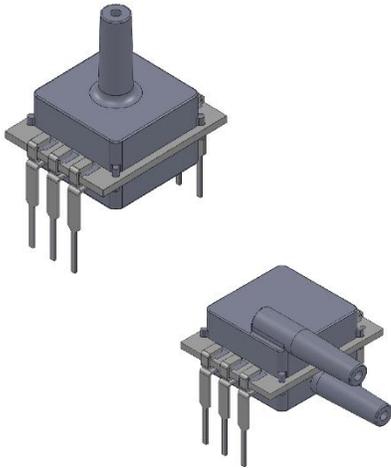


MSDX Series Pressure Sensors



Features

- Low-cost, small DIP package
- Constant voltage excitation
- Low Noise
- Compensated range 0 to 50°C
- Absolute, Differential & Gage Configurations
- Pressure ranges from 5 in H₂O to 100 psi
- Superior Long-term stability

Applications

- Industrial Automation
- Pneumatic Controls
- Computer Peripherals
- HVAC
- Medical Instrumentation

Description

Amphenol All Sensors' MSDX series pressure sensors deliver precise and reliable measurement capabilities in a cost-effective, PCB-mountable design. Built with high-quality materials for durability, these sensors are optimized for applications involving clean, dry air and non-corrosive gases. Available in absolute, differential, and gage configurations, the MSDX series offers flexible solutions to meet a wide range of application requirements. Designed as an alternative for the Honeywell SDX series, the MSDX simplifies upgrades and replacements without the need for design modifications.

The MSDX series features a compact, low-cost DIP package, constant voltage excitation, and low-noise performance for superior accuracy. Engineered for long-term stability, these sensors offer a fully calibrated output over a temperature range of 0 to 50°C [32 °F to 122 °F]. With pressure ranges from 5 in H₂O to 100 psi, the MSDX series delivers dependable performance across various industries, including medical instrumentation, HVAC systems, industrial automation, and pneumatic controls. Whether you require absolute, differential, or gage pressure sensing, the MSDX series provides unmatched versatility and reliability to meet your most demanding application needs. To help you select the best sensor for your specific needs, our experienced application specialists are ready to provide expert support.

Environmental Specifications

| Characteristic | Parameter |
|-------------------------|-------------------------------------|
| Compensated Temperature | 0°C to 50°C (32°F to 122°F) |
| Operating Temperature | -40°C to 85°C (-40°F to 185°F) |
| Storage Temperature | -55°C to 125°C (-67°F to 257°F) |
| Humidity Limits | 0% RH to 95% RH (non-condensing) |

Pressure Sensor Maximum Ratings

| Characteristic | Parameter |
|---|---------------------|
| Supply Voltage (Vs) | 20 Vdc |
| Common Mode Pressure InH ₂ O Devices (L05, L10) PSI Devices (01,05,15,30,60,100) | 50 PSIG 150 PSIG |
| Lead Temperature (soldering 2-4 sec.) | 250°C |
| Maximum Device Temperature | 245°C |

Standard Pressure Range Specifications

| Device | Operating Range | Proof ⁽⁵⁾ Pressure | Burst ⁽⁶⁾ Pressure | Full-Scale Span (mV) ^(1,2) | | |
|------------------|----------------------------|-------------------------------|-------------------------------|---------------------------------------|--------|--------|
| | | | | Min. | Typ. | Max. |
| MSDX-L05D-xxxx-P | + 5 in H ₂ O | 193 in H ₂ O | 193 in H ₂ O | 19.50 | 20.00 | 20.50 |
| MSDX-L10D-xxxx-P | + 10 in H ₂ O | 193 in H ₂ O | 193 in H ₂ O | 24.50 | 25.00 | 25.50 |
| MSDX-001D-xxxx-H | + 1 PSI | 5 PSID | 15 PSID | 17.37 | 18.00 | 18.63 |
| MSDX-001D-xxxx-P | + 1 PSI | 5 PSID | 15 PSID | 17.82 | 18.00 | 18.18 |
| MSDX-005D-xxxx-H | + 5 PSI | 20 PSID | 20 PSID | 57.90 | 60.00 | 62.10 |
| MSDX-005D-xxxx-P | + 5 PSI | 20 PSID | 20 PSID | 59.40 | 60.00 | 60.60 |
| MSDX-015D-xxxx-H | + 15 PSI | 30 PSID | 30 PSID | 86.85 | 90.00 | 93.15 |
| MSDX-015D-xxxx-P | + 15 PSI | 30 PSID | 30 PSID | 89.10 | 90.00 | 90.90 |
| MSDX-030D-xxxx-H | + 30 PSI | 60 PSID | 60 PSID | 86.85 | 90.00 | 93.15 |
| MSDX-030D-xxxx-P | + 30 PSI | 60 PSID | 60 PSID | 89.10 | 90.00 | 90.90 |
| MSDX-100D-xxxx-H | + 100 PSI | 150 PSID | 150 PSID | 96.50 | 100.00 | 103.50 |
| MSDX-100D-xxxx-P | + 100 PSI | 150 PSID | 150 PSID | 99.00 | 100.00 | 101.00 |
| MSDX-L05G-xxxx-P | 0 - 5 in H ₂ O | 193 in H ₂ O | 193 in H ₂ O | 19.50 | 20.00 | 20.50 |
| MSDX-L10G-xxxx-P | 0 - 10 in H ₂ O | 193 in H ₂ O | 193 in H ₂ O | 24.50 | 25.00 | 25.50 |
| MSDX-001G-xxxx-H | 0 - 1 PSI | 5 PSID | 15 PSID | 17.37 | 18.00 | 18.63 |
| MSDX-001G-xxxx-P | 0 - 1 PSI | 5 PSID | 15 PSID | 17.82 | 18.00 | 18.18 |
| MSDX-005G-xxxx-H | 0 - 5 PSI | 20 PSID | 20 PSID | 57.90 | 60.00 | 62.10 |
| MSDX-005G-xxxx-P | 0 - 5 PSI | 20 PSID | 20 PSID | 59.40 | 60.00 | 60.60 |
| MSDX-015G-xxxx-H | 0 - 15 PSI | 30 PSID | 30 PSID | 86.85 | 90.00 | 93.15 |
| MSDX-015G-xxxx-P | 0 - 15 PSI | 30 PSID | 30 PSID | 89.10 | 90.00 | 90.90 |
| MSDX-030G-xxxx-H | 0 - 30 PSI | 60 PSID | 60 PSID | 86.85 | 90.00 | 93.15 |
| MSDX-030G-xxxx-P | 0 - 30 PSI | 60 PSID | 60 PSID | 89.10 | 90.00 | 90.90 |
| MSDX-100G-xxxx-H | 0 - 100 PSI | 150 PSID | 150 PSID | 96.50 | 100.00 | 103.50 |
| MSDX-100G-xxxx-P | 0 - 100 PSI | 150 PSID | 150 PSID | 99.00 | 100.00 | 101.00 |
| MSDX-015A-xxxx-H | 0 - 15 PSIA | 30 PSIA | 30 PSIA | 86.85 | 90.00 | 93.15 |
| MSDX-015A-xxxx-P | 0 - 15 PSIA | 30 PSIA | 30 PSIA | 89.10 | 90.00 | 90.90 |
| MSDX-030A-xxxx-H | 0 - 30 PSIA | 60 PSIA | 60 PSIA | 86.85 | 90.00 | 93.15 |
| MSDX-030A-xxxx-P | 0 - 30 PSIA | 60 PSIA | 60 PSIA | 89.10 | 90.00 | 90.90 |
| MSDX-100A-xxxx-H | 0 - 100 PSIA | 150 PSIA | 150 PSIA | 96.50 | 100.00 | 103.50 |
| MSDX-100A-xxxx-P | 0 - 100 PSIA | 150 PSIA | 150 PSIA | 99.00 | 100.00 | 101.00 |

Performance Characteristics ⁽⁷⁾ for MSDX Series (in H₂O Devices)

| Characteristic | Min. | Typ. | Max. | Unit |
|--|------|------|------|------|
| Zero Pressure offset ⁽³⁾ | -1.0 | 0.0 | +1.0 | mV |
| Combined linearity and hysteresis ⁽⁴⁾ | - | ±0.2 | ±1.0 | %FSS |
| Temperature effect on span, 0°C to 50°C (32°F to 122°F) ⁽⁸⁾ | - | ±0.4 | ±2.0 | %FSS |
| Temperature effect on offset, 0°C to 50°C (32°F to 122°F) ⁽⁸⁾ | - | ±0.2 | ±0.6 | mV |
| Repeatability ⁽⁹⁾ | - | ±0.5 | - | %FSS |
| Input resistance ⁽¹⁰⁾ | - | 4.0 | - | kΩ |
| Output resistance ⁽¹¹⁾ | - | 4.0 | - | kΩ |
| Common mode voltage ⁽¹²⁾ | 1.5 | 3.0 | 5.0 | Vdc |
| Response time ⁽¹³⁾ | - | 100 | - | μsec |
| Long term stability of offset and span ⁽¹⁴⁾ | - | ±0.1 | - | %FSS |

Performance Characteristics ⁽⁷⁾ for Standard Grade (H) MSDX Series (in PSI Devices)

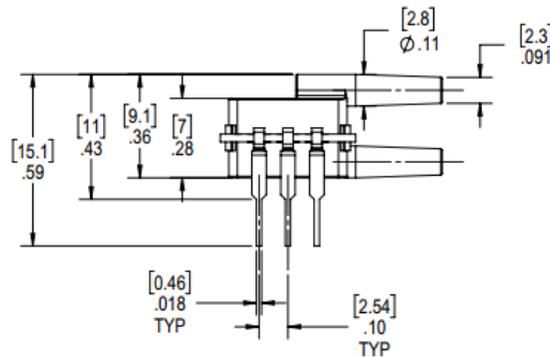
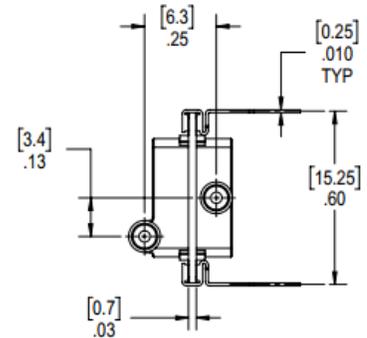
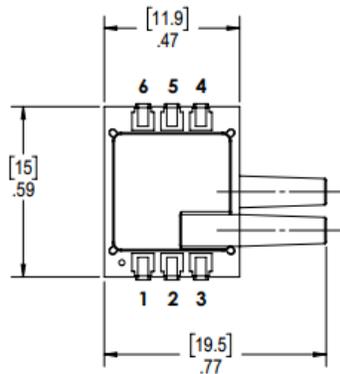
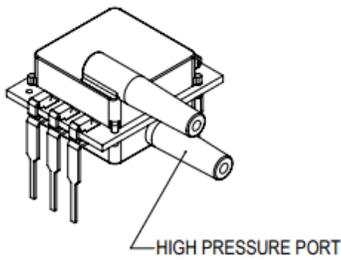
| Characteristic | Min. | Typ. | Max. | Unit |
|--|------|------|------|------|
| Zero Pressure offset ⁽³⁾ | -1.0 | 0.0 | +1.0 | mV |
| Combined linearity and hysteresis ⁽⁴⁾ | - | ±0.2 | ±1.0 | %FSO |
| Temperature effect on span, 0°C to 50°C (32°F to 122°F) ⁽⁸⁾ | - | ±0.4 | ±2.0 | %FSO |
| Temperature effect on offset, 0°C to 50°C (32°F to 122°F) ⁽⁸⁾ | - | ±0.2 | ±1.0 | mV |
| Repeatability ⁽⁹⁾ | - | ±0.2 | ±0.5 | %FSO |
| Input resistance ⁽¹⁰⁾ | - | 4.0 | - | kΩ |
| Output resistance ⁽¹¹⁾ | - | 4.0 | - | kΩ |
| Common mode voltage ⁽¹²⁾ | 1.5 | 3.0 | 5.0 | Vdc |
| Response time ⁽¹³⁾ | - | 100 | - | μs |
| Long term stability of offset and span ⁽¹⁴⁾ | - | ±0.1 | - | mV |

Performance Characteristics ⁽⁷⁾ for Prime Grade (P) MSDX Series (in PSI Devices)

| Characteristic | Min. | Typ. | Max. | Unit |
|--|------|------|-------|------|
| Zero Pressure offset ⁽³⁾ | -0.3 | 0.0 | +0.3 | mV |
| Combined linearity and hysteresis ⁽⁴⁾ | - | ±0.1 | ±0.25 | %FSO |
| Temperature effect on span, 0°C to 50°C (32°F to 122°F) ⁽⁸⁾ | - | ±0.4 | ±1.0 | %FSO |
| Temperature effect on offset, 0°C to 50°C (32°F to 122°F) ⁽⁸⁾ | - | ±0.2 | ±0.5 | mV |
| Repeatability ⁽⁹⁾ | - | ±0.1 | - | %FSO |
| Input resistance ⁽¹⁰⁾ | - | 4.0 | - | kΩ |
| Output resistance ⁽¹¹⁾ | - | 4.0 | - | kΩ |
| Common mode voltage ⁽¹²⁾ | 1.5 | 3.0 | 5.0 | Vdc |
| Response time ⁽¹³⁾ | - | 100 | - | μs |
| Long term stability of offset and span ⁽¹⁴⁾ | - | ±0.1 | - | mV |

Specification Notes:

1. Analog Output Voltage is ratiometric to the supply voltage $V_{(s)}$.
2. Full-Scale Span is the algebraic difference between the output voltage at Full-scale pressure and the output at zero pressure. Full-scale span is ratiometric to the supply voltage.
3. Offset voltage is the voltage output at zero pressure
4. Combined Nonlinearity and Hysteresis: Nonlinearity is defined as the BFSL (best fit straight line) across the entire pressure range and Hysteresis is the maximum output difference at any point within the operating pressure range for increasing and decreasing pressure.
5. Proof Pressure is the maximum pressure which may be applied without causing damage to the sensing element
6. Burst Pressure is the maximum pressure which may be applied without causing permanent damage to the sensor.
7. Reference Conditions (unless otherwise noted:
 - $V_{(s)} = 12 \text{ Vdc}$,
 - Ambient Temperature 25°C (77°F)
 - Common Mode Line Pressure = 0 psig, pressure applied to port 2
8. Maximum deviation of Span and offset over the compensated temperature range (0°C to 50°C) relative to 25°C (77°F).
9. Repeatability is defined as typical deviation from the output signal after 10 pressure cycles
10. Input resistance is the resistance between $V_{(s)}$ and ground.
11. Output resistance is the resistance between the + and – outputs
12. Common Mode voltage of the output arms for $V_{(s)} = 12\text{Vdc}$
13. Response Time for a 0 psi to Full-Scale Span pressure step change, 10% to 90% rise time.
14. Typical Long-Term Stability over a period of one year.



Differential / Gage

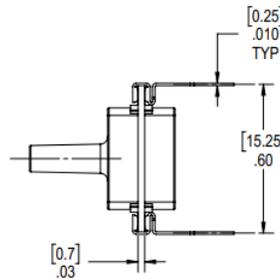
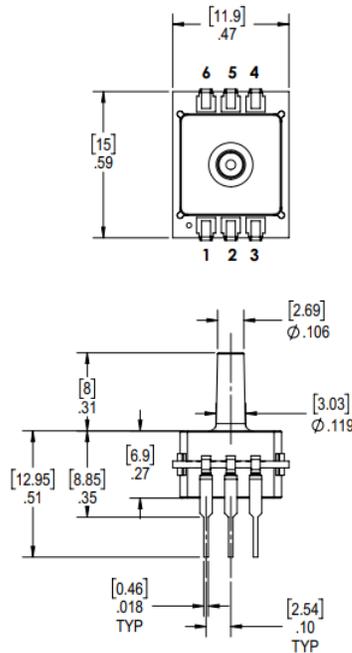
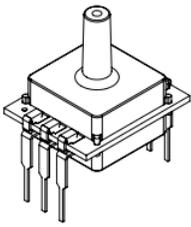
| Pin | Name | Function |
|-----|-------|-----------------|
| 1 | +Vout | Positive output |
| 2 | GND | Ground |
| 3 | -Vout | Negative Output |
| 4 | N/C | No Connection |
| 5 | +Vs | Power Supply |
| 6 | N/C | No Connection |

***CAUTION**
Note: Non-standard Pin Numbering

Absolute

| Pin | Name | Function |
|-----|-------|-----------------|
| 1 | -Vout | Negative output |
| 2 | GND | Ground |
| 3 | +Vout | Positive Output |
| 4 | N/C | No Connection |
| 5 | +Vs | Power Supply |
| 6 | N/C | No Connection |

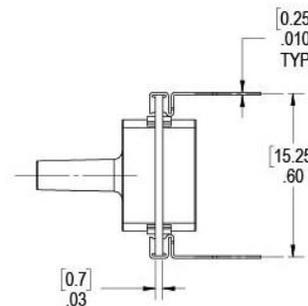
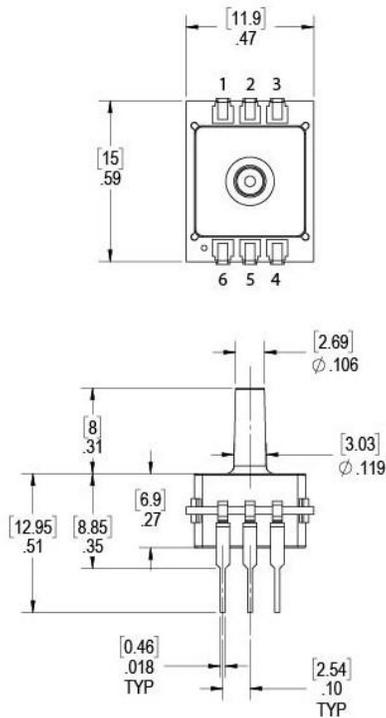
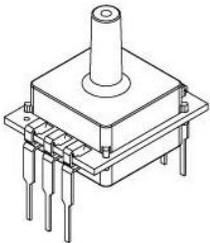
Absolute



| Pin | Name | Function |
|-----|-------|-----------------|
| 1 | -Vout | Negative output |
| 2 | GND | Ground |
| 3 | +Vout | Positive Output |
| 4 | N/C | No Connection |
| 5 | +Vs | Power Supply |
| 6 | N/C | No Connection |

*CAUTION: Non-standard Pin Numbering

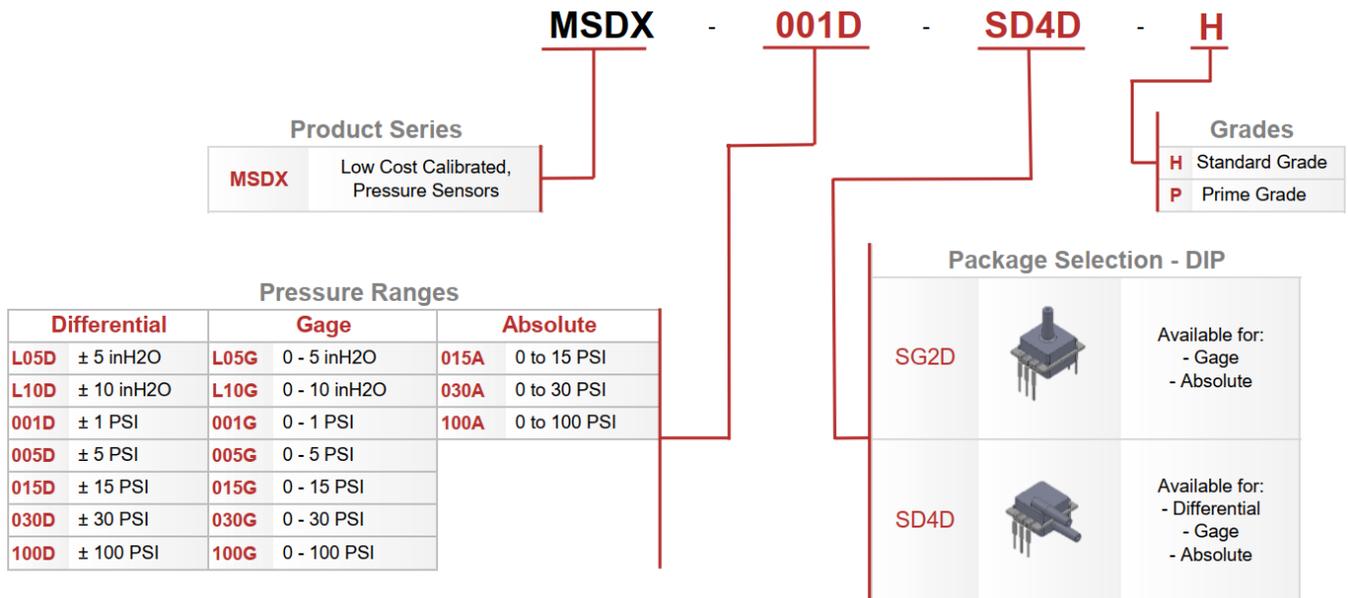
Gage



| Pin | Name | Function |
|-----|-------|-----------------|
| 1 | +Vout | Positive output |
| 2 | GND | Ground |
| 3 | -Vout | Negative Output |
| 4 | N/C | No Connection |
| 5 | +Vs | Power Supply |
| 6 | N/C | No Connection |

*CAUTION: Non-standard Pin Numbering

How to Order – MSDX



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