Honeywell

Model Z

General Purpose Gage/Absolute Pressure Transducer



DESCRIPTION

Model Z pressure transducers are all-welded stainless steel sensors built for rugged industrial applications that require high accuracy and measurement stability. Pressure ranges span from 0.5 psi to 60000 psi. They utilize complete four-arm 350 ohm strain gage bridges. The Model Z is available with a variety of options for extended temperature operation, electrical terminations and high-level outputs including 5 Vdc or 10 Vdc and 4 mA to 20 mA. Most high-level output models have internal shunt calibration circuits as a standard feature to allow easy set-up of the sensor to the data system. An optional internal signature calibration chip provides calibration information for automatic set up with the Model SC four-or-twelve channel digital indicator.

The gage Model Z is a strain gage based transducer. This design references the primary pressure sensing diaphragm to the atmosphere, and provides a stable zero regardless of the transducer environment.

The absolute Model Z has an all-welded vacuum reference chamber assuring long-term stability.

FEATURES

- 0.25 % accuracy
- 0.005 % F.S./°F temperature effect
- 0.5 psig/a to 60000 psig/a range
- mV/V, 4 mA to 20 mA, 0 Vdc to 5 Vdc, or 0 Vdc to 10 Vdc available outputs
- All-welded, stainless steel construction
- Intrinsically safe available (2N option only)[16]
- CE[17]

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Model Z

PERFORMANCE SPECIFICATIONS

Characteristic	Measure
Accuracy[1]	±0.25 % full scale
Linearity	±0.15 % full scale
Hysteresis	±0.10 % full scale
Media	All gases/liquids compatible with wetted parts
Resolution	Infinite
Calibration	5 point calibration: 0 %, 50 %, and 100 % of full scale

ENVIRONMENTAL SPECIFICATIONS

Characteristic	Measure
Temperature compensated	15 °C to 71 °C [60 °F to 160 °F]
Temperature effect, zero	0.005 % full scale/°F
Temperature effect, span	0.005 % reading/°F
Sealing	Hermetically sealed IP68/NEMA 6P (AP132)

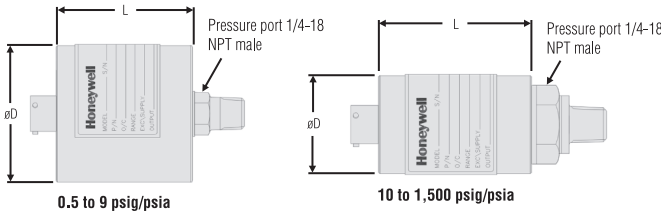
ELECTRICAL SPECIFICATIONS

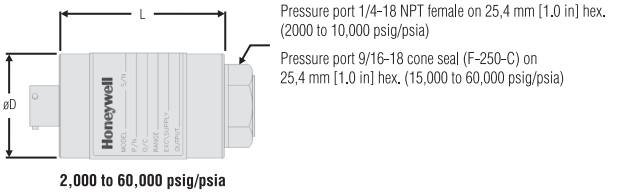
Characteristic	Measure
Strain gage type	Bonded foil
Insulation resistance	5000 mOhm @ 50 Vdc
Bridge resistance	350 ohm
Shunt calibration data	Included
Electrical termination (std)	PTIH-10-6P or equiv. (hermetic stainless)
Mating connector (not incl)	PT06A-10-6S or equiv. (AA111)

MECHANICAL SPECIFICATIONS

Characteristic	Measure
Wetted parts material	
< 2000 psig/a	17-4 PH stainless steel
> 2000 psig/a	15-5 PH stainless steel
Weight	10 oz
Case material	304 stainless steel
Marking	Permanent metal name plate MIL-STD130F 4.3; Individual sequential serial number per sensor; Country of origin and date of manufacture

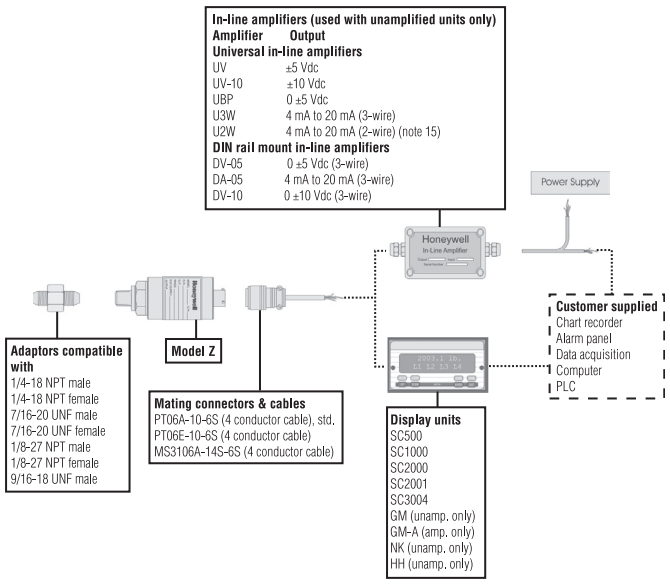
MOUNTING DIAGRAM AND CHARACTERISTICS





For reference only

TYPICAL SYSTEM DIAGRAM



SPECIAL REQUIREMENTS (CONSULT FACTORY)

Have a special requirement? New case pressure, different cable lengths, electrical connectors, or materials? Consult our factory by calling +1 614-850-5000 (800-848-6564). Customization is key to our test and measurement business. Special outputs, wiring codes, and calibrations are all standard to us.

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RANGE CODES

Pressure range (psi)	0.5**	1	2	5	10	15	25	50	75	100	150	200	300	500	750	1000	1500
RANGE CODE	AN	AP	AR	AT	AV	BJ	BL	BN	BP	BR	CJ	CL	CP	CR	CT	CV	DJ
D mm [in] psia/g	57 [2.25]				38 [1.50]												
L mm [in] psia	NA	65 [2.54]			60 [2.35]												
L* mm [in] psia	NA	96 [3.79]			91 [3.60]												
L mm [in] psig	61 [2.41]				60 [2.35]												54 [2.13]
L* mm [in] psig	93 [3.66]				91 [3.60]												86 [3.38]
Over pressure (test) (psi)	150 % full scale				150 % full scale												
Over pressure (burst) (psi)	50				100		200		400		800		2 k		3 k	3.5k	4 k
Port volume cm^3 [in^3]	5,2 [0.32]				4,1 [0.25]			2,8 [0.17]									
Natural frequency (Hz)	500	500	550	1000	1.3 k	2.1 k	2.5 k	2.9 k	3.5 k	4.6 k	6 k	7 k	9 k	9.5 k	12 k	17 k	20 k

Pressure range (psi)	2000	3000	5000	7500	10000	15000	20000	30000	50000	60000
RANGE CODE	DL	DN	DR	DT	DV	EJ	EL	EN	EP	ES
D mm [in] psia	38 [1.50]					38 [1.50]				
L mm [in] psia	48 [1.90]					56 [2.21]				
L* mm [in] psia	80 [3.15]					89 [3.46]				
Over pressure (test) (psi)	150 % full scale					Consult factory				
Over pressure (burst) (psi)	8 k	12 k	20 k	25 k	25 k	40 k	45 k	60 k	80 k	80 k
Port volume cm^3 [in^3]	3,1 [0.12]					1,5 [0.06]				
Natural frequency (Hz)	35 k	40 k	54 k	60 k	80 k	100 k	>100 k	>100 k	>100 k	>100 k

* Length of pressure transducer with amplified option (see option codes)
** 0.5 psi is available for gage only

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OPTION CODES

	Many range/option combinations are available in our quick-ship and fast-track manufacture programs. Please see http://sensing.honeywell.com/TMsensor-ship for updated listings.	
Pressure ranges	15, 25, 50, 100, 200, 500, 1000 psia 0.5, 200, 500, 1000, 5000 psig 1, 2, 5, 10, 15, 25, 50, 75, 100, 150, 300, 750, 1500, 2000, 3000, 7500, 10000, 15000, 20000, 30000, 50000, 60000 psig/a	
Temperature compensation	1a. 60 °F to 160 °F 1b. 30 °F to 130 °F 1c. 0 °F to 185 °F 1d. -20 °F to 130 °F 1e. -20 °F to 200 °F	1f. 70 °F to 250 °F[11] 1g. 70 °F to 325 °F[11] 1h. 70 °F to 400 °F[11] 1i. -65 °F to 250 °F[11]
Internal amplifiers[10]	2a. 0 Vdc to 5 Vdc (four wire) output[10] 2c. 0 Vdc to 5 Vdc output[10] 2j. 4 mA to 20 mA (three wire) output[10] 2k. 4 mA to 20 mA (two wire) output[8, 10, 15]	2n. (2N) 4 mA to 20 mA (two wire) intrinsically safe[8, 10, 15] 2t. 0 Vdc to 10 Vdc output10 2u. Unamp., mV/V output
Internal amplifier enhancements	3a. Input/output isolation[18] 3d. Remote buffered shunt calibration	
Pressure ports[9]	5a. 1/4-18 NPT female (5000 psig only) 5b. 1/4-18 NPT male (200, 500 & 1000 psig) 5c. 7/16-UNF female (per MS33649-4)	5d. 7/16-20 UNF male 5g. G 1/4 male
Electrical termination	6a. Bendix PTIH-10-6P (or equiv), 6 pin (max 250 °F) 6b. MS type connector to mate with MS3106-14S 6S (max 160 °F)[13] 6e. Integral cable: Teflon (0 °F to 180 °F) 6f. Integral cable: PVC (-20 °F to 160 °F) 6g. Integral cable: Neoprene (0 °F to 180 °F) 6h. Integral cable: Silicone (-65 °F to 300 °F)	6i. Integral underwater cable (max 180 °F) 6j. 1/2-14 conduit fitting with [1.83] 5 ft of four-conductor PVC cable 6m. DIN 43650 6q. Molded integral cable: Polyurethane (max 180 °F)[5] 6t. Integral cable with Heyco spring strain relief (5 ft)
Shunt calibration	8a. Precision internal resistor[11]	
Special calibration[9]	9a. 10 point (5 up/5 down) 20 % increments @ 70 °F (gage) 9b. 20 point (10 up/10 down) 10 % increments @ 70 °F (gage)	
Wetted diaphragm[9]	10a. 316 stainless steel[9] 10b. Crucible A-286	10c. Hastelloy-C 10d. Monel K-500
Bridge resistance[9]	12a. 1000 ohm (foil) (max 250 °F) 12b. 5000 ohm (foil) (max 400 °F)	
Zero and span adjustment	14a. No access to pots 14b. Top access to pots	
Shock and vibration	44a. Shock and vibration resistance	
Interfaces	53e. Signature calibration[11] 53t. TEDS IEEE1451.4 module[14]	

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iNTERNAL AMPLIFIERS

Amplifier specifications	mV/V output standard	Voltage output: Option 2a[4]	Vehicle voltage output: Option 2c[4]	Vehicle voltage output: Option 2t[4]	Current three-wire: Option 2j[4]	Current two-wire: Option 2k[4]	Intrinsically safe amp: Option 2N (2n)
Output signal	3 mV/V [2]	0 Vdc to 5 Vdc	0-5 Vdc or ±5 Vdc @ 5 mA	0-10 Vdc or ±10 Vdc @ 5 mA	4 mA to 20 mA	4 mA to 20 mA	4 mA to 20 mA
Input power (voltage)	10 Vdc regulated	±15 Vdc or 26-32 Vdc	11 Vdc to 28 Vdc	15 Vdc to 28 Vdc	22 Vdc to 32 Vdc[3]	9 Vdc to 32 Vdc[3]	9 Vdc to 28 Vdc[3]
Input power (current)	28.5 mA @ 10 Vdc	45 mA	40 mA	40 mA	65 mA	4 mA to 28 mA	4 mA to 24 mA
Freq. resp (amp)	Natural frequency	2000 Hz	3000 Hz	3000 Hz	2500 Hz	2500 Hz	2000 Hz
Power supply rej.	NA	60 db	60 db	60 db	60 db	60 db	60 db
Operating temp.	-73 °C to 121 °C [-100 °F to 250 °F]	-28 °C to 85 °C [-20 °F to 185 °F]	-40 °C to 93 °C [-40 °F to 200 °F]	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]	-40 °C to 85 °C [-40 °F to 185 °F]	-28 °C to 85 °C [-20 °F to 185 °F]
Reverse voltage protection	NA	Yes	Yes	Yes	Yes	Yes	Yes
Short cir. protection	NA	Momentary	Momentary	Momentary	Yes	Yes	Yes
Wiring code: connector (std)[5]	A (+) Excitation B (+) Excitation C (-) Excitation D (-) Excitation E (-) Output F (+) Output	A (+) Supply B Output com. C Supply ret. D (+) Output E Shunt Cal 1 F Shunt Cal 2	A (+) Supply B Output com ** C Supply ret ** D (+) Output E Shunt Cal 1 F Shunt Cal 2	A (+) Supply B Output com ** C Supply ret ** D (+) Output E Shunt Cal 1 F Shunt Cal 2	A (+) Supply B Output com ** C Supply ret ** D (+) Output E Shunt Cal 1 F Shunt Cal 2	A (+) Supply B No conn. C No conn. D (+) Output E Case ground F No conn.	A (+) Supply B No conn. C No conn. D (+) Output E Case ground F No conn.
Wiring code: cable[5,6,7]	R (+) Excitation Bl (-) Excitation G (-) Output W (+) Output	R (+) Supply Bl Output com. G Supply ret. W (+) Output B Shunt Cal 1 Br Shunt Cal 2	R (+) Supply Bl Output com* G Supply ret.* W (+) Output B Shunt Cal 1 Br Shunt Cal 2	R (+) Supply Bl Output com* G Supply ret.* W (+) Output B Shunt Cal 1 Br Shunt Cal 2	R (+) Supply Bl Output com* G Supply ret.* W (+) Output B Shunt Cal 1 Br Shunt Cal 2	R (+) Supply Bl (+) Output W Case ground	R (+) Supply Bl (+) Output W Case ground
For current information		Reference application sheet #008-0356-00	Reference application sheet #008-0357-00	Reference application sheet #008-0360-00	Reference application sheet #008-0361-00	Reference application sheet #008-0361-60	See Honeywell Web site for info on intrinsically safe approvals. #008-0547-00

* Black and green wires are internally connected.

** Pins B and C are internally connected.

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NOTES

1. Accuracies stated are expected for best fit straight line for all errors including linearity, hysteresis & non-repeatability thru zero.
2. Output for 0.5 psig/a, 1 psig/a, 2 psig/a units is 1 mV/V to 2 mV/V.
3. Input power (voltage) for internal amplifier options 2j, 2k, 2n(2N) depends on load resistance.
4. CE mark requires options 6a & 3d.
5. Interconnecting shunt cal. 1 with shunt cal. 2 terminal provides 50 % (unamplified units), 75% (4 mA to 20 mA three-wire units), or 80 % (voltage amp. units) of full scale output for quick calibration. Shunt calibration comes standard with internal amplifier options 2a, 2b, 2c, 2t and 2j.
6. G=Green; B=Blue; W=White; Bl=Black; Br=Brown; Y=Yellow; R=Red; O=Orange. Color specifying cable and number or letter specifying connector.
7. No mating connector necessary with cable option.
8. Options 2k, 2n(2N) only available with option 12b.
9. Availability varies according to range.
10. Not available with temperatures below -29 °C [-20 °F] or above 85 °C [185 °F].
11. Cannot be used with amplified option.
12. Gage pressure units greater than 200 psi are sealed at atmospheric pressure.
13. No pot access available with MS type connector.
14. Consult factory for TEDS availability with amplified models.
15. 5000 ohm bridge required.
16. Range dependent; consult factory. Termination dependent; consult factory.
17. Internal amp and termination dependent; consult factory.
18. Input/output isolation only available with voltage output (2A, 2B, or 2C amplifiers).

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- 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

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- 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.

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