DEMC 1000



The DEMC size classifier (as defined in ISO 15900:2000) selects aerosol particles from an aerosol stream according to their electrical mobility. Different lengths of columns are available depending on the size range to be selected. Depending on the configuration of the control unit and column, the designation changes accordingly.

The size classifier is suitable in combination with condensation particle counters from the Palas UF-CPC , ENVI-CPC series or electrometers (Charme®) for measuring the number concentrations of different aerosols in scientific and regulatory environments. Alternatively, columns and particle counters from other manufacturers can also be integrated.

Model Variations



DEMC 1000 X
Differential electrical mobility classifier from 4 – 600 nm with integrated X-ray ionization

OPERATION PRINCIPLE

DIFFERENTIAL ELECTRICAL MOBILITY CLASSIFIER FROM 4 TO 600 NM

Particle-free sheath air in the column leads the aerosol flowing in at the annular gap of the column to the opposite side of the column. At the same time an electric field from the inner column outer wall to the inner center electrode moves the particles horizontally to the electrode in an electric field (capacitor), drift after a short acceleration with constant velocity and either reach the upper inner annular gap (exit to the counter) or are deposited at the electrode or are carried out of the column via the sheath volume flow and filtered off.

The change of the applied voltage at the electrode of the column (typically in the range of a few volts up to max. 10 kV) leads to different horizontal drift velocities in the column depending on the particle size and the number of charges on the particle. An "inversion algorithm" can be used to infer the particle size and concentration, as described in ISO 15900:2000. Instead of selecting individual particle sizes, the systems can display the size distribution and concentration in the set range in scan mode.

With a short classifying column (model 1000), the Palas DEMC is suitable for the size range 4 to 600 nm. The basic control unit is available with (DEMC 1000 X) and without (DEMC 1000) X-ray neutralizer and can be combined with appropriate counters from the Palas ENVI-CPC/UF-CPC system series or an electrometer such as Charme® to measure aerosol concentration.

All settings are directly accessible via the 7" touch screens, which are also used for the first graphical processing and already allow first comparisons. Measured values and sensor data are immediately and continuously recorded.

Extensions/Accessories

The DEMC system is usually used for the generation of monodisperse aerosol but can be coupled via different interfaces (USB, LAN, WLAN, RS-232/485) with further systems, e.g., of a counter (in scan mode to the U-SMPS system or for the measurement of the number concentration of selected quantities in calibration mode).

BENEFITS

- The user is able to select any size within the defined size range.
- The DEMC can be connected to many counters to form an SMPS.
- Continuous and fast-scanning principle of measurement
- Graphic display of measurement values
- Intuitive operation using 7″ touchscreen and GUI
- Integrated data logger
- Low maintenance
- Reliable function
- Reduces your operating expenses

NORMS AND CERTIFICATES

ISO 15900:2010, CEN/TS 17434:2020

DATASHEET

Volume flow (sheath air)	2.5 – 14 l/min (others on request)
Size channels	Max. 256 (128/decade)
User interface	Touchscreen, 800 • 480 pixel, 7″ (17.78 cm)
Data logger storage	4 GB
Software	PDAnalyze
Power supply	90 – 264 V, 50/60 Hz
Classifying range (size)	4–600 nm
Installation conditions	+5 – +40 °C (control unit)
Impactor	Nozzle for 3 different cut-offs
Adjustment range (voltage)	1 – 10,000 V
Data Management	Prepared for connection to the Palas Cloud MyAtmosphere (“MyAtmosphere-ready”); Internet access and separate registration required. The MyAtmosphere terms of use apply.

Applications

- Calibration of condensation particle counters (CPC)
- Monodisperse particle source
- System component of an SMPS

Mehr Informationen:
https://www.palas.de/en/product/demc1000