Low Pressure Sensor
Model PR-274/275
RoHS

The PR-274/275 incorporates a new micro-machined glass-on-silicon (Gl-Si) capacitance sensor. This technology revolutionizes very low pressure measurement. Temperature related zero drift, calibration shift due to overpressure, non-repeatability, non-linearity, and extremely low pressure sensitivity have been some of the problems which have plagued the controls industry. The PR-274/275 with the new Gl-Si technology not only addresses all of the above shortcomings, but for the first time offers a reliable, accurate means to measure and control building/room pressure, air flow, duct pressure, filter pressure drop, or any other extremely low pressure application. Up to six field selectable direct or compound ranges, two enclosure types, field selectable outputs, fully temperature compensated NIST traceable accuracy, non-interacting zero and span adjustments, short circuit and reverse polarity protected output, and a liberal five year warranty are some of the features which make the PR-274/275 the industry’s highest performance, ultra-stable, low pressure sensor.
The PR-274/275 incorporates sophisticated integrated circuits to not only provide a high level, fully-conditioned and temperature compensated output, but also to offer field selectable flexibility which was unheard of in the industry. The PR-274/275 offers up to six field selectable pressure ranges in one unit. In this way, a customer does not need to know the exact pressure range prior to selection. By merely knowing the application, a unit may be selected and then later field-configured for the desired pressure range. With fixed range units, in case of engineering error or incorrect selection, the only solution is expensive field recalibration or time consuming product exchange or replacement. Similarly, numerous units have to be kept in stock as spares to cover all ranges in case of field failure. The PR-274/275 with the field selectable pressure range feature, eliminates above mentioned costly inefficiencies. A single unit can be configured to cover all the pressure ranges in a particular application thereby eliminating any possibility of incorrect range selection. Additionally, one unit can be kept in stock and, in the event of failure, it can be field-configured thereby eliminating the need to stock numerous fixed range units. (For a complete listing of all ranges available, please see the ordering information section on page three.)

On VDC output units, two additional field-selectable options are available: dual outputs 0-5 or 0-10 VDC, and dual unregulated supply voltages 12-35 VAC or 12-40 VDC. By merely setting a dip switch, one can select the desired output for the specific application. As far as supply voltage is concerned, the unit automatically configures for AC or DC, and no field selection is necessary. Another feature is that the output is fully protected from short circuit to ground, or if the supply voltage is applied by mistake to the output. Past experience demonstrates that field-related wiring problems do occur. Instead of denying this fact, the protection circuit is designed in to ensure trouble-free start-up. The VDC output unit is also designed to handle low impedance circuits. In fact, the unit can drive up to 1k ohms minimum. In this way, multiple controllers, indicators, or other devices can be paralleled to the output without performance degradation.

The mA output units can function over a wide unregulated supply voltage range: 12-40 VDC without any effect on calibration or performance. The unit has built-in reverse polarity protection. As a result, it is next to impossible to damage the unit by miswiring. By using sophisticated low drop-out voltage regulators and CMOS integrated circuits, the mA output unit can drive very high output impedance.

In fact, with only 12 VDC supply, the unit can drive 200 ohms. At 40 VDC, the unit is capable of handling up to 1600 ohms load. In this way, the output loop can be tied in series to multiple controllers, indicators, and other devices without degrading the performance.

Due to the low mass of the micro-machined capacitance Gl-Si sensor, the mounting orientation error for ranges higher than 1.0"wc (250 pa) is negligible. For extremely low ranges, if the unit is installed as indicated on the label, there should be no orientation error. However, due to space limitation, if the unit cannot be installed in the indicated position, the error can be easily removed by merely adjusting the zero trimmer. Since the zero and span trimmers are non-interactive, adjustment to the zero should under no circumstance affect the calibration integrity of the unit including linearity and repeatability specifications across the range.

The PR-274/275 is available with two packaging options: a NEMA 4 (IP-65) fully gasketed, dust proof and splash proof enclosure, or a lightweight but rugged panel mount chassis for ease of installation with minimum space requirement in a control panel. The NEMA 4 (IP-65) enclosure has an external mounting bracket to facilitate field installation. A ½” (.875”/22.25mm dia.) knockout for conduit connection is also provided. A liquid tight cable connector is also supplied if the unit is not being hard wired. Once installed, the enclosure maintains its environmental rating and protects the electronics and the sensing element from condensation, corrosive contaminants and other environmental pollutants. Both packaging options also have additional features for ease of installation, including uplugable terminal blocks, rugged brass hose barbs, easily accessible zero and span trimmers, and conveniently located dip switches for field selection.
PR-274/275

SPECIFICATIONS:

Accuracy*: ±1% FS
Overpressure: 10 PSID
Supply Voltage: 12-40 VDC
   12-35 VAC (VDC output units only)
Supply Current: VDC Units – 10 mA max.
   mA Units – 20 mA max.
Compensated Temp Range: 25°F - 150°F
   (4°C - 65°C)
T.C. Error: ±0.0125%/°F (.02%/°C)
Load Impedance: 1.6K ohms max. at 40 VDC
   (mA output units)
   1K ohms min.
   (VDC output units)
Enclosure: 18 Ga. C. R. Steel NEMA 4 (IP-65)
   or Panel Mount Chassis
Finish: Baked-on enamel – PMS2GR88B
*Includes non-linearity, hysteresis, and non-repeatability

Operating Temp Range: 0°F – 175°F
   (-18°C – 80°C)
Media Compatibility: Clean dry air or any inert gas
Environmental: 10–90%RH Non-Condensing
Termination: Unpluggable screw terminal block
Wire Size: 12 Ga. max
Weight: Enclosure - 1.0 lbs. (.45 kg)
   Panel Mount - 0.5 lbs. (.25 kg)

CONFORMANCE & TESTING:
RoHS Compliant
EMC Testing:
   BS EN 55022:1998, BS EN 55024:1998,
   EN 61000-3-3, EN 61000-4-2,
   EN 61000-4-3, EN 61000-4-4,
   EN 61000-4-5, EN 61000-4-6,
   EN 61000-4-11

CAUTION: Do not use in explosive/hazardous environment or with flammable/combustible media.

ORDERING INFORMATION: PR-

<table>
<thead>
<tr>
<th>Packaging</th>
<th>Range</th>
<th>Output</th>
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<tbody>
<tr>
<td>274 (enclosure)</td>
<td>R1 (&quot;wc) 0 to 0.10 / -0.05 to +0.05</td>
<td>mA (4-20 mA 2-wire)</td>
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<tr>
<td>275 (panel mount)</td>
<td>R2 (&quot;wc) 0 to 1.0 / 0 to 0.5 / 0 to 0.25 / -0.5 to +0.5 / -0.25 to +0.25 / -0.125 to +0.125</td>
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<tr>
<td></td>
<td>R3 (&quot;wc) 0 to 5.0 / 0 to 2.5 / 0 to 1.25 / -2.5 to +2.5 / -1.25 to +1.25 / -0.625 to +0.625</td>
<td></td>
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<tr>
<td></td>
<td>R4 (&quot;wc) 0 to 30 / 0 to 15 / 0 to 7.5 / -15.0 to +15.0 / -7.5 to +7.5 / -3.75 to +3.75</td>
<td></td>
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<tr>
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<td>R5* (pa) 0 to 25 / -12.5 to +12.5</td>
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<td>R6* (pa) 0 to 250 / 0 to 125 / 0 to 62.5 / -125 to +125 / -62.5 to +62.5 / -31.25 to +31.25</td>
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<td>R7* (pa) 0 to 1250 / 0 to 625 / 0 to 312.5 / -625 to +625 / -312.5 to +312.5 / -156.25 to +156.25</td>
<td></td>
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<tr>
<td></td>
<td>R8* (pa) 0 to 7500 / 0 to 3750 / 0 to 1875 / -3750 to +3750 / -1875 to +1875 / -937.5 to +937.5</td>
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Example: PR-274-R2-mA: Enclosure unit with R2 Range which has six (6) field selectable range options and 4-20 mA output.

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