

Model TJE

Precision Gage/Absolute Pressure Transducer



DESCRIPTION

Model TJE pressure transducers are all-welded stainless steel sensors built for rugged industrial applications that require high accuracy and measurement stability. The Model TJE 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.

FEATURES

- 0.1 % accuracy
- 0.0025 % F.S./°F temperature effect
- 1 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 output
- All-welded, stainless steel construction
- Intrinsically safe available (2N option only)¹⁸
- CE¹⁹

The gage Model TJE is a strain gage based transducer and features a unique “true gage” design which utilizes a second welded stainless steel diaphragm that hermetically seals the strain gage circuitry from atmospheric contamination. This design references the primary pressure sensing diaphragm to the atmosphere, and provides a stable zero regardless of the transducer environment.

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

Model TJE

PERFORMANCE SPECIFICATIONS

| Characteristic | Measure |
|-----------------------|---|
| Accuracy ¹ | ±0.10 % full scale |
| Linearity | ±0.10 % full scale |
| Hysteresis | ±0.05 % 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 | 0.0025 % full scale/°F |
| Temperature effect, span | 0.0025 % reading/°F |
| Sealing | Hermetically sealed IP68/NEMA 6P |

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 | number here |
| < 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.

Precision Gage/Absolute Pressure Transducer

RANGE CODES

| Pressure range (psi) | 1 | 2 | 5 | 10 | 15 | 25 | 50 | 75 | 100 | 150 | 200 | 300 | 500 | 750 | 1000 | 1500 |
|--|------------------|-----|------|------------------|-------|-------|------------|-------|-------|-----|-----|-----|-------|------|-------|------|
| RANGE CODE | AP | AR | AT | AV | BJ | BL | BN | BP | BR | CJ | CL | CP | CR | CT | CV | DJ |
| D mm [in] psia | 57 [2.25] | | | 38 [1.50] | | | | | | | | | | | | |
| D mm [in] psig | 57 [2.25] | | | 45 [1.75] | | | 38 [1.50] | | | | | | | | | |
| L mm [in] psia | 65 [2.54] | | | 60 [2.35] | | | | | | | | | | | | |
| L* mm [in] psia | 96 [3.79] | | | 91 [3.60] | | | | | | | | | | | | |
| L mm [in] psig | 46 [1.81] | | | 51 [2.00] | | | 51 [2.02] | | | | | | | | | |
| L* mm [in] psig | 78 [3.06] | | | 83 [3.25] | | | 83 [3.27] | | | | | | | | | |
| Over pressure (test) (psi) | 150 % full scale | | | 150 % full scale | | | | | | | | | | | | |
| Over pressure (burst) (psi) | 50 | | | 100 | | 200 | | 400 | | 800 | | 2 k | | 3 k | 3.5 k | 4 k |
| Port volume cm ³ [in ³] | 5,2 [0.32] | | | 4,1 [0.25] | | | 2,8 [0.17] | | | | | | | | | |
| Natural frequency (Hz) | 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

| | | | |
|---|--|---|--|
| Range Code | 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 | 1, 2, 5, 10, 15, 25, 50, 75, 100, 150, 200 300, 750, 1500, 2000, 15000, 20000, 30000, 50000, 60000 psig/a 500, 1000, 3000, 5000, 7500, 10000 psia 500, 1000, 3000, 5000, 7500, 10000 psig | | |
| 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 amplifiers¹⁰ | 2a. 0 Vdc to 5 Vdc (four wire) output ¹⁵ 2c. 0-5 Vdc output ¹⁵ 2j. 4 mA to 20 mA (three wire) output 2k. 4 mA to 20 mA (two wire) output ^{8, 17} | 2n. 4 mA to 20 mA (two wire) intrinsically safe ^{8, 17} 2t. 0 Vdc to 10 Vdc output 2u. Unamp., mV/V output | |
| Internal amplifier enhancements | 3a. Input/output isolation ¹⁵ 3d. Remote buffered shunt calibration | | |
| Pressure ports⁹ | 5a. 1/4-18 NPT female (3000 psig to 10000 psig) 5b. 1/4-18 NPT male (15 psig/a to 10000 psig/a) 5c. 7/16-20 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 5 ft of 4 conductor PVC cable | 6m. DIN 43650 6q. Molded integral cable: Polyurethane (max 180 °F) 6t. Integral cable with Heyco spring strain relief (5 ft) |
| Shunt calibration | 8a. Precision internal resistor ¹¹ | | |
| Special calibration⁹ | 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 diaphragm⁹ | 10a. 316 stainless steel ⁹ 10b. Crucible A-286 | 10c. Hastelloy-C 10d. Monel K-500 | |
| Bridge resistance⁹ | 12a. 1000 ohm (foil) (max 400 °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 ¹⁶ | | |

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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 volt. prot. | 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 500 psi are sealed at atmospheric pressure.
13. No pot access available with MS type connector.
14. Temperature 82 °C [180 °F] max., non-shielded standard, shielded available.
15. Input/output isolation only available with voltage output (options 2a, 2b, 2c).
16. Consult factory for TEDS availability with amplified models.
17. 5000 ohm bridge required.
18. Range dependent; consult factory. Termination dependent; consult factory.
19. Internal amp and termination dependent; consult factory.

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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 catalogue 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.

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