

# AA04A

## Absolute General Purpose Baratron® Pressure Transmitter



MKS Instruments Inc., the recognized leader in capacitance manometer technology, includes in its broad range of pressure measurement tools the AA04A absolute pressure transmitter. This Baratron® transmitter represents MKS' commitment to continuous product improvement and is the result of over sixty years of experience in gas measurement and control devices. This design of the AA04A offers superior temperature compensation, a dual electrode design, and an ambient operating temperature of up to 100°C. For ambient operation temperatures beyond 50°C, contact MKS applications for calibration requirements.

With the AA04A, pressure is determined by measuring the change in capacitance between the Inconel® diaphragm and an adjacent dual electrode. The diaphragm deflects as a result of pressure changes causing a change in the capacitance between the diaphragm and the electrode. An electronic circuit converts the pressure sensitive capacitance to a precise linear 4 to 20mA current output. The precision design and manufacturing permits an accuracy specification as a percentage of output reading, rather than in terms of Full Scale reading. The AA04A is a RoHS replacement for the MKS 230E absolute pressure transmitter. There is no change to the sensor or the parts and materials in the wetted path.

### Product Features

- Ambient operating temperature up to 100°C
- Full Scale range as low as 1 Torr and as high as 25K Torr
- Two-wire, 4-20 mA signal output allows for the use of long installation cables
- Modern D-sub electrical connector with an option for including a D-sub to terminal block adapter



### Key Benefits

- Measures total pressure directly, independent of gas composition
- Sensor has an all Inconel corrosion-resistant construction
- Dual electrode design provides improved stability

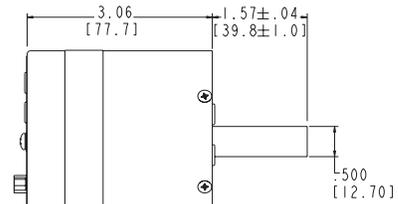
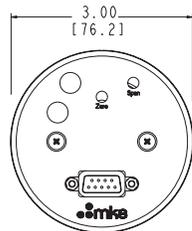
## Specifications

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<b>Full Scale Pressure Ranges</b>	1, 10, 100, 1000, 5000, 10000, 15000, 20000, 25000 Torr (mmHg)						
<b>Accuracy<sup>1,2</sup></b>	<table border="0"> <tr> <td style="text-align: right;"><b>Standard</b></td> <td>• ±0.5% of Reading</td> </tr> <tr> <td style="text-align: right;"><b>Optional</b></td> <td>• ±0.3% of Reading (Option available for Full Scale ranges of 10 Torr or higher).</td> </tr> </table>	<b>Standard</b>	• ±0.5% of Reading	<b>Optional</b>	• ±0.3% of Reading (Option available for Full Scale ranges of 10 Torr or higher).		
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<b>Temperature Coefficients</b>	<table border="0"> <tr> <td style="text-align: right;"><b>Zero</b></td> <td>• ±200 ppm/°C</td> </tr> <tr> <td></td> <td>• ±250 ppm/°C for Full Scale of ≤1 Torr</td> </tr> <tr> <td style="text-align: right;"><b>Span</b></td> <td>• ±400 ppm/°C</td> </tr> </table>	<b>Zero</b>	• ±200 ppm/°C		• ±250 ppm/°C for Full Scale of ≤1 Torr	<b>Span</b>	• ±400 ppm/°C
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<b>Span</b>	• ±400 ppm/°C						
<b>Operating Temperature</b>	0°C to 100°C (Please contact MKS applications for calibration requirements for ambient temperatures in excess of 50°C).						
<b>Materials Exposed to Gases</b>	<table border="0"> <tr> <td style="text-align: right;"><b>Standard</b></td> <td>• Inconel</td> </tr> <tr> <td style="text-align: right;"><b>Optional</b></td> <td>• Some fittings are made from 300 series stainless steel (See Fittings section for materials)</td> </tr> </table>	<b>Standard</b>	• Inconel	<b>Optional</b>	• Some fittings are made from 300 series stainless steel (See Fittings section for materials)		
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<b>Volume (Px side)</b>	7.0 cc for ½" OD tube fitting. Volumes with other fittings available on request.						
<b>Overpressure Limit</b>	120% of Full Scale or 35 psia (240 kPa), whichever is greater without damage						
<b>Input Required/Output Signal</b>	<ul style="list-style-type: none"> <li>• Two-wire, 4-20 mA @ +24 to 32 VDC into 500 Ω load (4 mA @ 0 absolute pressure to 20 mA @ Full Scale)</li> <li>• Pin 1: +DC, Pin 2: Power Return</li> </ul>						
<b>Fittings</b>	<table border="0"> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <li>½" tubulation (max 1000 Torr)</li> <li>8 VCR Female</li> <li>8 VCO Female</li> <li>KF16 (max 1000 Torr)</li> <li>KF25 (max 1000 Torr)</li> <li>1.33" CF</li> <li>2.75" CF</li> </ul> </td> <td style="vertical-align: top;"> <b>Materials</b> <ul style="list-style-type: none"> <li>• None</li> <li>• 316 Stainless</li> <li>• 316 Stainless</li> <li>• 304 Stainless</li> <li>• 304 Stainless</li> <li>• 304 Stainless</li> <li>• 304 Stainless</li> </ul> </td> </tr> </table>	<ul style="list-style-type: none"> <li>½" tubulation (max 1000 Torr)</li> <li>8 VCR Female</li> <li>8 VCO Female</li> <li>KF16 (max 1000 Torr)</li> <li>KF25 (max 1000 Torr)</li> <li>1.33" CF</li> <li>2.75" CF</li> </ul>	<b>Materials</b> <ul style="list-style-type: none"> <li>• None</li> <li>• 316 Stainless</li> <li>• 316 Stainless</li> <li>• 304 Stainless</li> <li>• 304 Stainless</li> <li>• 304 Stainless</li> <li>• 304 Stainless</li> </ul>				
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<b>Compliance</b>	CE						

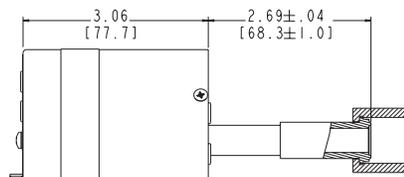
<sup>1</sup> Includes non-linearity, hysteresis, and non-repeatability.

<sup>2</sup> Accuracy specification and NIST-traceable calibration points included on calibration sheet are from Full Scale to 10% of Full Scale.

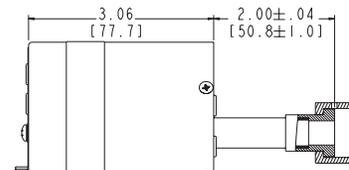
## Dimensional Drawings



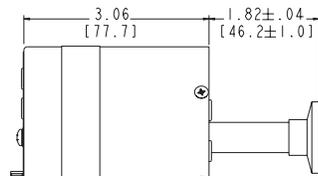
AA04A FITTING CODE -BA-



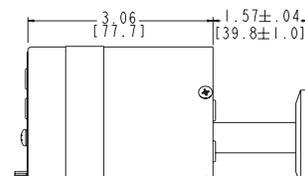
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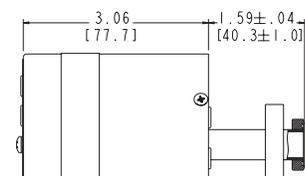
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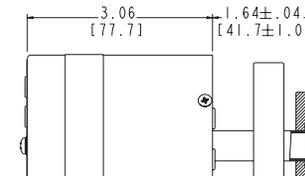
AA04A FITTING CODE -GA-



AA04A FITTING CODE -GC-



AA04A FITTING CODE -HA-



AA04A FITTING CODE -HC-

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

## Ordering Information

Ordering Code Example: AA04A13TCEADF	Code	Configuration
<b>Model</b>		
AA04A Baratron General Purpose Pressure Transmitter	AA04A	AA04A
<b>Full Scale Pressure Range</b>		
1 10 100 1000 5000 10000 15000 20000 25000	01 11 12 13 53 14 RB 24 RC	13
<b>Units Of Measurement</b>		
Torr/mmHg mbar Absolute KPa	T M K	T
<b>Fittings</b>		
½" OD tube (Max 1000 Torr) 8 VCR female 8 VCO female KF16 (Max 1000 Torr) KF25 (Max 1000 Torr) 1.33" CF 2.75" CF	BA CE DA GA GC HA HC	CE
<b>Connector</b>		
9 pos D-subminiature, male 9 pos D-subminiature, male, filtered (for applications with high RF noise)	A V	A
<b>Optional Terminal Block Adapter</b>		
None Terminal Block Adapter on D sub	D T	D
<b>Accuracy (see specifications for applicability)</b>		
Standard: ±0.5% of Reading Optional: ±0.3% of Reading	F T	F