



bar

Model A-5 General Purpose Gage/Absolute Pressure Transducer

FEATURES

- 0.50 % accuracy
- 0.0075 % 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)¹⁵
- CE¹⁶



DESCRIPTION

Model A-5 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 A-5 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 A-5 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 A-5 has an all-welded vacuum reference chamber assuring long-term stability.



PERFORMANCE SPECIFICATIONS

| Characteristic | Measure |
|-----------------------|---|
| Accuracy ¹ | ±0.50 % full scale |
| 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 | 0.0075 % full scale/°F |
| Temperature effect, span | 0.01 % reading/°F |
| Temperature effect, sealing | Hermetically sealed IP68/NEMA 6P (AP142) |

ELECTRICAL SPECIFICATIONS

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

MECHANICAL SPECIFICATIONS

| Characteristic | Measure |
|-----------------------|---|
| Media | All gases and liquids compatible with wetted parts |
| 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 |

OPTION CODES

| | | |
|-----------------------------------|--|--|
| | Many range/option combinations are available in our quick-ship and fast-track manufacture programs. Please see http://sensing.honeywell.com/TMsen-sor-ship for updated listings. | |
| Pressure ranges | 0.5 psig 1, 2, 5, 10, 15, 25, 50, 75, 100, 150, 200, 300, 500, 750, 1000, 1500, 2000, 3000, 5000, 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 | 2c. 0 Vdc to 5 Vdc output ¹⁰ 2t. 0 Vdc to 10 Vdc output ¹⁰ 2u. Unamp., mV/V output ¹⁰ | 2a. 0 Vdc to 5 Vdc (4 wire) output ¹⁰ 2j. 4 mA to 20 mA (3 wire) output ¹⁰ 2k. 4 mA to 20 mA (2 wire) output ^{10, 14} 2n. (2N) 4 mA to 20 mA (2 wire) intrinsically safe ^{10, 14} |
| Internal amplifier enhancements | 3a. Input/output isolation ¹⁷ 3d. Remote buffered shunt calibration | |
| Pressure ports ⁹ | 5a. 1/4-18 NPT female 5b. 1/4-18 NPT male 5d. 7/16-20 UNF male | 5c. 7/16-20 UNF female (per MS33649-4) 5g. G 1/4 male |
| 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 Ohms (foil) (max 250 °F) 12b. 5000 Ohms (foil) (max 400 °F) | |
| Zero and span adjustments | 14a. No access to pots 14b. Top access to pots | |
| Shock and vibration | 44a. Shock and vibration resistance | |
| Interfaces | 53e. Signature calibration 53t. TEDS IEEE1451.4 module ¹³ | |



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 BI (-) Excitation G (-) Output W (+) Output | R (+) Supply BI Output com. G Supply ret. W (+) Output B Shunt Cal 1 Br Shunt Cal 2 | R (+) Supply BI Output com* G Supply ret.* W (+) Output B Shunt Cal 1 Br Shunt Cal 2 | R (+) Supply BI Output com* G Supply ret.* W (-) Output B Shunt Cal 1 Br Shunt Cal 2 | R (+) Supply BI Output com* G Supply ret.* W (+) Output B Shunt Cal 1 Br Shunt Cal 2 | R (+) Supply BI (+) Output W Case ground | R (+) Supply BI (+) 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 | #008-0547-00 |

* Black and green wires are internally connected.

** Pins B and C are internally connected.



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 | 3.5 k | 4 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 | 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 | |

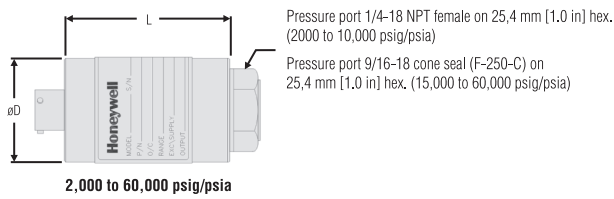
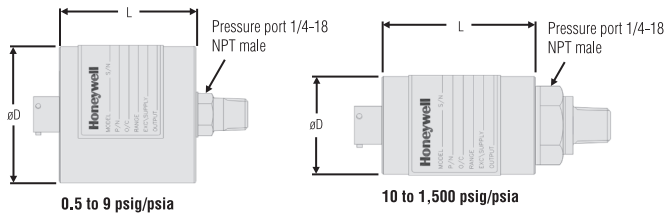
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|--|------------------|------|------|------|-------|-----------------|--------|--------|--------|--------|
| Pressure range (psi) | 2000 | 3000 | 5000 | 7500 | 10000 | 15000 | 20000 | 30000 | 50000 | 60000 |
| RANGE CODE | DL | DN | DR | DT | DV | 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

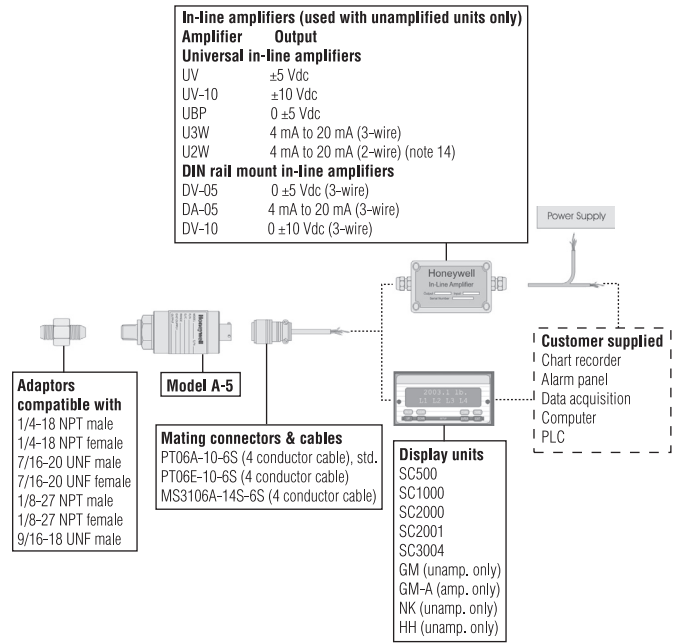


MOUNTING DIMENSIONS AND CHARACTERISTICS



For reference only

TYPICAL SYSTEM DIAGRAM





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.
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. Consult factory for TEDS availability with amplified models.
14. 5000 ohm bridge required.
15. Range dependent; consult factory. Termination dependent; consult factory.
16. Internal amp and termination dependent; consult factory.
17. Input/output isolation only available with voltage output (2A, 2B, or 2C amplifiers)