Application fields

- Static and dynamic precision positioning
- Fiber positioning
- Laser tuning
- Nanotechnology

Outstanding lifetime thanks to PICMA® piezo actuators

The patented PICMA® piezo actuators are all-ceramic insulated. This protects them against humidity and failure resulting from an increase in leakage current. PICMA® actuators offer an up to ten times longer lifetime than conventional polymer-insulated actuators. 100 billion cycles without a single failure are proven.

Suitable for sophisticated vacuum applications

Piezo actuators do not require lubrication and do not cause abrasion. The all-ceramic isolated PICMA® actuators also do not require polymer isolation and are therefore ideal for vacuum applications.
## Specifications

<table>
<thead>
<tr>
<th></th>
<th>P-840.1</th>
<th>P-840.2</th>
<th>P-840.3</th>
<th>P-840.4</th>
<th>P-840.6</th>
<th>Unit</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Travel range at 0 to 100 V</strong></td>
<td>15</td>
<td>30</td>
<td>45</td>
<td>60</td>
<td>90</td>
<td>µm</td>
<td>±20 %</td>
</tr>
<tr>
<td>Resolution*</td>
<td>0.15</td>
<td>0.3</td>
<td>0.45</td>
<td>0.6</td>
<td>0.9</td>
<td>nm</td>
<td></td>
</tr>
<tr>
<td><strong>Static large-signal stiffness</strong></td>
<td>57</td>
<td>27</td>
<td>19</td>
<td>15</td>
<td>10</td>
<td>N/µm</td>
<td>±20 %</td>
</tr>
<tr>
<td>Push force capacity</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>N</td>
<td>max.</td>
</tr>
<tr>
<td>Pull force capacity</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>N</td>
<td>max.</td>
</tr>
<tr>
<td>Torque on tip</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
<td>Nm</td>
<td>max.</td>
</tr>
<tr>
<td>Electrical capacitance</td>
<td>1.5</td>
<td>3.0</td>
<td>4.5</td>
<td>6.0</td>
<td>9.0</td>
<td>µF</td>
<td>±20 %</td>
</tr>
<tr>
<td>Resonant frequency $f_r$ (no load)</td>
<td>18</td>
<td>14</td>
<td>10</td>
<td>8.5</td>
<td>6</td>
<td>kHz</td>
<td>±20 %</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-20 to 80</td>
<td>-20 to 80</td>
<td>-20 to 80</td>
<td>-20 to 80</td>
<td>-20 to 80</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>Mass without cable</td>
<td>20</td>
<td>28</td>
<td>46</td>
<td>54</td>
<td>62</td>
<td>g</td>
<td>±5 %</td>
</tr>
<tr>
<td>Length L</td>
<td>32</td>
<td>50</td>
<td>68</td>
<td>86</td>
<td>122</td>
<td>mm</td>
<td>±0.3 mm</td>
</tr>
</tbody>
</table>

* The resolution of the system is only limited by the noise of the amplifier and measuring technology because PI piezo actuators are free of friction.

** Dynamic small-signal stiffness is approx. 30 % higher.

Voltage connection: LEMO FFA.00.250. Coaxial cable RG 178, 1 m.

Housing / tip material: Stainless steel.

Vacuum versions to $10^{-6}$ hPa are available under the order number P-840.xxV.

All specifications based on room temperature (22 °C ±3 °C).

Specifications for vacuum versions can differ.
Drawings / Images

Ordering Information

Actuators without sensor

**P-840.10**
Preloaded piezo actuator, 15 µm travel range, 1000 N / 50 N

**P-840.20**
Preloaded piezo actuator, 30 µm travel range, 1000 N / 50 N

**P-840.30**
Preloaded piezo actuator, 45 µm travel range, 1000 N / 50 N

**P-840.40**
Preloaded piezo actuator, 60 µm travel range, 1000 N / 50 N

**P-840.60**
Preloaded piezo actuator, 90 µm travel range, 1000 N / 50 N

*P-840 / P-841, dimensions in mm. Sensor included only with P-841.*
Actuators without sensor, vacuum compatible

P-840.10V
Preloaded piezo actuator, 15 µm travel range, 1000 N / 50 N, vacuum compatible to $10^{-6}$ hPa

P-840.20V
Preloaded piezo actuator, 30 µm travel range, 1000 N / 50 N, vacuum compatible to $10^{-6}$ hPa

P-840.30V
Preloaded piezo actuator, 45 µm travel range, 1000 N / 50 N, vacuum compatible to $10^{-6}$ hPa

P-840.40V
Preloaded piezo actuator, 60 µm travel range, 1000 N / 50 N, vacuum compatible to $10^{-6}$ hPa

P-840.60V
Preloaded piezo actuator, 90 µm travel range, 1000 N / 50 N, vacuum compatible to $10^{-6}$ hPa

Actuators without sensor, with tip

P-840.1B
Preloaded piezo actuator, 15 µm travel range, 1000 N / 50 N, ball tip

P-840.2B
Preloaded piezo actuator, 30 µm travel range, 1000 N / 50 N, ball tip

P-840.3B
Preloaded piezo actuator, 45 µm travel range, 1000 N / 50 N, ball tip

P-840.4B
Preloaded piezo actuator, 60 µm travel range, 1000 N / 50 N, ball tip

P-840.6B
Preloaded piezo actuator, 90 µm travel range, 1000 N / 50 N, ball tip

Actuators without sensor, with tip, vacuum compatible

P-840.1BV
Preloaded piezo actuator, 15 µm travel range, 1000 N / 50 N, ball tip, vacuum compatible to $10^{-6}$ hPa

P-840.2BV
Preloaded piezo actuator, 30 µm travel range, 1000 N / 50 N, ball tip, vacuum compatible to $10^{-6}$ hPa

P-840.3BV
Preloaded piezo actuator, 45 µm travel range, 1000 N / 50 N, ball tip, vacuum compatible to $10^{-6}$ hPa

P-840.4BV
Preloaded piezo actuator, 60 µm travel range, 1000 N / 50 N, ball tip, vacuum compatible to $10^{-6}$ hPa

P-840.6BV
Preloaded piezo actuator, 90 µm travel range, 1000 N / 50 N, ball tip, vacuum compatible to $10^{-6}$ hPa