

Model ASL

High Accuracy Low Differential Pressure Transducer

Features

- 0.25% typical total error band
- Reduce calibration time
- High accuracy: $\pm 0.07\%$ FS
- End point method linearity
- High overpressure capability: >100X range
- Low thermal error
- Excellent stability: <0.15% FS/YR
- Calibrate using SecureCal™ calibration key
- High line pressure capability
- Unidirectional & bidirectional models

Applications

- Filter pressure
- Leak detection systems
- Exhaust pressure
- Medical instrumentation
- Part integrity testing
- Test stands
- Wind tunnels
- Industrial high accuracy

Setra's Model ASL is the highest accuracy transducer for measuring low differential pressure in the AccuSense™ product line. Its $\pm 0.07\%$ FS accuracy is calibrated using the "End Point Method" which improves linearity when compared to competitive transducers, which use the "Best Fit Straight Line Method" of calibration. The ASL's calibration is tamper proof by utilizing a SecureCal™ calibration key which eliminates inadvertent adjustments, while allowing authorized users to adjust the sensor's calibration coefficients for a true sensor calibration. The design of the ASL offers class leading overpressure capability and multiple pressure and electrical fittings to accommodate a wide range of applications.

High accuracy for demanding applications

The Model ASL differential pressure transducer uses a resonant variable capacitance sensor. This sensor is linearized and thermally compensated through a computerized curve fitting algorithm that optimizes the sensor's linearity for maximum accuracy in demanding applications.

Robust design & construction for reliable service

The Model ASL is designed and built to withstand demanding applications. The laser welded sensor construction, designed with positive and negative overpressure stops, enables the sensor to resist overpressure conditions up to 100X in all pressure ranges.

Fast & secure calibration

The Model ASL is ideal for the Test & Measurement industry because it adheres to the stringent accuracy requirements. In order to make adjustments, the ASL utilizes the SecureCal™ calibration key, providing secure calibration. The SecureCal™ provides the ability to calibrate zero and span coefficients through a simple push button and rotary adjustment dial. The SecureCal™ also offers the option to restore factory defaults for fail-safe sensor calibration.



Specifications

Performance Data

| | |
|---|---|
| Internal volumes | Positive Port 0.03 cu. in. Reference Port 0.75 cu. in. |
| Operable line pressure | Vacuum to 250 PSI max |
| Maximum volume change at FS | 0.002 cu. in. |
| Long-term stability | <0.15% FS/Year, Typical |
| Response time to pressure input (From 100% to 10% of pressure range) | <10 ms for Voltage Output <50 ms for Current Output |
| Line pressure effect | 2% FS/100 PSIG |
| Zero offset positive effect | <0.1%/G |
| Unit factory calibrated in vertical position (pressure port download) | |

Physical Description

| | |
|----------------------------|---|
| Electrical terminations | 6-Conductor Cable, Pigtail 6-Pin Bayonet Connector |
| Dimensions | See reverse side |
| Weight | 13 oz. (360 g) |
| Moisture/splash resistance | NEMA 4X (IP65) |
| Pressure fittings | See ordering information |
| Case materials | Stainless steel |

Pressure Media

Clean, dry gases compatible with 300 series stainless steel and 17-4 pH stainless steel.

Approvals

CE, RoHS

¹RSS: Root Sum Square of endpoint linearity, Hysteresis and Non-repeatability at constant temperature.

²Current consumption: ≥70mA of inrush current for approximately 5ms.

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Specifications subject to change without notice.

Environmental Data

| | |
|--|--------------------------|
| Temperature calibrated °F (°C) | -4 to +140 (-20 to +60) |
| Operating temperature ¹ °F (°C) | -40 to +124 (-40 to +85) |
| Storage temperature °F (°C) | -40 to +185 (-40 to +85) |
| Higher or lower limits available (consult factory) | |

Electrical Data

| | |
|----------------------------------|---|
| Excitation range | 9 to 30VDC (5VDC & 4-20 mA output) 15 to 30VDC (10 VDC output) |
| Current consumption ² | <23 mA |
| Miswiring | Reverse Excitation Protection |
| Warm-up, Environmental | Within ±0.02% FS after 15 min warm-up time |
| Signal output ranges | 0 to 5 VDC, 0 to 10 VDC (4-wire), 4-20mA (2-wire) |

| Accuracy data | Accuracy code "A" | Accuracy code "C" |
|---|--------------------------------|-----------------------|
| Accuracy | < ±0.07% FS RSS | ≤ ±0.1% FS RSS |
| Non-linearity, End-point (typ.) | < ±0.03% FS | ≤ ±0.08% FS |
| Hysteresis (typ.) | < 0.03% FS | ≤ ±0.06% FS |
| Non-repeatability (typ.) | < ±0.02% FS | ≤ ±0.04% FS |
| Span setting tol. | < ±0.1% FS | < ±0.15% FS |
| Zero offset tol. (typ.) | < ±0.1% FS | < ±0.20% FS |
| Thermal total error band (-20°C to 60°C) | < ±0.25% FS < ±0.5% FS Max. | < ±0.5% < ±1% Max. |

Overpressure Capability

| Pressure Ranges | Burst Pressure ¹ | Standard Proof Pressure ² Option Code "00" | High Proof Pressure ² Option Code "01" |
|------------------------------|-----------------------------|--|--|
| 0 to 1" WC | 175 PSI, 12 Bar | ±8 PSI | ±25 PSI |
| 0 to 2.5" WC, 5 mBar | 200 PSI, 15 Bar | ±10 PSI, ±700 mBar | ±75 PSI, ±5 Bar |
| 0 to 5" WC, 10 mBar | 300 PSI, 20 Bar | ±20 PSI, ±1 Bar | ±100 PSI, ±7 Bar |
| 0 to 10" WC, 25 mBar | 300 PSI, 20 Bar | ±30 PSI, ±2 Bar | ±150 PSI, ±10 Bar |
| 0 to 30" WC, 1 PSI, 100 mBar | 300 PSI, 20 Bar | ±50 PSI, ±4 Bar | ±150 PSI, ±10 Bar |

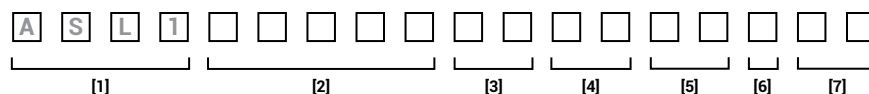
¹Burst Pressure: The maximum pressure that may be applied to the positive pressure port without rupturing the diaphragm or reference pressure containment.

²Proof Pressure: The maximum recoverable pressure that may be applied without charging performance beyond specification: ±0.5% Zero Shift, Typical.

Ordering information

Example part number: ASL1001WB1F2B03A00;

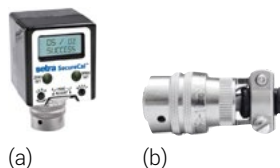
ASL Transducer, $\pm 1"$ W.C. Pressure Range, 1/8" NPT Female Reference Port, 0 to 5 VDC Output, 3 Foot Cable, $\leq \pm 0.07\%$ FS RSS Accuracy, No Options:



| [1] | [2] | or | [2] | [3] | [4] | [5] | [6] | [7] |
|----------------|--|----|---|--------------------------------------|-----------------------|--|-----------------------------------|-----------------------------|
| Model | Pressure range ¹ | | Pressure range ¹ | Process/reference port | Output | Elec. termination | Accuracy | Option |
| ASL1 Model ASL | Pressure range¹ (unidirectional) | | Pressure range¹ (bidirectional) | 1F 1/8" NPT Int./ Barb | 2B 0 to 5 VDC | 03 3 ft./1 m std. cable | A $\leq \pm 0.07\%$ FS RSS | 00 None, standard |
| | R25WD² 0 to 0.25" WC | | 0R1WB² $\pm 0.1"$ WC | FF 1/8 NPT Int./ 1/8 NPT Int. | 2C 0 to 10 VDC | B3 Std. 6-pin ext. bayonet connect, std. wiring | C $\leq \pm 0.1\%$ FS RSS | 01 High overpressure |
| | 0R5WD 0 to 0.5" WC | | R25WB $\pm 0.25"$ WC | 1M 1/8" NPT Ext./ Barb | 11 4 to 20 mA | | | |
| | 001WD 0 to 1" WC | | 0R5WB $\pm 0.5"$ WC | J7 7/16-20 SAE Ext./Barb | | | | |
| | 002WD 0 to 2" WC | | 001WB $\pm 1"$ WC | | | | | |
| | 2R5WD 0 to 2.5" WC | | 002WB $\pm 2"$ WC | | | | | |
| | 005WD 0 to 5" WC | | 005WB $\pm 5"$ WC | | | | | |
| | 010WD 0 to 10" WC | | 015WB $\pm 15"$ WC | | | | | |
| | 030WD 0 to 30" WC | | 005MB ± 5 mBar | | | | | |
| | 040WD 0 to 40" WC | | 010MB ± 10 mBar | | | | | |
| | 005MD 0 to 5 mBar | | 025MB ± 25 mBar | | | | | |
| | 010MD 0 to 10 mBar | | 050MB ± 50 mBar | | | | | |
| | 025MD 0 to 25 mBar | | 001PB ± 1 PSID | | | | | |
| | 050MD 0 to 50 mBar | | 002PB ± 2 PSID | | | | | |
| | 100MD 0 to 100 mBar | | 025LB² ± 25 Pa | | | | | |
| | 001PD 0 to 1 PSID | | 050LB ± 50 Pa | | | | | |
| | 002PD 0 to 2 PSID | | 125LB ± 125 Pa | | | | | |
| | 050LD² 0 to 50 Pa | | | | | | | |
| | 100LD 0 to 100 Pa | | | | | | | |
| | 250LD 0 to 250 Pa | | | | | | | |

Accessories

- (a) See data sheet for more information on Setra's SecureCal™ calibration key.
- (b) 6-pin bayonet connector assembly with strain relief. Order separately: Part No. 600751



¹ Other ranges and engineering units are available (e.g. Pa, kPa).
² Range only available with accuracy code "C".

Dimensions

