BEMS 4000



In Europe, motor vehicles (light-duty vehicles) will, in the future, be tested for braking emissions in the WLTP cycle. The basis for this is the directive ECE/TRANS/WP.29/GRPE, in short, UN GTR. The particle sizes in brake emissions are in the nanoparticle range up to about 10 μm in concentrations of up to $2x10^6$ particles/cm³.

Therefore, emissions in this size range are tested for TPN (Total Particle Number, solid and volatile) and SPN (Solid Particle Number, solid particles only, in particles/cm³). The $PM_{2.5}$ and PM_{10} values (in $\mu g/m^3$) are also considered.

The test of $PM_{2.5}$ and PM_{10} (in $\mu g/m^3$) is done purely gravimetric after the entire test is finished, meaning there is one emission value for $PM_{2.5}$ and one for PM_{10} for the overall test cycle.

Continuous and time-resolved monitoring of PM_1, $PM_{2.5}$, and PM_{10} and also particle size distribution can be realized by scattered light detection of the particle size and concentration with the BEMS 4000.

This device is sold via our partner Link[1]

Operation principle

Brake emission measurement system

The BEMS 4000 uses the recognized optical light scattering measuring technique according to ISO 21501-1 on a single particle. It is equipped with an LED light source of high light intensity, high light stability, and long service life.

The instrument's calibration can be easily and quickly checked and, if necessary, adjusted at any time, even when installed, using a monodisperse test aerosol.

[1] Link Website: https://www.linkeng.com/product/model-4222-brake-emissions-particle-measuring-system/

Extensions/Accessories

Data transmission is via an integrated interface, TCP-IP for the CPCs, and the dilution (AK-Ethernet protocol on request).

The calibration of the BEMS 4000 takes place traceably at Palas, including a comprehensive calibration certificate.

Notice. Our partner, Link Engineering, distributes this product. We will be glad to forward your request.

Benefits

- Easy integration into the BEMS System
- Time-resolved measurement of $PM_{2.5}$ and PM_{10}
- Additional measurement of particle size distribution and PM_1
- Robust, compact design

DATASHEET

Measuring principle	Optical light-scattering
Measurement range (number C_N)	$< 2 \cdot 10^4$ particles/cm^3
Measurement range (size)	0.18–18 μm
Volume flow	9.5 l/min
Size channels	Max. 64 (32/decade)
Power consumption	Approx. 200 W

Applications

- Time-resolved measurement of brake emissions

Mehr Informationen:
https://www.palas.de/en/product/bems4000