

Dekati[®] DMM Mass Monitor

Real-time simultaneous particle mass and
number concentration measurement

Diesel and gasoline exhaust PM concentration

Pre- and post after-treatment device
measurements



Excellence in Particle Measurements

Dekati[®] DMM Mass Monitor

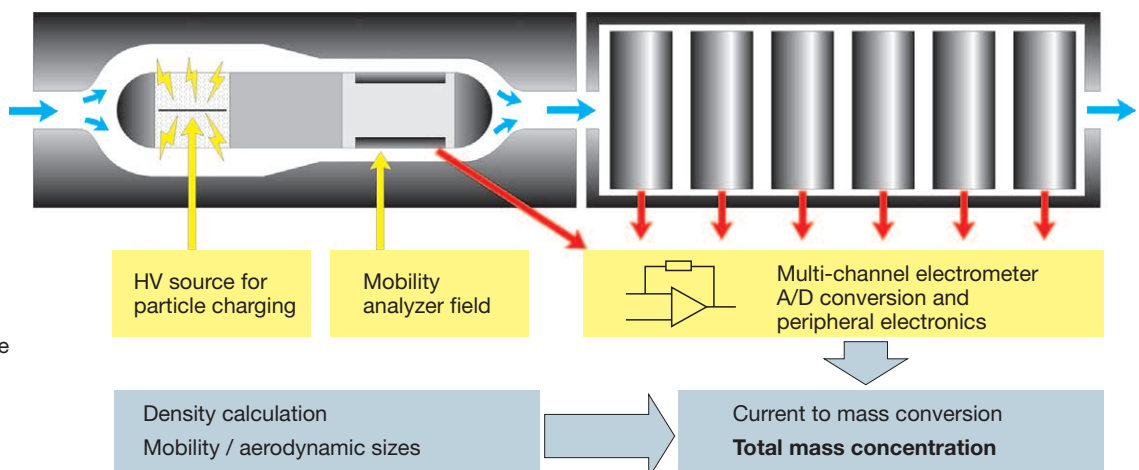


DMM, Dekati[®] Mass Monitor, is a real-time instrument for diesel and gasoline vehicle PM (Particulate Matter) emission measurements. Used either with a tailpipe sampling system or an existing CVS tunnel, it provides second-by-second information about vehicle particle mass and number emission.

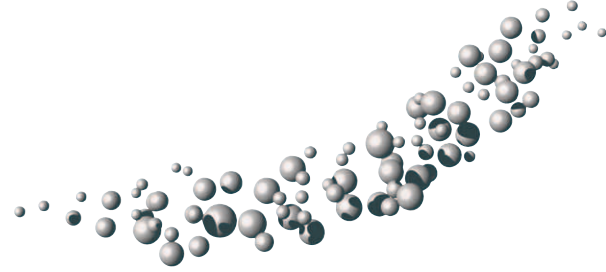
Operating principle

Based on well-known ELPI[™] technology, the device consists of a corona charger complete with on-line particle density

measurement, and an inertial 6-stage impactor with electrical detection. A diffusion charger is used to give a precisely designed charge to particles, and particle size classification is accomplished in a 6-stage inertial impactor. Sensitive electrometers are connected to the impactor collection sensors and the measured current is proportional to the amount of particles in the corresponding size range. Combining the particle mobility size information from the charger and aerodynamic size from the impactor enables calculation of the effective density of the particles required for conversion from measured current values to particle mass and number concentration.



DMM-230
operating principle



DMM applications

DMM is specially designed for automotive PM emission measurements, and in this field it can be used for all development and routine measurement purposes. Some of its common applications and benefits are:

- Engine development and ECU tuning – see immediate results
- After-treatment device development – simultaneous tailpipe measurement, upstream and downstream of catalyst or DPF for real-time efficiency measurements
- Raw exhaust or CVS tunnel measurements, both steady state and transient testing
- Test cell integration possible, analog input and output signals

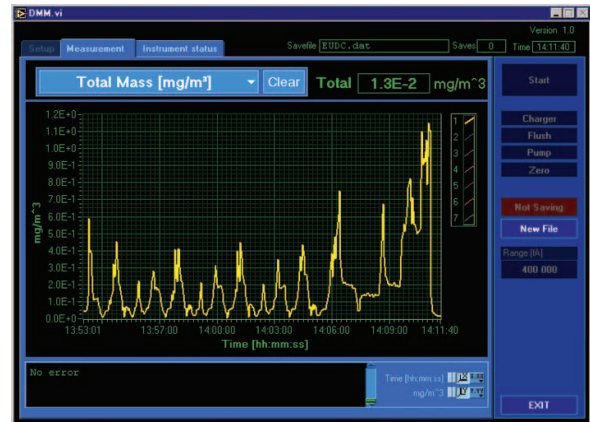
User Interface and Software

Special attention has been paid to easy and reliable operation. The need for service and maintenance is minimized, data reporting automatized, and test cell integration is also possible with analog input / output signals. All this results in faster and more cost-effective PM emission reductions than ever before.

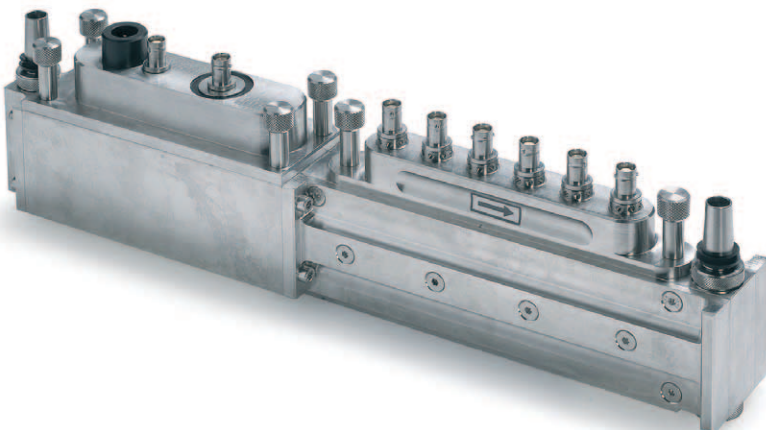
Measured data is displayed on a computer screen on a second-by-second basis, and the total mass concentration can be recorded to data acquisition systems by using analogue output signals.

DMM Technical advantages

DMM is currently the most advanced PM mass measuring equipment available, measuring both solid and volatile particles with outstanding sensitivity and a fast time response. The instrument can be used for measuring both number and mass concentration of particles. Even concentrations well below ambient levels are measured, minimum detectable concentration is as low as $1 \mu\text{g}/\text{m}^3$, and the data is still reported in real time, time resolution being 1 Hz and time constant 2-3 s. The dynamic range is also exceptionally wide, maximum concentration is $1000 \mu\text{g}/\text{m}^3$, even higher for short periods of time.

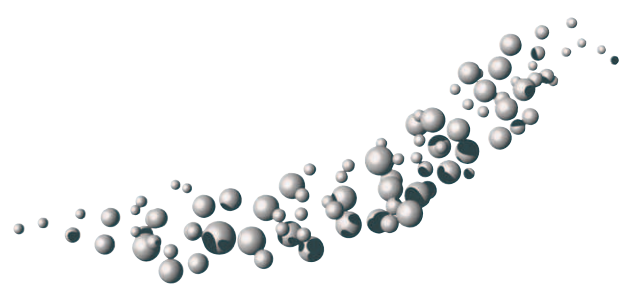


Total tailpipe mass concentration during EUDC cycle



DMM impactor and charger unit

Dekati® DMM - Mass Monitor



Specifications

Particle size range	0 – 1.2 µm
Number of Stages	6 impactor stages + one mobility channel
Volumetric flow rate	10 lpm (nominal)
Lowest stage pressure	100 mbars absolute pressure
Operation temperature	5-40°C
Operation humidity	0-60 % R.H.
Time resolution	1 Hz
Concentration range	From 1 to 1000 µg/m ³ (up to 5000 µg/m ³ for short periods of time), or 100 - 10E+06/cm ³
DMM unit dimensions	Outer cabin: W x L x H 560 x 420 x 300 mm Installable to 19" rack, 6 U height: W x H x L 450 x 266 x 400 mm
Unit weight	40 kg
Inlet	G 3/8" thread
Outlet	G 3/8" thread, NW-16 –connector
Input/output	RS-232 serial connector for computer interface 0-5 V analogue mass concentration output 2 0-5 V analogue input signals
Required accessories	Vacuum pump Computer Sampling system
Computer requirements	Pentium II processor, 64 MB RAM, MS-WINDOWS™ 95, 98, ME™, NT4.0™, 2000™ or XP™
Pump requirements	7 m ³ /h at 100 mbar



Accessories

- Vacuum pumps for 230/100/110V
- Vacuum hose set for pump connection
- Dekati® ejector diluter (DI-1000) for CVS tunnel sampling
- Dekati® Fine Particle Sampler (FPS-4000) for tailpipe sampling
- Dekati® Engine Exhaust Diluter (DEED) for sample conditioning according to PMP legislation
- 19" Mobile instrument rack
- 19" Installation cabinet

For more information, please contact: sales@dekati.fi



Dekati Ltd.
Osuusmyllynkatu 13
FIN-33700 Tampere
Finland
Tel. int. +358 3 3578 100
Fax int. +358 3 3578 140
E-mail sales@dekati.fi
www.dekati.fi

Dekati Ltd. is specialized in the design and manufacture of innovative fine particle measuring and sampling devices. Since its founding in 1994, Dekati has become the technological market leader in producing fine particle measurement instrumentation for various applications and hundreds of customers. ●