Product Description

SSI Technologies Inc., a leading OEM supplier of automotive sensors, having delivered more than 100 million sensors to its customers, now offers a new series of MediaSensor™ pressure sensors where ultra low pressure, cost, compact size, robust packaging, chemical compatibility and performance are critical.

These new MediaSensor™ P51 Series ULG bulk micro-machined, gage pressure sensors are designed to work at ultra low pressure ranges (3 psi, 5 psi, 10 psi) over an operating temperature range of -40°C to +105°C with a superior accuracy of <±1.0%.

The ULG series pressure sensors are cost competitive, compact, have robust packaging with a wide variety of fittings that work in both harsh and benign media. They are ideal for a variety of pressure measurement applications in the automotive, industrial and commercial industries. Two different electrical signal outputs are available for use by computers, digital panel meters, PLCs, chart recorders and other devices that can display, record or change the pressure in a closed loop system.

Product Features

- **Pressure Ranges:**
  - 3 psig (20.7 kPa)
  - 5 psig (34.5 kPa)
  - 10 psig (68.9 kPa)

- **Superb Accuracy:** <± 1.0 % includes Repeatability, Hysteresis and Linearity

- **Compact, Robust Package:** All laser-welded stainless steel design for optimal media isolation

- **Standard and Custom Options**

Call us at (888) 477-4320 or visit our Web Site: [http://ssitechnologies.com](http://ssitechnologies.com)
MediaSensor™ P51 Series ULG
Ultra Low Gage Pressure Sensors

Chemical Compatibilities: Any gas or liquid compatible with 304L & 316L stainless steel.

- Refrigerant
- Motor Oil
- Diesel
- Hydraulic Fluid
- Brake Fluid
- Water
- Waste Water
- Hydrogen
- Nitrogen
- Air

Typical Applications
- Refrigeration
- Fuel Cells
- Pumps
- Hydraulics
- Pneumatics
- Agriculture
- Process Control

Typical Connections

The following torque limits should be used when mounting the MediaSensor™ pressure port.

<table>
<thead>
<tr>
<th>Connection Type</th>
<th>Recommended Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight Thread w/O-Ring:</td>
<td>150 in lb</td>
</tr>
<tr>
<td>NPTF Thread:</td>
<td>2 T.F.F.T. (Turns From Finger Tight)</td>
</tr>
</tbody>
</table>

MediaSensor™ Transducer (Voltage Output) connections:

1) Connect the Power Lead (Red) to the + terminal of the supply voltage.

2) Connect the Ground Lead (Black) and the – terminal of the supply voltage to – input of your voltage measurement equipment.

3) Connect the Vout Lead (White) to the + input of your voltage measurement equipment.
SSI Technologies – Application Note PS-AN8
MediaSensor™ P51 Series ULG
Ultra Low Gage Pressure Sensors

Standard Packaging Options

<table>
<thead>
<tr>
<th>THREAD SIZE</th>
<th>LENGTH “A”</th>
<th>LENGTH “B”</th>
<th>LENGTH “C”</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4-18 NPT</td>
<td>66.6</td>
<td>26.0</td>
<td>18.0</td>
</tr>
<tr>
<td>1/8-27 NPT</td>
<td>63.0</td>
<td>21.0</td>
<td>13.0</td>
</tr>
<tr>
<td>7/16-20 UNF</td>
<td>63.0</td>
<td>19.0</td>
<td>11.0</td>
</tr>
</tbody>
</table>

Integral Harness with 22mm Hex

Packard Connector with 22mm Hex
5 Vdc Input: 0.5 – 4.5 Vdc Ratiometric Output

Harness Construction: PVC Jacketed 24 AWG Wire

Mating Packard Connector P/N 12065287 and Mating Packard Terminal P/N 12103881

<table>
<thead>
<tr>
<th>THREAD SIZE</th>
<th>LENGTH “A”</th>
<th>LENGTH “B”</th>
<th>LENGTH “C”</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4-18 NPT</td>
<td>70.0</td>
<td>28.0</td>
<td>18.0</td>
</tr>
<tr>
<td>1/8-27 NPT</td>
<td>65.0</td>
<td>21.0</td>
<td>13.0</td>
</tr>
<tr>
<td>7/16-20 UNF</td>
<td>63.0</td>
<td>19.0</td>
<td>11.0</td>
</tr>
</tbody>
</table>

Packard Connector with 22mm Hex
8 - 30 Vdc Input : 1 - 5 Vdc Output

Packard Connector with 22mm Hex
8 - 30 Vdc Input : 4 - 20 mA Output

Mating Packard Connector P/N 12065287 and Mating Packard Terminal P/N 12103881
Performance Specifications (all values at 22°C unless noted otherwise)

<table>
<thead>
<tr>
<th>Output Type</th>
<th>0.5 to 4.5 Volts</th>
<th>1 – 5 Volts</th>
<th>4-20mA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accuracy</strong>¹</td>
<td>&lt;± 1.00% FS</td>
<td>&lt;± 1.00% FS</td>
<td>&lt;± 1.00% FS</td>
</tr>
<tr>
<td><strong>Thermal Error</strong>² (-40°C to 105°C)</td>
<td>&lt;± 2.00% FS</td>
<td>&lt;± 2.00% FS</td>
<td>&lt;± 2.00% FS</td>
</tr>
<tr>
<td><strong>Stability (Typical)</strong></td>
<td>&lt;± 0.25% FS / Year</td>
<td>&lt;± 0.25% FS / Year</td>
<td>&lt;± 0.25% FS / Year</td>
</tr>
<tr>
<td><strong>Zero Pressure Offset</strong>³</td>
<td>0.50 V</td>
<td>1.0 V</td>
<td>4.0 mA</td>
</tr>
<tr>
<td><strong>Full Scale Output</strong>⁴</td>
<td>4.5 V</td>
<td>5.0 V</td>
<td>20mA</td>
</tr>
<tr>
<td><strong>Operating Temperature</strong></td>
<td>-40 to 105°C</td>
<td>-40 to 105°C</td>
<td>-40 to 105°C</td>
</tr>
<tr>
<td><strong>Storage Temperature</strong></td>
<td>-40 to 105°C</td>
<td>-40 to 105°C</td>
<td>-40 to 105°C</td>
</tr>
<tr>
<td><strong>Proof Pressure</strong></td>
<td>3 X FS</td>
<td>3 X FS</td>
<td>3 X FS</td>
</tr>
<tr>
<td><strong>Burst Pressure</strong></td>
<td>10 X FS</td>
<td>10 X FS</td>
<td>10 X FS</td>
</tr>
</tbody>
</table>

Electrical Specifications

<table>
<thead>
<tr>
<th>Output Type</th>
<th>0.5 to 4.5 Volts</th>
<th>1 – 5 Volts</th>
<th>4-20mA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Supply Voltage</strong></td>
<td>5 +/- 0.5</td>
<td>8 to 30 Volts</td>
<td>8 to 30 Volts</td>
</tr>
<tr>
<td><strong>Supply Current</strong></td>
<td>&lt; 6 mA</td>
<td>&lt; 3 mA</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Output Current</strong></td>
<td>0.45mA Max(Sink or Source)</td>
<td>0.45mA Max(Sink or Source)</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Response Time</strong></td>
<td>&lt; 1 ms</td>
<td>&lt; 1ms</td>
<td>&lt; 1ms</td>
</tr>
</tbody>
</table>

Reliability and Environmental Performance

<table>
<thead>
<tr>
<th>Test Conditions</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure/Temperature Cycles⁴</td>
<td>&gt;1.8x10</td>
<td>Cycles</td>
</tr>
<tr>
<td>Thermal Shock</td>
<td>250</td>
<td>Cycles</td>
</tr>
<tr>
<td>Vibration</td>
<td>144</td>
<td>Hours</td>
</tr>
<tr>
<td>EMC Compatibility</td>
<td>10 Volts/meter per EN 61000-4-3</td>
<td></td>
</tr>
<tr>
<td>Humidity</td>
<td>250</td>
<td>Hours</td>
</tr>
<tr>
<td>Weight</td>
<td>≤85</td>
<td>Grams</td>
</tr>
</tbody>
</table>

¹Includes hysteresis, repeatability, & non-linearity (BFSL)
²Additional error over temperature
³Transducer output @ 0 Paig,
⁴Pressure cycling performed at rated full scale pressure.
## MediaSensor™ Series ULG Ultra Low Pressure Sensor Ordering System

The following explains SSI’s ultra low pressure sensor order number sequence.

**Example**

```
P51 - 5G - UA - P - 4.5V
```

### Product Family
- P51- MediaSensor

### Pressure Ranges
- 3 PSIG
- 5 PSIG
- 10 PSIG
- Custom Call Factory

### Port Configuration
- Hex
  - UA 7/8 in 7/16 - 20UNF 2A
  - UB 7/8 in 1/8 - 27 NPT
  - UC 7/8 in 1/4 - 18 NPT
  - UD 7/8 in 1/8 - 27 NPTF
  - UE 5/8 in 3/8 - 24 UNF-2B
- Port
  - 7/16 - 20UNF 2A
  - 1/8 - 27 NPT
  - 1/4 - 18 NPT
  - 1/8 - 27 NPTF
  - 3/8 - 24 UNF-2B

### Connector
- P – Packard
- I 6 – 6” Integral Harness
- I12 – 12” Integral Harness
- I18 – 18” Integral Harness
- I24 – 24” Integral Harness
- I36 – 36” Integral Harness
- I72 – 72” Integral Harness

### Output Options
- 4.5V – 0.5 to 4.5V (5V input only)
- 5V – 1 to 5V (8 to 30V input only)
- 20mA – 4 - 20mA (8 to 30V input only)

### Notes:
1) **G** designates Gage Pressure
2) Calibration of the transducer is as follows:
   a. Gage Transducers are calibrated to have 0.5 Vdc or 1 Vdc, or 4mA respectively at 0 Psig

To place an order or to view our other pressure sensors, please see our website http://www.ssitechnologies.com for a listing of our distribution partners and Regional Sales Managers.

For custom orders or specifications not listed, call SSI toll-free at **1-888-477-4320**