ErLEED 100/150
Reverse View LEED Optics

- High performance optics for LEED and AES
- Mounted on DN100CF (6”OD) or DN150CF (8”OD) flange
- Light shielded miniature electron gun
- 50 or 100 mm z-retraction (optional)
- Integral multi-segment shutter (optional)
- Digitally or analog controlled power supplies with independent HV modules
- Software for Auger spectroscopy and quantitative LEED studies (optional)
The SPECS reverse view ErLEED optics was designed at the University of Erlangen-Nürnberg (Lehrstuhl für Festkörperphysik) and has been developed over a period of some 20 years to its current high performance specifications. It is manufactured exclusively by SPECS.

In order to guarantee the highest possible quality and performance of each optics, great importance is attached to the selection of the materials and components as well as to the quality of the mechanical and electrical manufacturing.

The miniature electron gun allows a full view of the diffraction pattern. It is completely light shielded in order to avoid stray light and thus to be able to measure quantitative LEED I(E) curves or spot profiles. Two types of filaments are available: Thoria coated iridium hairpin and LaB₆ single crystal. The thoria coated iridium filaments allow the operation of the gun at pressures of up to 10⁻⁴ mbar oxygen. All filaments are easily replaceable in the users laboratory.

The high transmission grid assemblies are made of gold coated molybdenum ensuring long term mechanical stability as well as an uniform work function and non-magnetic characteristics. The optics are available in 2, 3 and 4 grid versions.

Two different sizes are offered. The ErLEED 100 mounted on a DN100CF flange (6”CF, 152 mm OD), while the ErLEED 150 is mounted on a DN150CF flange (8”CF, 203 mm OD).

A z-retraction mechanism allows the optics to be moved into or withdrawn from a restricted working area. Z-travel of 50 mm or 100 mm is available.

The optics can be protected by an integral multi-segment shutter mounted in front of all grids. All ErLEED optics are fully tested under UHV conditions before delivery. A detailed test certificate is supplied with each optics.

Several layers of organic 4T = Quaterthiophen molecules on Ag(111) surface

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Controls

**ErLEED 3000 D**

- Fully floating unit measures true beam current
- Up to 9 independent high precision HV-modules (primary energy, Wehnelt, anode, Einzel lens, suppressor, screen, collector, detection energy)
- Primary energy 0-1000 eV (LEED), 0-3000 eV (AES)
- Screen voltage 0-10 kV
- All voltages adjustable with offset and gain
- Internal and external measurement of the beam current
- Internal ramp generator with 0-2000 eV detection energy (AES)
- Variable energy sweep and scan time
- Collector voltage 0-500 V
- Internal sine generator with 750 Hz - 1.25 kHz oscillator frequency, 0-12 V pp amplitude, 1f, 2f and reference output
- External monitoring of the primary energy
- External 0-10 V control of primary and detection energy
- Preamplifier, filter and matching unit
- Integrated lock-in amplifier (optional)
- 18 bit D/A A/D converters for control and read-out of voltages
- Large screen dot-matrix LC display with back-light
- Manual operation by numeric keypad, up-down buttons, and rotary control knob
- Operation by PC via RS232 interface
- Non-volatile memory for store and recall of complete parameter settings
- 19” rack, height 182 mm, weight 11.5 kg
- Wide range mains input: 85-264 V, 47-440 Hz

**ErLEED 1000A**

- Fully floating unit measures true beam current
- Lens voltages run as function of beam energy
- 5 independent high-precision HV-modules (primary energy, extractor, Einzel lens, suppressor, screen, detection energy)
- 3 digital meters for current and voltage display
- Primary energy (LEED) 0-1000 eV
- Screen voltage 0-7.5 kV
- Gun voltages (lens 1/3, lens 2 and anode) adjustable with offset and gain
- Input for external control of primary energy 0-10 V
- External measurement of beam current
- External monitoring of primary energy
- 19” rack, height 182 mm, weight 10 kg
- 220-240 V, 50 Hz or 100-120 V, 50-60 Hz

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*Innovation in Surface Spectroscopy and Microscopy Systems*
### Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnetic shielding</td>
<td>Mu-metal</td>
</tr>
<tr>
<td>Bakeout temperature</td>
<td>250 °C</td>
</tr>
<tr>
<td>Type of optics</td>
<td>ErLEED 150/100</td>
</tr>
<tr>
<td>Grids</td>
<td>Gold coated molybdenum</td>
</tr>
<tr>
<td>Grid transmission</td>
<td>81%</td>
</tr>
<tr>
<td>Number of grids</td>
<td>2, 3 or 4 grids</td>
</tr>
<tr>
<td>Screen</td>
<td>Hemispherical rear view glass screen coated with ITO conducting layer and P43 cadmium free phosphorus</td>
</tr>
<tr>
<td>Viewing angle</td>
<td>100 °/84 °</td>
</tr>
<tr>
<td>Gun diameter</td>
<td>15 mm (0.6&quot;)</td>
</tr>
<tr>
<td>Gun energy range</td>
<td>0-3000 eV</td>
</tr>
<tr>
<td>Spot size</td>
<td>&lt; 1 mm @1 μA &amp; 100 eV</td>
</tr>
<tr>
<td>Beam current</td>
<td>&gt; 15 μA @1 keV, &gt; 45 μA @3 keV (AES)</td>
</tr>
<tr>
<td>Filaments</td>
<td>Thoria coated iridium hairpin for operation at pressures up to 10⁻³ mbar or LaB₆ single crystal.</td>
</tr>
<tr>
<td>Mounting flange</td>
<td>DN150 CF (8&quot; OD), DN100 CF (6&quot; OD)</td>
</tr>
<tr>
<td>Inner Diameter Ø D</td>
<td>145 mm (ErLEED 150), 96 mm (ErLEED 100)</td>
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### Working Distance

<table>
<thead>
<tr>
<th>Sample Working Distance</th>
<th>ErLEED 150</th>
<th>ErLEED 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>I: 9 mm</td>
<td>I: 0 mm</td>
<td>I: 13 mm</td>
</tr>
<tr>
<td>II: 18 mm</td>
<td>II: 13 mm</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Working Distance (Δ)</th>
<th>ErLEED 150 - z50</th>
<th>ErLEED 100 - z50</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 grids shutter</td>
<td>26 mm, R 38.5</td>
<td>3 grids shutter</td>
</tr>
<tr>
<td>3 grids shutter</td>
<td>23 mm, R 36</td>
<td>4 grids shutter</td>
</tr>
<tr>
<td>4 grids shutter</td>
<td>19 mm, R 33.5</td>
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| Sample to flange distance (for fixed length optics) | ErLEED 150: 165 mm (6.5") | ErLEED 100: 203 mm (8") |
| Sample to flange distance (for retractable optics, fully extended) | ErLEED 150: 254 mm (10") | ErLEED 100: 350 mm (13.8") |

| Power supplies                          | ErLEED 1000A analog for LEED/AES, ErLEED 3000D digital for LEED/AES |
| Software                                | SAFIRE/RFA-PC     |
| Weight                                  | 15 kg/8.2 kg      |

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ISO 9001 Certificate

Your Local Representative: