Aerosol Spectrometer for Atmospheric Research, Model 1.129 Sky-OPC

Applications

Airborne measurements
with airplanes
helicopters
or balloons ...

Tropospheric research

Vertical Profiling

Measuring of cloud droplets

Fixed station monitoring

Aerosol-Science

Advantages

Real time measurements of aerosol particles and droplets

Sample flow independent on atmospheric pressure

31 size channels within 6 sec.

Fast scanning down to 1 sec.

Particle concentration, dust mass (or PM-values optional)

Optional pressure, humidity and temperature sensors

Easy to install and maintain due to docking station

Data logging on storage card or online via PC

Precise aerosol-measurements independent of atmospheric pressure

The Aerosol spectrometer model 1.129 Sky-OPC is specifically designed for air-borne measurements at different altitudes. The sample flow rate, maintained by an external vacuum pump, is controlled by a critical orifice.
The instument detects aerosol particles in real time in the size range 0.25 µm to 32 µm in 31 size channels and displays the results as particle concentration or optionally as particle mass.

Easy to install, flexible, and easy to use

To install and operate the 1.129 Sky-OPC simply slide it into the docking station and connect an external power supply (12 V DC) and an external vacuum pump.
The data are stored on a data storage card in the spectrometer or displayed online via terminal program or the Grimm Windows® software. Additional sensor data such as internal temperature, differential pressure for volume flow rate, etc. are recorded simultaneously.

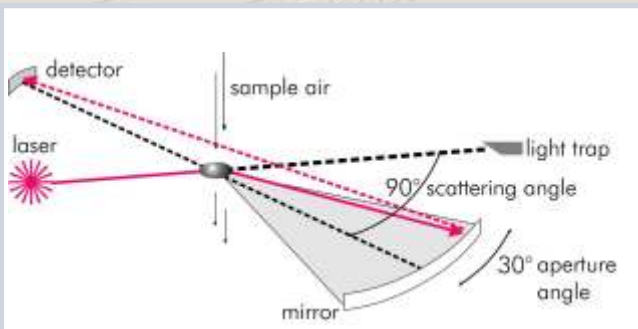
Data acquisition and presentation

The data can be saved on the data storage card in the spectrometer or easily transfered or recorded via USB or RS-232 on a computer. The Grimm Windows® Software displays the data as particle concentration in counts/litre, for all size channels.
Dust mass concentration in µg/m³, for all size channels or PM10, PM2.5 and PM1 values, according to US EPA guideline are selectable as well.
With the Grimm Windows® software graphs and statistical analysis can be realised quickly and easily. If required data can be exported as text or Excel™ files for further processing.

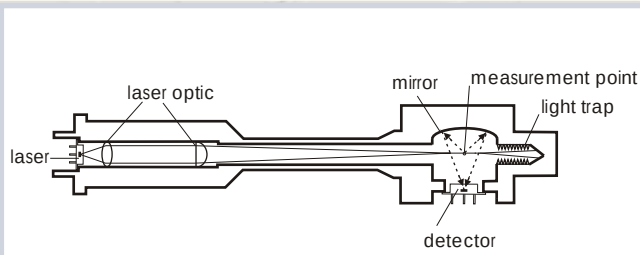
Modell 1.129 Sky-OPC

Specification

Principle:	90° light scattering
Particle concentration:	1 to 2.000.000 particles/litre
Dust mass:	0.1 to 100.000 µg/m³
Reproducibility:	5 % over the whole range
Light source:	Diode-Laser (λ = 655 nm, P_{max} = 40 mW)
Measuring range:	0.25 µm to 32 µm in 31 size channels
Volume flow:	1.2 litre/minute, with external pump volume controlled by critical orifice
Sampling time:	6 sec (normal), 1, 2, 3 sec (fast mode)
Data storage:	intern 80 KByte, with storage card 6 MByte
Storage interval:	1 min to 1h selectable (1 sec online)
Interface:	RS-232 Interface (USB or RS-232)
Power supply:	12 VDC, external
Temperature range:	0 to +40 °C (32 to 104 °F)
Humidity range:	relative humidity < 95 % (non condensing)
Dimensions (LxWxH):	Docking-Station 255 mm x 182 mm 72 mm Spectrometer 250 mm x 160 mm x 60 mm Complete: 255 mm x 182 mm 72 mm
Weight:	Docking-Station: 1.315 kg (2.90 lb) Spectrometer: 1.60 kg (3.54 lb) Complete: 2.915 kg (6.44 lb)
Size channels:	0.25- 0.28- 0.3- 0.35- 0.4- 0.45- 0.5- 0.58- 0.65- 0.7- 0.8- 1- 1.3-1.6 2- 2.5- 3- 3.5- 4- 5- 6.5- 7.5- 8.5- 10- 12.5- 15- 17.5- 20- 25- 30- 32 µm



Measurement principle



Laser measurement chamber


Docking station

Analog input

The instrument is equipped with a 6-pin socket analog connection, capable to receive three individual input signals (e.g. additional sensors) between 0 and 10 volts each. The connection-socket can also supply the external power for 10 volts up to 40 mA. The measured analog values are stored on the data storage card or displayed online.


Complete Sky-OPC

Installation

The docking station (shown above) contains all connections for electrical and pneumatic installation, rinsing air, serial port and three additional analog inputs.

The complete Sky-OPC (on the right) with the aerosol spectrometer attached to the docking station.

User experiences or application examples on request!

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