The MKS Types 141 and 142 Vacuum/Pressure Switches offer fast, accurate, and reliable protection for vacuum equipment and processes. Designed for applications where a DC signal output is not required, the Types 141 and 142 provide relay outputs that are readily interfaced with alarms, valve actuators, computers, process controllers, or other protection devices.

Based on the well-known MKS Baratron® capacitance manometer principle of operation, the Types 141/142 sense the deflection of a diaphragm due to applied pressure, providing a switched output when pressure exceeds the chosen set point. An LED provides visual “above set point” indication, and facilitates adjustment of the set point. The dual electrode sensor is an all-metal, all-welded design, thus exposing only corrosion-resistant Inconel® to the process gases.

The 142 is a heated (100°C) version of the Type 141, and is designed to help minimize process effluent buildup that can occur in LPCVD nitride, aluminum etch, and other types of processes.

Features & Benefits

- Ideal for protection of expensive equipment or processes: high vacuum pumps, mass spectrometers, lasers, plasma systems
- Fully adjustable set point: from 0.2% to 100% of Full Scale
- High accuracy set point: 0.5% of Full Scale
- Corrosion resistant: all-metal, all-welded construction exposes only Inconel® and stainless steel to gases
- Double pole, two Form C relay contacts
- Fast response switching: 20 msec
- Provide inexpensive process control for opening/closing slow pump and isolation valves, and for turning on/off various types of pumps
### Specifications and Ordering Information

**Full Scale Ranges**

1, 2, 10, 100, 1000 Torr (mmHg) absolute¹

(Other engineering units available on special order, consult Applications Engineering.)

**Set Point Range**

0.2% to 100% of F.S.²

**Accuracy**

±0.5% of range (± temperature coefficients)

**Temperature Coefficients**

- **Zero**
  - Type 141: ±0.04% of F.S./°C
  - Type 142: ±0.015% of F.S./°C

- **Span**
  - Type 141: ±0.06% of set point/°C
  - Type 142: ±0.03% of set point/°C

**Ambient Operating Temperature**

- **Type 141:** 0° to 50°C
- **Type 142:** 20° to 70°C; sensor is temperature controlled at 100°C

**Response Time**

< 20 msec from 0 to F.S.

**Material Exposed to Process**

- Inconel and 316 S.S.

**Internal Volume**³

3.7 cc

**Overpressure**⁴

120% of F.S. or 35 psia (1000 mmHg), whichever is larger

**Outputs**

- Electromechanical relay DPDT (isolated) contacts rated at 2 amps @ 30VDC or 1 amp @ 120VAC resistive. Relay is energized when pressure is above set point. Fail-safe operation provides for the relay to be energized when pressure is below set point. For CE compliance, voltages cannot equal or exceed either 50 VAC or 75 VDC.

  - **Type 141:** +20 to +30 VDC, 72 mA max. (60 mA @ 24 VDC)
  - **Type 142:** +20 to +30 VDC, 1.2 Amps max. (875 mA @ 24 VDC)

**Input Power Required**

- **Type 141:** +20 to +30 VDC, 72 mA max. (60 mA @ 24 VDC)
- **Type 142:** +20 to +30 VDC, 1.2 Amps max. (875 mA @ 24 VDC)

**Fittings**⁵

- Standard 0.5” (12.7 mm) tubulation
- Optional Swagelok® VCR® (female), mini-CF, NW 16 KF, Swagelok® VCO®

**CE Compliance**

- Fully compliant to EMC Directive 2004/108/EC

---

### Ordering Code Example: 141AA-00001AA

<table>
<thead>
<tr>
<th>Types 141 and 142</th>
<th>Code</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type Numbers</strong></td>
<td>141AA/142AA</td>
<td>141AA</td>
</tr>
<tr>
<td><strong>Full Scale Ranges</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 mmHg</td>
<td>00001</td>
<td></td>
</tr>
<tr>
<td>2 mmHg</td>
<td>00002</td>
<td></td>
</tr>
<tr>
<td>10 mmHg</td>
<td>00010</td>
<td></td>
</tr>
<tr>
<td>100 mmHg</td>
<td>00100</td>
<td></td>
</tr>
<tr>
<td>1000 mmHg</td>
<td>01000</td>
<td></td>
</tr>
<tr>
<td><strong>Fittings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>½” dia. tubulation</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Swagelok® 8 VCR® (female)</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>Mini-CF, rotatable</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>NW 16 KF</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Swagelok® 8 VCO® (female)</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td><strong>Relay Mode</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard operation (energizes above set point)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Fail-safe operation (energizes below set point)</td>
<td>B</td>
<td></td>
</tr>
</tbody>
</table>

---

¹If gauge pressure set point actuation is desired on the Type 141, 142, add SP110-89 to end of ordering code.

²Unit shipped with set point at 50% of F.S. unless otherwise specified.

³5K–25K Torr units have an 8.5 cc volume.

⁴If 1 and 2 Torr F.S. units have a max. overpressure of 25 psia.

⁵Ranges above 1000 Torr are available with certain fittings; consult Applications Engineering.

---

**Global Headquarters**

2 Tech Drive, Suite 201
Andover, MA 01810
Tel: 978.645.5500
Tel: 800.227.8766 (in U.S.A.)
Web: www.mksinst.com

Specifications are subject to change without notice.

Baratron® is a registered trademark of MKS Instruments, Inc., Andover, MA.

Swagelok®, VCR®, and VCO® are registered trademarks of Swagelok Marketing Co., Solon, OH.

Inconel® is a registered trademark of Inco Alloys International, Huntington, WV.