

141 Unheated 142 High Temperature Baratron® Vacuum Pressure Switches



The 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 141 and 142 provide relay outputs that are readily interfaced with alarms, valve actuators, computers, process controllers, or other protection devices.

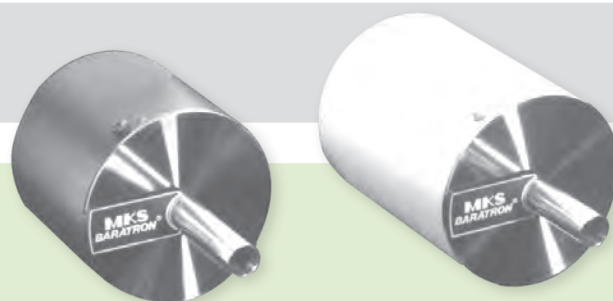
Based on the well-known MKS Baratron® capacitance manometer principle of operation, the 141/142 sense the deflection of a diaphragm due to applied pressure,

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 141, and is designed to help minimize process effluent buildup that can occur in LPCVD nitride, aluminum etch, and other types of processes.

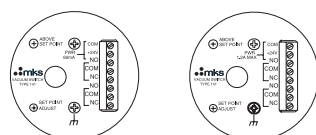
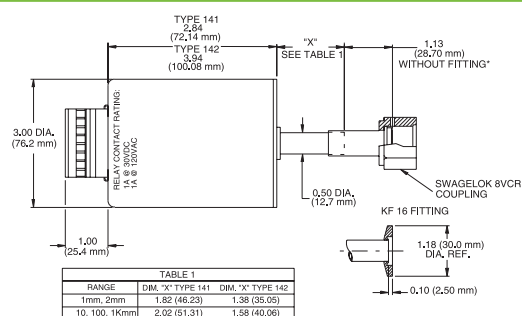
Product Features

- 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
- Double pole, two Form C relay contacts
- Fast response switching: 20 msec



Key Benefits

- Corrosion resistant: all-metal, all-welded construction exposes only Inconel® and stainless steel to gases
- Provides inexpensive process control for opening/closing slow pump and isolation valves, and for turning on/off various types of pumps



Dimensional Drawing - Unless otherwise specified, dimensions are nominal values in inches (mm referenced).

Specifications		
Full Scale Ranges		1, 2, 10, 100, 1000 Torr (mmHg) absolute ¹ (Other engineering units available on special order, consult Applications Engineering.)
Set Point Range		0.2% to 100% of Full Scale ²
Accuracy		±0.5% of range (± temperature coefficients)
Temperature Coefficients	Zero	141: ±0.04% of Full Scale/°C 142: ±0.015% of Full Scale/°C
	Span	141: ±0.06% of set point/°C 142: ±0.03% of set point/°C
Ambient Operating Temperature		141: 0° to 50°C 142: 20° to 70°C; sensor is temperature controlled at 100°C
Response Time		< 20 msec from 0 to Full Scale
Material Exposed to Process		Inconel and 316 S.S.
Internal Volume ³		7.0 cc
Overpressure ⁴		120% of Full Scale or 35 psia (1000 mmHg), whichever is larger
Outputs	Electromechanical Relay	DPDT (isolated) contacts rated at 2 amps @ 30 VDC or 1 amp @ 120 VAC 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 compliance, voltages cannot equal or exceed either 50 VAC or 75 VDC.
Input Power Required		141: +20 to +30 VDC, 72 mA max. (60 mA @ 24 VDC) 142: +20 to + 30 VDC, 1.2 Amps max. (875 mA @ 24 VDC)
Fittings ⁵	Standard Optional	0.5" (12.7 mm) tubulation - Swagelok® 8 VCR® (female), mini-CF, NW 16 KF, Swagelok 8 VCO®

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

² Unit shipped with set point at 50% of Full Scale unless otherwise specified.

³ 5K – 25K Torr units have an 8.5 cc volume.

⁴ 1 and 2 Torr Full Scale units have a max. overpressure of 25 psia.

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

Ordering Code Example: 141AA-00001AA	Code	Configuration
Model		
141 142	141AA 142AA	141AA
Full Scale Ranges		
1 mmHg 2 mmHg 10 mmHg 100 mmHg 1000 mmHg	00001 00002 00010 00100 01000	00001
Fittings		
½" dia. tubulation Swagelok 8 VCR (female) Mini-CF, rotatable NW 16 KF Swagelok 8 VCO (female)	A B C D E	A
Relay Mode		
Standard operation (energizes above set point) Fail-safe operation (energizes below set point)	A B	A