

# 5416

## High-end Condensation Particle Counter

For nanoparticle counting – with SMPS+C capability

- Integrated DMA controller
- 3.0 l/min sheath air flow
- 0.3 l/min sample air flow
- Compact design



## Features

- **Precise nanoparticle counting**
  - n-Butanol based CPC
  - $D_{50} = 4.0 \text{ nm}$
  - Droplet size control
  - Single count mode (150 000 particles/cm<sup>3</sup>)
  - Photometric mode (up to 10<sup>7</sup> particles/cm<sup>3</sup>)
- **Internal pumps for sample and sheath air**
- **Saturator shutter**
- **Analog input for optional meteorological sensor**
- **Wide range power supply**  
90 ... 264 VAC wide range power supply,  
47 ... 63 Hz; 80 ... 130 W
- **SMPS+C capability**
  - Integrated DMA controller
  - 3.0 l/min sheath air flow

## Benefits

- **Suitable for many nanoparticle applications**
  - Fundamental aerosol research
  - Environmental aerosol research
  - Filter testing
  - Nanotechnology process monitoring
  - Workplace monitoring
  - Printer emission studies
  - Studies on atmospheric nucleation
- **All in one solution**
  - Ready to use
  - Status control via LEDs for CPC and SMPS functionality
  - 5475 GRIMM nanoSoftware for for Counters
  - Start/stop button for stand-alone operation
  - Direct USB flash drive data storage
- **Compact design**  
Allows easy integration in laboratory setups

## Technical data

|                                               |                                                                                                                                |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Detection principle</b>                    | Condensation particle counter                                                                                                  |
| <b>Working fluid</b>                          | n-butanol (n-butyl alcohol)                                                                                                    |
| <b>Output</b>                                 | Particle number concentration/cm <sup>3</sup>                                                                                  |
| <b>Particle concentration range</b>           | Single count mode: up to 150 000 particles/cm <sup>3</sup><br>Photometric mode up to 10 <sup>7</sup> particles/cm <sup>3</sup> |
| <b>Reproducibility</b>                        | Single count mode: > 95%<br>Photometric mode: > 90%                                                                            |
| <b>Particle size range</b>                    | 4.0 nm ( $D_{50}$ measured with tungsten oxide particles) to greater 3 µm                                                      |
| <b>Response time</b><br>$t_{10} \dots t_{90}$ | < 3 s                                                                                                                          |
| <b>Sample flow rate</b>                       | 0.3 l/min                                                                                                                      |
| <b>Sheat air flow rate</b>                    | 3.0 l/min                                                                                                                      |
| <b>Flow control</b>                           | Critical orifice with stabilized temperature                                                                                   |

|                                  |                                                                                                                                                                                                                        |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Aerosol carrier gas</b>       | Air and inert gases                                                                                                                                                                                                    |
| <b>Data recording</b>            | Directly on PC with GRIMM 5475 nanoSoftware, optionally on USB flash drive                                                                                                                                             |
| <b>Connectivity</b>              | USB, USB flashdrive, RS-232, analog pulse output, analog input                                                                                                                                                         |
| <b>Power requirements</b>        | 90 ... 264 VAC, 47 ... 63 Hz;<br>wide range power supply; 80 ... 130 W                                                                                                                                                 |
| <b>Operating conditions</b>      | <ul style="list-style-type: none"> <li>• Ambient temperature: 10 ... 40 °C (50 ... 104 °F)</li> <li>• Ambient humidity: 0 ... 95% RH, non-condensing</li> <li>• Absolute pressure range: 500 ... 1 100 mbar</li> </ul> |
| <b>Transport and storage</b>     | 0 ... +50 °C (32 ... 122 °F), RH < 95%                                                                                                                                                                                 |
| <b>Dimensions</b><br>(h x w x d) | 40 x 25 x 29 cm (15.7 x 9.8 x 11.4 inch)                                                                                                                                                                               |
| <b>Weight</b>                    | 12.4 kg (27.3 lbs)                                                                                                                                                                                                     |

## Optional accessories

- 55-M** Electrostatic Classifier "Vienna" M-DMA (5 ... 350 nm)
- 55-L** Electrostatic Classifier "Vienna" L-DMA (10 ... 1094 nm)
- 5477** GRIMM nanoSoftware for Sizers
- 7917** Emission Sampling System ESS