

# AGP-1 Pirani Gauge

## Wide Range MEMS Pirani Gauge

The AGP Pirani gauge incorporates cutting edge MEMS (Microelectromechanical Systems) sensor technology with precision digital signal processing and advanced measurement algorithms. Combined with precision automated manufacturing and calibration processes, this product provides uncompromised measurement performance.

The well-known gas dependency in the rough vacuum range of thermal conductivity gauges has been eliminated by integrating a MEMS diaphragm sensor that offers precision performance comparable to more expensive capacitance manometers. This feature ensures more accurate control of vacuum system venting processes and can prevent over-pressurization of the vacuum system.



- Measurement range:  $1 \times 10^{-6}$  mBar to 1333 mBar ( $7.5 \times 10^{-7}$  to 1000 Torr)
- Ultra-wide range high performance MEMS Pirani sensor
- Advanced innovative digital signal processing
- Precision gas-independent sensor from 5 to 1333 mBar
- 0 - 10 Vdc programmable voltage output
- Mountable in any orientation without impact on performance
- Programmable voltage output signal
- Digital RS-232 interface
- One solid-state relay for process control
- High overpressure tolerance of 10 bar (145 psi) absolute

Transducer settings and parameters are user-programmable from the serial interface enabling diagnostics, predictive maintenance, service, calibration, setpoint configuration, analog output scaling and acquisition of real-time vacuum pressure measurements. A wide selection of analog output scaling options to emulate other vendors' vacuum gauges and transducers is available.

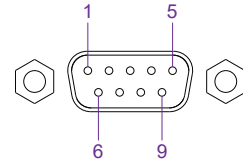
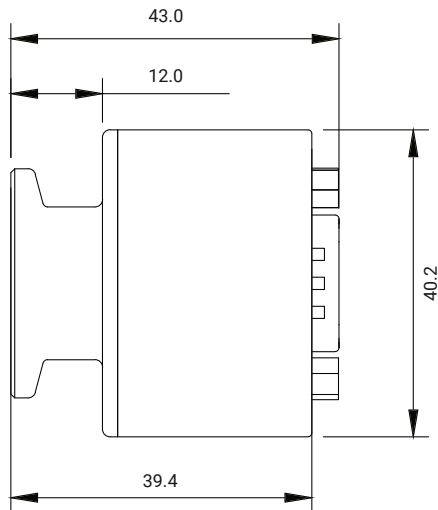
Active temperature compensation and calibration provides an ultra-stable zero-point which enables a reliable, wide dynamic range – it also eliminates the need for frequent user re-zeroing due to zero-point drift commonly known from legacy Pirani and convection gauges. The active temperature compensation also compensates for measurement signal errors introduced by fluctuations in the ambient temperature.

One independent solid-state switch relay. The basic control uses on/off regulation with a programmable setpoint and hysteresis value and offers both normally closed and normally open contacts.

## TECHNICAL DATA

Specifications	
Measurement range	1 x 10 <sup>-6</sup> to 1333 mBar (7.5 x 10 <sup>-7</sup> to 1000 Torr)
Measuring principle 1 x 10 <sup>-6</sup> to 1.5 mBar	MEMS Pirani thermal conductivity
Measuring principle 1.5 to 2 mBar	Blended MEMS Pirani / piezo reading
Measuring principle 2 to 1333 mBar	MEMS piezo resistive diaphragm
Accuracy 1 x 10 <sup>-5</sup> to 9.99 x 10 <sup>-5</sup> mBar	25% of reading
Accuracy 1 x 10 <sup>-4</sup> to 7.99 mBar	5% of reading
Accuracy 8.00 to 99.9 mBar	1% of reading
Accuracy 100 to 800 mBar	0.5% of reading
Accuracy 800 to 1099 mBar	0.25% of reading
Accuracy 1100 to 1333 mBar	0.5% of reading
Hysteresis 1x10 <sup>-3</sup> to 10 mbar (ISO19685:2017)	1%
Hysteresis 10 to 1333 mbar (ISO19685:2017)	0.1%
Analog output resolution	16 bit (150 µV)
Analog output update rate	124 Hz
Response time (ISO 19685:2017)	<20 ms
Temperature compensation	+10°C to +50°C
Solid state relay set point range	5 x 10 <sup>-6</sup> to 1333 mbar (3.75 x 10 <sup>-6</sup> to 1000 Torr)
Solid state relay contact rating	50 Vdc/Vac peak, 100 mA <sub>rms</sub> /mA <sub>dc</sub>
Environmental conditions	
Operating ambient temperature	-20°C to +50°C
Media temperature	-20°C to +50°C
Storage ambient temperature	-40°C to +120°C
Bake-out temperature (non-operating)	+120°C
Maximum media pressure	10 bar absolute
Mounting position	Arbitrary
Protection rating, EN 60529/A2:2013	IP 40
Humidity, IEC 68-2-38	98%, non-condensing
Power supply	
Supply voltage	12 - 30 Vdc
Power consumption	240 mW maximum
Reverse polarity and over voltage protection	Yes
Internal fuse	100 mA (thermal recoverable)
Materials	
Vacuum process flange	SS 1.4404 / AISI 316 stainless steel
Enclosure	SS 1.4404 / AISI 316 stainless steel / Aluminium
Vacuum exposed materials (media wetted)	316 Stainless steel, Kovar, glass, silicon, nickel, aluminum, SiO <sub>2</sub> , Si <sub>3</sub> N <sub>4</sub> , gold, Viton®, low out-gassing epoxy resin
Process leak tightness	< 1 · 10 <sup>-9</sup> mBar · l/sec.

## DIMENSIONS & PIN OUTS



Pin	Description
1	Relay NO (normally open contact)
2	Relay NC (normally closed contact)
3	Supply voltage 12 - 30 Vdc
4	Supply voltage – (return)
5	Analog voltage signal +
6	Relay Common
7	RS-232 Transmit (-)
8	Analog voltage signal – (return)
9	RS-232 Receive (+)

### Notes

All dimensions are in millimetres.

## GAUGE CONTROLLER



AML offer an Ion Gauge Controller with Active Gauge Input which includes an industry standard RJ45 jack that allows connection of most low power Active gauges. This enables a continuous measurement range of 1200 mBar to  $3 \times 10^{-11}$  mBar when used with our AGP-1 Active Pirani gauge head or equivalent.

AML supplies a range of hot-cathode ionization gauges with a choice of tungsten (W), thoria coated iridium (ThO<sub>2</sub>/Ir) or yttria coated iridium (Y<sub>2</sub>O<sub>3</sub>/Ir) filaments. We also offer passive Pirani gauges.

## ORDERING INFORMATION

Order Code	
AGP-1	Active Pirani Gaugehead

Related Products	
NGC3	Ion Gauge Controller with Active Gauge Input
XAD1	AGP-1 to RJ45 adapter



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AML pursues a policy of continuous improvement and reserves the right to make detail changes to specifications without consultation. E and OE.