Phenom ProX G6 Desktop SEM

Desktop SEM with EDS capability for robust, effortless, and versatile elemental analysis
The sixth generation of Thermo Scientific Phenom ProX G6 Desktop SEM fills the gap between light microscopy and floor-model SEM analysis, expanding the capabilities of research facilities. It offers fast, high-resolution imaging in addition to an integrated energy dispersive spectroscopy (EDS) detector for robust, easy-to-use, rapid elemental analysis.

Expand your research facility’s capabilities
Fast and easy to use, the Thermo Scientific™ Phenom™ ProX G6 Desktop SEM can be used to relieve the burden of routine analysis for common samples from floor-model SEM instruments. Instrument configuration and the sample loading mechanism ensure quick imaging with minimal time spent tuning between experiments.

Facility users of any experience level can quickly begin producing high-quality results with the Phenom ProX G6 Desktop SEM. Its long-lifetime CeB₆ source offers high brightness while requiring low maintenance. Additionally, the Phenom ProX G6 Desktop SEM’s high stability and small form factor allow it to be used in practically any lab environment because it does not require specialized infrastructure or expert oversight.

Imaging specifications

<table>
<thead>
<tr>
<th>Imaging modes</th>
<th>Magnification range: 20–134x</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light optical</td>
<td></td>
</tr>
<tr>
<td>Electron optical</td>
<td>Magnification range: 160–350,000x</td>
</tr>
<tr>
<td>Illumination</td>
<td></td>
</tr>
<tr>
<td>Light optical</td>
<td>Bright field / dark field modes</td>
</tr>
<tr>
<td>Electron optical</td>
<td>Long lifetime thermionic source (CeB₆)</td>
</tr>
<tr>
<td>Acceleration voltages</td>
<td>• Default: 5 kV, 10 kV and 15 kV</td>
</tr>
<tr>
<td></td>
<td>• Advanced mode: adjustable range between 4.8 kV and 20.5 kV imaging and analysis mode</td>
</tr>
<tr>
<td>Resolution</td>
<td>• ≤6 nm (SED)</td>
</tr>
<tr>
<td></td>
<td>• ≤8 nm (BSD)</td>
</tr>
<tr>
<td>Detector</td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td>• Energy dispersive spectroscopy detector</td>
</tr>
<tr>
<td></td>
<td>• Backscattered electron detector</td>
</tr>
<tr>
<td>Optional</td>
<td>Secondary electron detector (enabled for live mixing with BSE)</td>
</tr>
</tbody>
</table>
The EID software package runs smart algorithms with advanced peak analysis to optimize the auto-identification functionality, while still allowing for manual adjustments at any time in the analysis process. The intuitive step-by-step process within the software helps you collect all X-ray results in an organized and structured manner.

### EDS Specifications

<table>
<thead>
<tr>
<th>Detector type</th>
<th>Silicon Drift Detector (SDD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Thermoelectrically cooled (LN$_2$ free)</td>
</tr>
<tr>
<td>Detector active area</td>
<td>25 mm$^2$</td>
</tr>
<tr>
<td>X-ray window</td>
<td>Ultra thin silicon nitride (Si$_3$N$_4$) window allowing detection of elements B to Cf</td>
</tr>
<tr>
<td>Energy resolution</td>
<td>Mn K$_\alpha$ ≤132 eV</td>
</tr>
<tr>
<td>Processing capabilities</td>
<td>Multi-channel analyzer with 2048 channels at 10 eV/ch</td>
</tr>
<tr>
<td>Max. input count rate</td>
<td>300,000 cps</td>
</tr>
<tr>
<td>Hardware integration</td>
<td>Fully embedded</td>
</tr>
</tbody>
</table>

### Software

- Integrated in Phenom user interface
- Integrated column and stage control
- Auto-peak ID
- Iterative strip peak deconvolution
- Export functions: CSV, JPG, TIFF, ELID, EMSA

### Report

Docx format

### System specifications

<table>
<thead>
<tr>
<th>Dimensions and weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imaging module</td>
</tr>
<tr>
<td>Diaphragm vacuum pump</td>
</tr>
<tr>
<td>Power supply</td>
</tr>
<tr>
<td>Monitor (24&quot;)</td>
</tr>
</tbody>
</table>

### Workstation

- Powerful workstation, including SSD storage and four USB slots
- 92.5 (w) x 305.6 (d) x 343.5 (h) mm, 8 kg

### Requirements

**Ambient conditions**

- Temperature: 15°C ~ 30°C (59°F ~ 86°F)
- Humidity: Between 20% and 80% RH
- Power: Single phase AC 100–240 Volt, 50/60 Hz, 153 W average, 348 W max

### Recommended table dimensions

150x75 cm, load rating of 100 kg
Elemental Mapping and Line Scan specifications*

**Element Mapping**
- Full spectrum mapping and line scan, makes post processing possible including offline element selection and re-quantification
- User-specified individual element maps, plus BSD and mix image
- Any size, rectangular
- 32x32-960x960 pixels
- 1–500 ms

**Line Scan**
- 16–512 pixels
- 10–500 ms
- Auto ID or manual

**Reporting**
- Docx format

**SED specifications**
- Everhart Thornley

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**Secondary electron detector**
The standard detector in the Phenom ProX G6 Desktop SEM is a four-segment backscattered electron detector (BSD) that yields sharp images and provides topographical contrast information.

A secondary electron detector (SED) is optionally available. The SED collects low-energy electrons from the top surface layer of the sample. It is therefore the perfect choice to reveal detailed sample surface information. The SED can be of great use for applications where topography and morphology are important. This is often the case when studying microstructures, nanostructures or particles. Once installed, the Phenom ProX G6 offers live mixing of backscattered and secondary electrons images to combine compositional and topographic data.

**Long-life CeB₆ source**
The CeB₆ (cerium-hexaboride) source has several advantages: first, the high brightness it provides compared to tungsten makes it much easier to obtain high-quality images with many details; second, the lifetime of the source is very long, and maintenance can be scheduled, enabling you to obtain the results you are looking for, even after a long (automated) run. The lifetime is extended as much as possible via our intelligent software; the source is hibernated when the Phenom ProX G6 Desktop SEM is not in use. In case the source needs to be replaced, this can be done on-site.