

Model 424

Wing Union/Hammer Union Pressure Sensors



DESCRIPTION

The Model 424 Wing Union Pressure Sensors are rugged sensors designed for use with 2002 and 2202 wing unions in demanding land-based and off-shore applications.

The isolated pressure sensing diaphragm minimizes zero shift during hammer-up and eliminates long-term signal drift in the field. The sensor diaphragm and wing union fitting are machined as one part. Model 424 is constructed as an all-welded assembly using a deep penetration, proprietary, electron beam welding

process which also ensures hermetic integrity for all field conditions. These sensors incorporate special assembly processes to vibration and shock proof the components to ensure performance is maintained during the rigors of fracturing and cementing applications. The Model 424 Wing Union is machined of Inconel® X-750, providing service with highly abrasive and corrosive media.

FEATURES

- Quick delivery service
- Inconel® X-750 wetted parts for additional durability with abrasive or corrosive media
- ± 0.2 % accuracy BFUL
- Rugged, robust design
- RFI/EMI protected
- Optional on-board temperature sensor
- Optional one wire (with IS approval) or two-wire (without IS approval) shunt calibration allows users the ability to validate the offset signal in the field, ensuring the sensor is actively plugged into the system
- Intrinsically safe
- CE approved; CSA/ATEX certification

POTENTIAL APPLICATIONS

- Acidizing
- Choke manifold
- Fracturing and cementing
- Mud pumps / mud logging
- New well development and extraction
- Oil and gas drilling
- Service and cement trucks
- Standpipe
- Stimulation
- Well head measurement



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PERFORMANCE SPECIFICATIONS

Characteristic	Measure
Pressure ranges	0 psi to 5000 psi; 0 psi to 6000 psi; 0 psi to 10000 psi; 0 psi to 15000 psi; 0 psi to 20000 psi; 0 bar to 350 bar; 0 bar to 400 bar; 0 bar to 700 bar; 0 bar to 1000 bar; 0 bar to 1350 bar
Accuracy ¹	±0.2 % best fit straight line
Calibration	Standard 5-point calibration: 0 %, 50 %, and 100 % of full scale
Output	4 mA to 20 mA, two-wire
Resolution	Infinite

ENVIRONMENTAL SPECIFICATIONS

Characteristic	Measure
Temperature, operating	-43 °C to 85 °C [-45 °F to 185 °F]
Temperature, compensating	-34 °C to 82 °C [-30 °F to 180 °F]
Temperature effect, zero	0.018 % full scale/°C [0.01 % full scale/°F]
Temperature effect, span	0.018 % reading/°C [0.01 % reading/°F]
Temperature effect, sealing	Hermetically sealed IP68/NEMA 6P

ELECTRICAL SPECIFICATIONS

Characteristic	Measure
Supply voltage	9 Vdc to 28 Vdc
Insulation resistance	>100 MOhm @ 50 Vdc
Max. loop resistance	950 ohm @ 28 V decreasing linearly to 0 ohm @ 9 V
Circuit protection	Reverse polarity protection of supply leads
RFI/EMI protection	Noise immunity from 5000 Hz to 1 GHz
Frequency response	Customer specified and factory installed filter for frequency response of min. 10 Hz to max. of 2500 Hz (1.4 x 10 ⁻⁴ s)
Electrical termination (std)	Standard electrical termination: MS series compatible, 4 pin, connector designed in stainless steel specifically for the oil and gas industry; offers full hermetic sealing (see pages 3 and 4 for additional electrical terminations)
Shunt calibration	Optional one-wire (with IS approval) or two-wire (without IS approval)

MECHANICAL SPECIFICATIONS

Characteristic	Measure
Media	Corrosive and abrasive service, Inconel® X-750
Overload, safe	150 % rated full scale pressure or limit of WECO 2002 and 2202 fitting
Overload, burst	250 % rated pressure or limit of WECO 2002 and 2202 fittings
Pressure port	WECO 2002 and 2202 wing union, 51 mm [2 in] pipe, male sub end
Wetted parts material	Inconel® X-750
Weight	2357 g [5.2 lb]
Case material	316L stainless steel (labels are welded stainless steel with embossed characters)

INTERNAL AMPLIFIERS

Amplifier specifications	Intrinsically safe amp: Option 2n(2N)***
Output signal	4 mA to 20 mA
Input power (voltage)	9 Vdc to 28 Vdc
Input power (current)	4 mA to 24 mA
Frequency response (amp)	2500 Hz
Power supply rejection	60 db
Operating temperature	-43 °C to 85 °C [-45 °F to 185 °F]
Reverse voltage protection	Yes
Short circuit protection	Yes
Wiring code: connector (std)	A No connection B (+) Output C (+) Supply D Case ground

*** See Honeywell's Web site (<http://measurementsensors.honeywell.com>) for the most up-to-date information regarding intrinsically safe approvals, ref. #008-0547-00.

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LISTINGS

Order code	Description
BP424NG,6,1AC,2N,6Z,7AD,10E	Model 424, 350 bar, ±0.2 % accuracy BFSL, -35 °C to 80 °C [-30 °F to 180 °F] temperature compensation, 4 mA to 20 mA two-wire intrinsically safe, MS compatible, 4-pin connector, wetted diaphragm
BP424EJ,6,1AC,2N,6Z,7AD,10E	Model 424, 15,000 psi, ±0.2 % accuracy BFSL, -35 °C to 80 °C [-30 °F to 180 °F] temperature compensation, 4 mA to 20 mA two-wire intrinsically safe, MS compatible, 4-pin connector, wetted diaphragm
BP424EL,6,1AC,2N,6Z,7AD,10E	Model 424, 20,000 psi, ±0.2 % accuracy BFSL, -35 °C to 80 °C [-30 °F to 180 °F] temperature compensation, 4 mA to 20 mA two-wire intrinsically safe, MS compatible, 4-pin connector, wetted diaphragm
BP424NU,6,1AC,2N,6Z,7AD,10E	Model 424, 1350 bar, ±0.2 % accuracy BFSL, -35 °C to 80 °C [-30 °F to 180 °F] temperature compensation, 4 mA to 20 mA two-wire intrinsically safe, MS compatible, 4-pin connector, wetted diaphragm

ORDER CODE NOMENCLATURE

Combine the order code, range code, and options code.

BP424 **EJ,** **6, 1AC, 2N, 6Z, 7AD, 10E**

Order code Range code Options code

BP424	EJ	6	1AC	2N		6Z	7AD		10E
Pressure Type	Range (Gauge)	Accuracy	Temperature Compensation	Internal Amplifiers	Amplifier Enhancements	Electrical Termination	Wiring Code Options	Calibration Options	Material Type
BP 424	DR 5000 psi	6 ±0.2 % BFSL	1AC -35 °C to 80 °C [-30 °F to 180 °F]	2N 4 mA to 20 mA two wire, intrinsically safe	None	6A Bendix PT, 6-pin shell size 10 conn PTH-10-6P	7AD 4-Pin Standard A: N/C or Shunt; B: + Out C: + Supply; D: Case Ground	None	10E Wetted diaphragm
	DS 6000 psi			2Y CE approved, 4 mA to 20 mA two wire	3D Remote buffered one-wire shunt calibration	6Z MS series comp. 4 pin, shell size 14 connector (32A-14S-2P-10-M2)	7AE 4-Pin Jupiter A: N/C; B: Case Ground C: + Out; D: + Supply	9A Special cal., 10 point	
	DV 10000 psi				3J Remote buffered two-wire shunt calibration	6BF Jupiter 4-pin	7AF 6-Pin Standard A: + Supply; B: + Out C: N/C; D: Case Ground E: N/C or Shunt; F: N/C	9B Special cal., 20 point	
	EJ 15000 psi					6BG Jupiter 7-pin	7AG 7-Pin Jupiter A: N/C; B: N/C; C: N/C; D: + Supply; E: + Out F: Case Ground; G: N/C or Shunt		
	EL 20000 psi					6BH Rota B-Series 4-pin	6-Pin Standard A: + Supply; B: - Supply; C: N/C; D: Case Ground; E: + Shunt Cal F: - Shunt Cal		
	NG 350 bar								
	NN 400 bar								
	NH 700 bar								
	MN 1000 bar								
	NU 1350 bar								

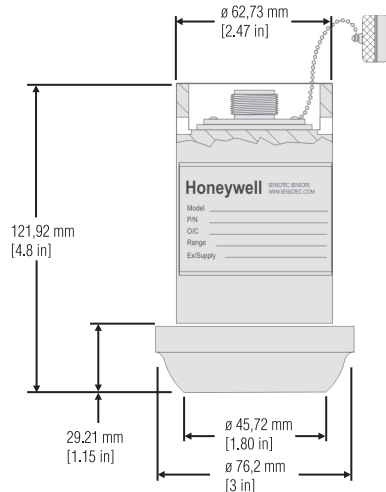
Exceptions:
 Option 7AD can only be used with Options 6Z or 6BF or 6BH
 Option 7AE can only be used with Option 6BF
 Option 7AF can only be used with Option 6A
 Option 7AG can only be used with Option 6BG
 Option 3D cannot be used with Options (7AE and 6BF)
 Option 3J can only be used with Option 2Y
 Two-wire shunt cal is not IS approved.

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RANGE CODES

Range Code	Available ranges
DR	0 psi to 5000 psi
DS	0 psi to 6000 psi
DV	0 psi to 10000 psi
EJ	0 psi to 15000 psi
EL	0 psi to 20000 psi
NG	0 bar to 350 bar
NN	0 bar to 400 bar
NH	0 bar to 700 bar
MN	0 bar to 1000 bar
NU	0 bar to 1350 bar

MOUNTING DIMENSIONS AND CHARACTERISTICS



For reference only

NOTES

1. Accuracies stated are expected for best fit straight line for all errors including linearity, hysteresis and non-repeatability thru zero.
2. Availability varies with range.



SPECIAL REQUIREMENTS (CONSULT FACTORY)

Need a special modification or complete custom design to meet your unique requirements? Consult our factory by calling +1 614-850-5000 (800-848-6564) or visit us online at <http://measurementsensors.honeywell.com>.

OPTION CODES

Pressure Ranges	0 psi to 5000 psi; 0 psi to 6000 psi; 0 psi to 10000 psi; 0 psi to 15000 psi; 0 psi to 20000 psi; 0 bar to 350 bar; 0 bar to 400 bar; 0 bar to 700 bar; 0 bar to 1000 bar; 0 bar to 1350 bar
Temperature Compensation	-34 °C to 82 °C [-30 °F to 180 °F]
Internal Amplifier	2N. 4 mA to 20 mA, two-wire output; intrinsically safe 2Y. CE approved 4 mA to 20 mA two-wire
Accuracy	6. ±0.2 % BFSL
Electrical Termination	Standard electrical termination: MS series compatible, 4 pin, connector designed in stainless steel specifically for the oil and gas industry; offers full hermetic sealing 6A. Bendix PT, 6-pin shell size 10 conn, PTIH-10-6P (max. 121 °C [250 °F]) 6Z. MS series compatible, 4 pin, shell size 14 connector (32A-14S-2P-10-M2) 6BF. Jupiter 4-pin connection 6BG. Jupiter 7-pin connection 6BH. Rota B-Series 4-pin Other connection(s) - By request
Amplifier Enhancements	3D. Remote buffered shunt calibration 3J. Remote buffered two-wire shunt calibration
Special Calibration²	9A. 10 point (5 up/5 down) 20 % increments @ 21 °C [70 °F] 9B. 20 point (10 up/10 down) 10 % increments @ 21 °C [70 °F]
Wetted Diaphragm	10E. Inconel® X-750

WIRING CODE OPTIONS

Order Code	Wiring
7AD	4 Pin Standard A: N/C or Shunt; B: + Out; C: + Supply; D: Case Ground
7AE	4 Pin Jupiter A: N/C; B: Case Ground; C: + Out; D: + Supply
7AF	6 Pin Standard A: + Supply; B: + Out; C: N/C; D: Case Ground E: N/C or Shunt; F: N/C
7AG	7 Pin Standard A: N/C; B: N/C; C: N/C; D: + Supply; E: + Out F: Case Ground; G: N/C or Shunt
7AH	6 Pin Standard A: + Supply; B: - Supply; C: N/C; D: Case Ground E: + Shunt Cal; F: - Shunt Cal

Option 7AD can only be used with Options 6Z or 6BF or 6BH

Option 7AE can only be used with Option 6BF

Option 7AF can only be used with Option 6A

Option 7AG can only be used with Option 6BG

Option 3D cannot be used with Options (7AE and 6BF)

Option 3J can only be used with Option 2Y

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Warranty. Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

 **WARNING**
PERSONAL INJURY

- DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

 **WARNING**
MISUSE OF DOCUMENTATION

- The information presented in this datasheet is for reference only. DO NOT USE this document as product installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

Find out more

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