Optical Particle Counters

A guide to the Alphasense OPC-N3 and OPC-R2 Optical Particle Counters

Alphasense
AMETEK®

Contents

Introduction to Alphasense Optical Particle Counters

Growing awareness of the dangers airborne particles present to health has led to an increased need to accurately quantify particulate matter in industry, the workplace and public spaces. In parallel, as we gain greater insight into the impact of particle matter on the performance and longevity of physical infrastructure, low-cost particle monitoring has come to the fore.

Alphasense's range of OPCs was developed hand in hand with aerosol scientists and engineered to deliver the accuracy you expect from industrial grade monitors in more workable size formats and at a fraction of the price.

Both the wide ranging OPC-N3 and the smaller footprint OPC-R2 provide digital outputs of PM1, PM2.5 and PM10 (and optionally PM4.25) along with a histogram of particle count for each of up to 24 user-configured size categories. Alphasense's proprietary flow correction technology ensures stable readings even in high-dust environments and is a key factor in a number of universities and research organisations independently verifying Alphasense OPCs as providing best-in-class performance.

OPC-R2

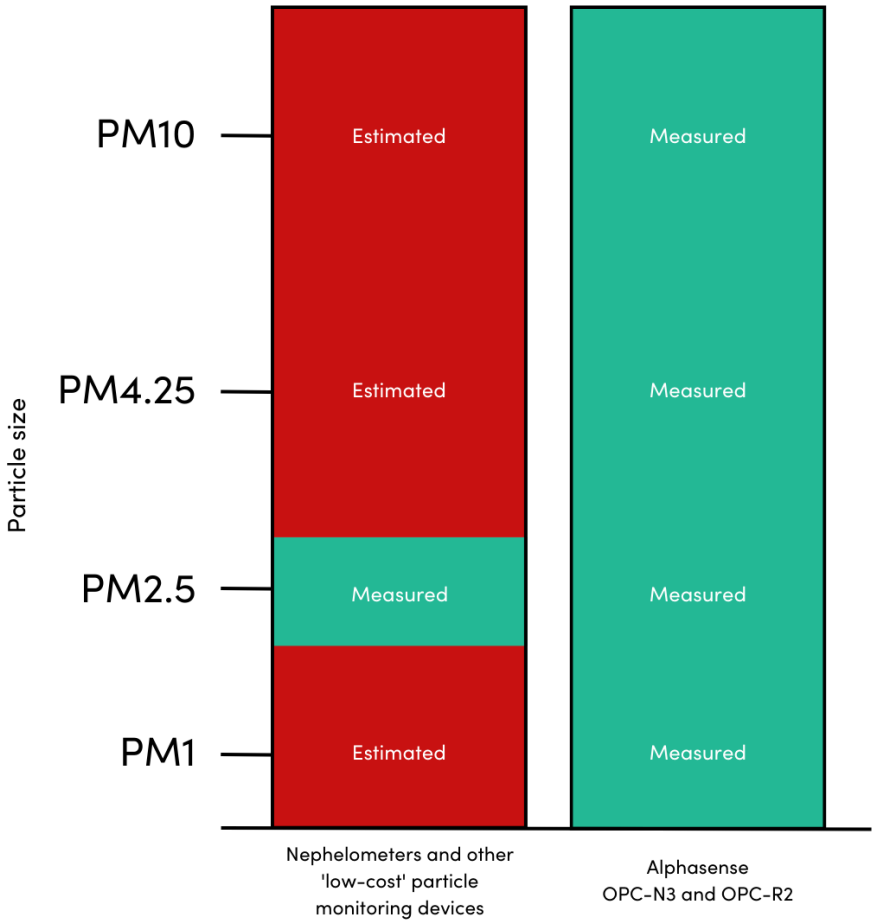
OPC-N3

Taking the guesswork out of particle counting

Unlike most low-cost particle sensors which measure particle count in a single size category and use that to estimate the volumes of others, Alphasense OPCs measure the full range from PM1 to PM10, giving end users reliable and repeatable data, rather than extrapolated values. This is demonstrated in the adjacent graph.

Other features that Alphasense OPCs offer over inferior particle counters include:

- Integrated flow correction technology
- Combined data from both high- and low-gain modes
- Optimised fan cycling to mitigate build up of debris and reduce noise



OPC-N3

The OPC-N3 is a high-accuracy device capable of producing reference station grade data for PM1, PM2.5, PM4.25 and PM10. This data is measured across the full size spectrum rather than calculated as in the case of Nephelometers. With 24 user-configurable sizing categories and a sample rate which can be set between 1 and 30 seconds, users can configure the device to suit their specific application. With a measurement range of 0.35-40 µm, the N3 is used in a broad range of applications, from MCerts certified air quality monitoring instruments to industrial safety and offshore installations.

The OPC-N3 is available in a marinised variant for marine applications and has been successfully used within instrumentation intended for use in explosive atmospheres.

PM1 to PM10

High accuracy

True PM measurement

Durable

Key features

- Particle range **0.35 to 40 µm**
- Sizing Categories **24**
- Max particle count rate **10,000 particles per second**
- Flow rate **5.5 Litres / min**
- Size **Compact**
- Sample interval **1 – 30 seconds**
- USB and SPI interface
- Patented design
- Integrated Temperature and Humidity monitoring
- Standby mode for reduced power consumption
- Suitable for use in MCerts certified instrumentation
- 24-month warranty

For full specifications please refer to the product datasheet.

3/4 view

Side view

Floor

OPC-R2

The OPC-R2 is an ultra-compact, high-accuracy device capable of producing reference station grade data for PM1, PM2.5, PM4.25 and PM10. This data is measured across the full size spectrum rather than calculated as in the case of Nephelometers. The R2 features 16 user-configurable sizing categories and a sample rate which can be set between 1 and 30 seconds, allowing users to configure the device to suit their specific requirements. Whilst the R2 has a smaller measurement range and reduced flow rate compared to the N3, its small footprint and low power consumption lend the R2 to portable, discreet and battery powered installations where high accuracy is required. Frequently used in indoor air quality, personnel monitoring and environmental applications, the R2 has established an enviable reputation within the low-cost sensor arena.

PM1 to PM10

High accuracy

True PM measurement

Durable

Key features

- Particle range **0.3 to 12.4 µm**
- Sizing categories **16**
- Max particle count rate **10,000 particles per second**
- Flow rate **0.24 Litres / min**
- Size **Ultra-compact**
- Sample interval **1 – 30 seconds**
- USB and SPI interface
- Patented design
- Integrated Temperature and Humidity monitoring
- Standby mode for reduced power consumption
- 12-month warranty

For full specifications please refer to the product datasheet.

Front three quarter view

Height: 30mm

Width: 30mm

length: 60mm

Side view

Base view

Comparison of OPC-N3 and OPC-R2

Model	Particle range	Sizing categories	Max particle count rate	Flow rate	Size	Sample interval	Datasheet
 OPC-N3	0.35 to 40 µm	24	10,000 particles per second	5.5 Litres / min	75mm x 63.5mm x 60mm	1 – 30 seconds	
 OPC-R2	0.3 to 12.4 µm	16	10,000 particles per second	0.24 Litres / min	72mm x 21.5mm x 20.5mm (25.5mm inc inlet)	1 – 30 seconds	

About Alphasense

Alphasense is the industry-leading manufacturer of sensors for air quality monitoring, gas detection and industrial applications. Founded in 1996, Alphasense supplies world-leading industrial OEM manufacturers of portable and fixed industrial gas detection equipment, stack gas analysers and environmental monitoring instruments.

We continue to push the boundaries in gas sensor development and manufacturing with our state-of-the-art automation and process equipment in our UK Centre of Excellence, driving technological advancements in manufacturing.

www.alphasense.com

+44 (0) 1376 556700

sensors.alphasense@ametek.com

Alphasense
AMETEK®

For more information, datasheets and application notes please visit
alphasense.com or contact sensors.alphasense@ametek.com

alphasense

AMETEK®