

MVX 2000 Multivariable Pressure Transducer

Ranges:

Differential Pressure 0 to +400 inH₂O

Absolute Pressure 0 to 1500 psia

34-SM-04-02

10/2002

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Specification and MSG

Introduction

The **MVX 2000 Multivariable Pressure Transducer**, based on Honeywell multivariable sensor technology, measures both differential pressure and absolute pressure and can replace two separate transmitters or transducers integrated to flow computers or chart recorders today.

The MVX 2000 enhances flow calculation accuracy and improves flow computer reliability. Multiple measurements, combined with Proven Sensor Characterization, will lower your overall costs when integrating the MVX 2000 to a flow computer.

The MVX 2000 Multivariable Pressure Transducer transmits an output signal proportional to the measured variables in multiplexed pulse format for interfacing with the Flow Computers or RTUs.

Proven Sensor Technology

The MVX 2000 utilizes proven Honeywell Piezoresistive sensor technology and has an ion-implanted silicon chip hermetically sealed in its meter body. This single piezo-resistive capsule actually contains three sensors in one; a differential pressure sensor, a static pressure sensor, and a meter body temperature sensor. Process pressure applied to the transmitter's diaphragm transfers through the fill fluid to the sensor. Voltage bridge (Wheatstone) circuits on the chip measures the differential and static pressures while a resistor in a voltage divider measures the temperature. These three input signals from the sensor coupled with the characterization data stored in the internal EPROM are then used by the flow computer microprocessor to calculate accurate values for the differential pressure and static pressure measurements.

Flow Computer Benefits

Cost-effective piezoresistive sensor technology provides +/- 0.25% accuracy for differential pressure and absolute pressure, which relates directly to increased flow accuracy for manufacturers of cost-effective flow computers.

Single Sensor Capsule integrated into a meter body design provides both DP and AP measurements and lowers the total cost of integration to flow computers.

MVX 2000 Sensor provides stable readings for DP and AP, which improve product reliability and reduces zero drift for flow computers.

MVX 2000 Integration

To utilize the MVX 2000 Multivariable Pressure Transducer, the flow computer OEM must develop a circuit board to communicate with the MVX 2000. This circuit board should include a 10-pin connector to attach to the sensor and provide all operating power to the MVX 2000. With 5 Vdc power, the MVX 2000 provides a pulse train of signals proportional to differential pressure, static pressure and meter body temperature. The flow computer circuit board must be designed to count the pulse duty cycle to interpret the signals.

Summary

The MVX 2000 multivariable pressure transducer utilizes a meter body with a single sensor capsule to measure both differential pressure and absolute pressure and therefore provides the most cost-effective integrated transducer-flow computer to replace aging chart recorders that are costly due to high maintenance and inaccuracy.

Specifications

Operating Conditions

Parameter	Reference Condition	Rated Condition	Operative Limits	Transportation and Storage
Meter Body Temperature °C °F	25 ±1 77 ±2	-40 to 110 -40 to 230	-40 to 125 -40 to 257	-55 to 125 -67 to 257
Ambient Temperature °C	25+/-1	-40 to 85	-40 to 185	-55 to 125
Overpressure psi	0	3000	3000	
Vacuum Region - Minimum Pressure mmHg absolute inH ₂ O absolute	Atmospheric Atmospheric	25 13		

Physical

Parameter	Description
Process Interface Material	Process Barrier Diaphragms: 316 SS Process Head: Carbon Steel Head Gaskets: Glass Reinforced Teflon Bolting: Carbon Steel
Fill Fluid	Silicone oil
Process Connections	1/4-inch NPT

Performance Under Rated Conditions - Differential Pressure Measurement

Parameter	Description
Model	MXA045
Upper Range Limit	+400 inH ₂ O (250 mbar) at 39.2 °F (4 °C) standard reference temperature.
Reference Pressure	
- Accuracy	50 inH ₂ O (250 mbar)
- Temperature & Pressure	50 inH ₂ O (250 mbar)
Turndown Ratio	400 to 1
Minimum Span	1 inH ₂ O (62.5 mbar)
Reference Accuracy (Includes combined effects of linearity, hysteresis, and repeatability)	±0.25% of calibrated span or upper range value (URV), whichever is greater. For URV below reference point (50 inH ₂ O), accuracy equals: +/- 0.25% (50/span)
Zero Temperature Effect per 28°C (50°F)	±0.3% of calibrated span. For URV below reference point (50 inH ₂ O), accuracy equals: +/- 0.3% (50/span)
Combined Zero + Span Temperature Effect per 28°C (50°F)	±0.6% of calibrated span. For URV below reference point (50 inH ₂ O), accuracy equals: +/- 0.6% (50/span)

Specifications, continued

Zero Static Pressure Effect per 1000 psi (70 bar)	±0.3% of calibrated span. For URV below reference point (50 inH ₂ O), accuracy equals: +/- 0.3% (50/span)
Combined Zero + Span Static Pressure Effect per 1000 psi (70 bar)	±1.0% of calibrated span. For URV below reference point (50 inH ₂ O), accuracy equals: +/- 1.0% (50/span)
Stability	+/-0.08% of URL per year

Performance Under Rated Conditions - Absolute Pressure Measurement (MXA045)

Parameter	Description
Upper Range Limit (URL)	1500 psia
Reference Pressure	
- Accuracy	250 psia
- Temperature Effect	250 psia
Turndown Ratio	15 to 1
Minimum Span	100 psia
Zero Suppression	No limit (except minimum span) from absolute zero to 100% URL. Specifications valid over this range.
Reference Accuracy (Includes combined effects of linearity, hysteresis, and repeatability)	±0.25% of calibrated span or upper range value (URV), whichever is greater - Terminal based. For URV below reference point (250 psig), accuracy equals: +/- 0.25% (250/span)
Zero Temperature Effect per 28°C (50°F)	±0.9% of calibrated span. For URV below reference point (250 psig), accuracy equals: +/- 0.9% (250/span)
Combined Zero + Span Temperature Effect per 28°C (50°F)	±0.9% of calibrated span. For URV below reference point (250 psig), accuracy equals: +/- 0.9% (250/span)
Stability	+/-0.1% of URL per year

Model Selection Guide (34-ST-16-49)

Model Selection Guide

34-ST-16-49 Issue 2

Instructions

Select the desired Key Number. The arrow to the right marks the selection available.
 Make one selection from each table, I and II, using the column below the proper arrow.
 Select as many Table III options as desired (if no options are desired, specify 00).
 A dot denotes unrestricted availability. A letter denotes restricted availability.
 Restrictions follow Table IV.

Key Number I II III (Optional) IV
 [] - [] - [] - [] + []

KEY NUMBER

Selection Availability

Differential Pressure Range	Pressure Range				
0-1"/400" H ₂ O (0-2.5 to 0-1000 mbar)	0-750 psia (52.5 bara)	MXA025			
0-1"/400" H ₂ O (0-2.5 to 0-1000 mbar)	0-1,500 psia (105 bara)	MXA045		↓	
0-1"/400" H ₂ O (0-2.5 to 0-1000 mbar)	0-3,000 psia (210 bara)	MXA070			
0-1"/400" H ₂ O (0-2.5 to 0-1000 mbar)	0-3,000 psig (210 barg)	MXG070			

TABLE I - METER BODY

	Process Heads	Vent/Drain Valves and Plugs	Barrier Diaphragms					
Materials of Construction	Carbon Steel *	316 St. St.	316 LSS	A _ _		•		
	Carbon Steel *	316 St. St.	Hastelloy C	B _ _				
	316 St. St.	316 St. St.	316 LSS	E _ _				
	316 St. St.	316 St. St.	Hastelloy C	F _ _				
	Hastelloy C	Hastelloy C	Hastelloy C	J _ _				
Fill Fluid	Silicone			_ 1 _		•		
Process Head Configuration	1/4" NPT			_ _ A		•		
	Rotated (Vertical) Process Heads with 1/4" NPT			_ _ R		•		

* Carbon Steel heads are zinc-plated.

TABLE II

No Selection	00000				
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Model Selection Guide, cont.

TABLE III - OPTIONS	Availability				
	MXG070				
	MXA0 _	25	45	70	70
Selection					
None	00		•		
Viton Head Gaskets (1/2" adapter gaskets are special)	VT		•		

TABLE IV					
Factory Identification	XXXX				

Ordering Information

Contact your nearest Honeywell sales office, or

In the U.S.:

Honeywell
Industrial Automation & Control
16404 N. Black Canyon Highway
Phoenix, AZ 85023
1-800-288-7491

In Latin America:

Honeywell Inc.
480 Sawgrass Corporate
Parkway,
Suite 200
Sunrise, FL 33325
(954) 845-2600

In Asia:

Honeywell Asia Pacific Inc.
Room 3213-25
Sun Hung Kai Centre
No. 30 Harbour Road
Wanchai, Hong Kong
(852) 2829-8298

In Canada:

The Honeywell Centre
155 Gordon Baker Rd.
North York, Ontario
M2H 3N7
1-800-461-0013

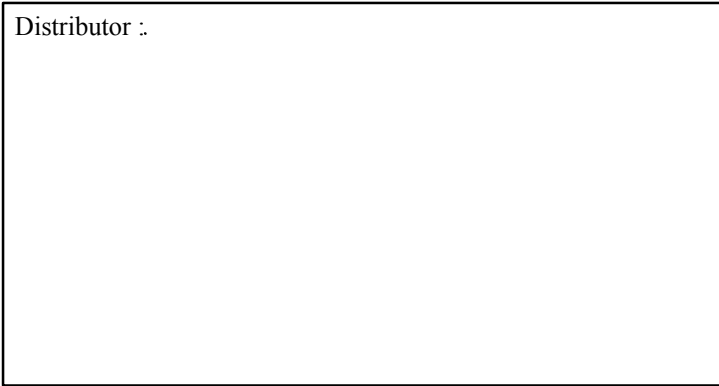
In Europe:

Honeywell PACE
1, Avenue du Bourget
B-1140 Brussels, Belgium
[32-2] 728-2111

In the Pacific:

Honeywell Limited
5 Thomas Holt Drive
North Ryde NSW 2113
Australia
(61 2) 9353 7000

Or, visit Honeywell on the
World Wide Web at:
<http://www.honeywell.com>

Distributor :


Specifications are subject to change without notice.

Honeywell

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