Nano/Micro Rotation Stage

**UMP1000R Series**

The Nano / Micro Rotation Stage UMP1000R Series are small rotation stages developed for applications that require microscopic rotation and position detection in atmospheric and high-vacuum conditions.

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**Features**

- Compact design allows incorporation into a variety of scanning electron microscopes (SEM) and focused ion beam (FIB) systems. (Contact us for details)
- Models are also available with optional rotational single detection.
- Installing the UNISOKU XYZ 3-axis Nano-manipulator / prober’s Z-stage enables applications that require a XYZ + R (Rotation 4-axis stage).
- Simple operation from a Windows PC.

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**Primary Applications**

- Rotational operation and angle detection under SEM, FIB, and optical microscopy
- Nano / Micro-manipulation and probing combining XYZ and rotational operation.

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**Line-ups**

**Rotation Stage (R)**
- Consists of stage unit, controller, and control software (PC optional).
- Selectable rotational angle detecting function.
- Model No.
  - UMP1000R - No rotational angle detection
  - UMP1000RE - With rotational angle detection

**XYZ 3-axis + Rotation (R) Stage**
- Consists of stage unit, controller, and control software (PC optional).
- Selectable rotational angle detecting function.
- Model No.
  - UMP1000UR - No rotational angle detection
  - UMP1000URE - With rotational angle detection

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**Rotation Stage**

- UMP1000R, UMP1000RE

*Rotor shape can be modified

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**Controller**

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**XYZ 3-axis Stage**

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**UMP1000UR Rotor**

*Shape of rotor at tip can be modified (No rotational angle detection function)
## Nano / Micro Rotation Stage

### UMP1000R Series

#### Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>UMP1000R</th>
<th>UMP1000RE</th>
<th>UMP1000UR</th>
<th>UMP1000URE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage Type</td>
<td>Rotation Stage</td>
<td>XYZ + R (Rotation) 4-axis Stage</td>
<td>XYZ + R (Rotation) 4-axis Stage</td>
<td></td>
</tr>
<tr>
<td>Angle Detection Function</td>
<td>No Angle Detection</td>
<td>With Angle Detection</td>
<td>No Angle Detection</td>
<td>With Angle Detection</td>
</tr>
<tr>
<td>Max. Range of Motion</td>
<td>XYZ Coarse (Pulse) Mode</td>
<td>-</td>
<td>-</td>
<td>XYZ-axis: &gt;5mm, Z-axis: &gt;3mm</td>
</tr>
<tr>
<td></td>
<td>XYZ Fine (DC) Mode</td>
<td>-</td>
<td>-</td>
<td>XYZ-axis: 1μm</td>
</tr>
<tr>
<td></td>
<td>Rotation (Pulse) Mode</td>
<td>-</td>
<td>&gt;360°</td>
<td></td>
</tr>
<tr>
<td>Min. Resolution</td>
<td>XYZ Coarse (Pulse) Mode</td>
<td>-</td>
<td>-</td>
<td>&lt;150nm</td>
</tr>
<tr>
<td></td>
<td>XYZ Fine (DC) Mode</td>
<td>-</td>
<td>-</td>
<td>Variable Resolution: Max. Range of Motion in DC Mode / 20,000</td>
</tr>
<tr>
<td></td>
<td>Rotation (Pulse) Mode</td>
<td>-</td>
<td>&lt;0.05°</td>
<td></td>
</tr>
<tr>
<td>Unit (Stage)</td>
<td>Rotation Speed</td>
<td>Approximately 30s – 120s / 1 rotation (variable)</td>
<td>*Varies with size / shape of rotor</td>
<td></td>
</tr>
<tr>
<td>Detection Angle Resolution</td>
<td>-</td>
<td>&lt;0.25°</td>
<td>*Higher resolution possible by special order</td>
<td></td>
</tr>
<tr>
<td>Rotary Shaft Eccentricity</td>
<td>-</td>
<td>&gt;100μm (± Stand)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input</td>
<td>Voltage</td>
<td>±150V</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extraction Line</td>
<td>2 (twisted pair wire)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>For Dsub terminal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions, Weight</td>
<td>Rotation Stage</td>
<td>Rotor OD: 18mm dia. Stator OD: 30mm dia.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dimensions (mm)</td>
<td>Weight</td>
<td>&lt;100g (Not including mounting base plate)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&lt;120g (Not including mounting base plate)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>&lt;180g (Not including mounting base plate)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>&lt;200g (Not including mounting base plate)</td>
<td></td>
</tr>
<tr>
<td>Operating Environment</td>
<td>Vacuum</td>
<td>In air &amp; 10°2 ± 10°Pa</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Temperature Range</td>
<td>4°C ± 10°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Humidity Range</td>
<td>15% ~ 80%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controller</td>
<td>Input Voltage</td>
<td>AC 100VAC (50/60Hz)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Power Consumption</td>
<td>Less than 100VA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Controller Output</td>
<td>±150V max.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Output Terminal</td>
<td>Dsub 9-pin female</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Input Terminal</td>
<td>USB terminal</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dimensions, Weight</td>
<td>Dimensions</td>
<td>213(W) x 370(D) x 100(H) mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weight</td>
<td>Approx. 6kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating Environment</td>
<td>Temperature Range</td>
<td>5°C ~ 40°C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Humidity Range</td>
<td>15% ~ 80%</td>
<td></td>
</tr>
<tr>
<td>Accessories</td>
<td>Standard Control Software CD-ROM</td>
<td>Windows 7 or 10 (32bit) Single user license : 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Special Connection Cable (USB)</td>
<td>PC - Controller (3m) : 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Special Connection Cable (1 side Dsub 15)</td>
<td>1.5m : 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optional (Requested specifications for Notebook PC)</td>
<td>OS (32bit Version)</td>
<td>Windows 7 or 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>USB Port</td>
<td>At least one</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CD-ROM Drive</td>
<td>Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Memory</td>
<td>At least 512MB *To allow for optional OS operation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>HDD</td>
<td>At least 10MB unoccupied</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Specifications and appearances are subject to change without notice.