x 25.5mm(h) x 21.5mm(w)

Photoionisation Detectors (PIDs)

PIDs can measure Volatile Organic Compounds (VOCs) to very low concentrations. Considered the gold standard for VOC measurement, Alphasense PIDs are compact and low power, with recently improved electronics and longer lamp life. An extended family of lamps now include better BTEX and chlorinated VOC detection.

PID-AH2



- Linear dynamic range of 1 PPB to 50 ppm (Isobutylene)
- 5-year operating life (excluding replaceable lamp and electrode stack)
- Power consumption: < 100 mW at 3.6 V, < 550 mW transient for 200 ms on switch-on

PID-A12



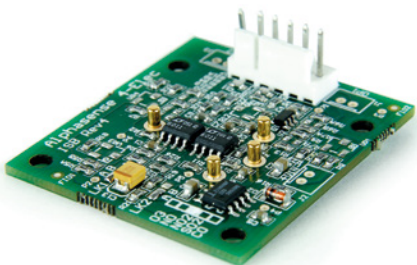
- Linear dynamic range of 50 PPB to 6,000ppm (Isobutylene)
- 5-year operating life (excluding replaceable lamp and electrode stack)
- Power consumption: 85 mW (max) at 3.2 V, 350 mW transient for 200 ms on switch-on



Air Quality sensor support circuits

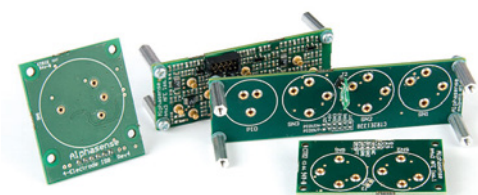
We offer support circuits for the new ranges of A4 and B4 four-electrode sensors, together with a 4-20mA transmitter board for our NDIR CO₂ infrared sensor. A range of gas hoods, mounting kits and cables are also available for use with Alphasense support circuits.

Individual Sensor Boards (ISBs)



Individual Sensor Boards (ISBs) have been built with lowest noise for the new B4 family of sensors, designed where best resolution at low PPB levels is required in permanent fixed site networks. Requiring 3.5 to 6.4 VDC input, they provide buffered voltage output from both the working and auxiliary electrodes. Boards are pre-configured when you order for the type of sensor, with fixed zero and electronic gain. Each ISB supports one B4 sensor and requires less than 1.5 mA power.

Analogue Front Ends (AFEs)



The Analogue Front End (AFE) family of circuits is designed for use with the Alphasense A4 family of four-electrode gas sensors where space is critical, such as with mobile Air Quality monitors. Options include a 2-sensor AFE, 3-sensor AFE and 3-sensor +PID AFE. All circuits include a low noise bandgap to provide 200 mV bias voltage for NO sensors. Requiring from 3.5 to 6.4 VDC supply, the 3-sensor board for example only needs 2 mA power.

Notes



Contact us

If you would like to enquire about our products or have an Air Quality project you'd like to discuss with us, please get in touch via our website, by email or by phone. We look forward to working with you soon.



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