## Pressure Unit Table

<table>
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<tr>
<th>Units</th>
<th>Pa</th>
<th>bar</th>
<th>PSI</th>
<th>kgf/cm²</th>
<th>atm</th>
<th>mm H₂O</th>
<th>in H₂O</th>
<th>mm Hg</th>
<th>in Hg</th>
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<tbody>
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<td>10⁻⁵</td>
<td>0.145x10⁻³</td>
<td>1.0197x10⁻³</td>
<td>0.987x10⁻³</td>
<td>0.10197</td>
<td>0.402x10⁻³</td>
<td>0.750x10⁻²</td>
<td>0.295x10⁻³</td>
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<td>0.249x10⁻²</td>
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# Pressure Sensors

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<th>Media</th>
<th>Maximum IP Rating</th>
<th>Hysteresis Output Mode Adjustment</th>
<th>Output Setting</th>
<th>Display</th>
<th>Page Number</th>
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<td>MPS-1</td>
<td>0 to -30 inHg</td>
<td>(1) NPN / PNP With Analog</td>
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## Accessories

-  80 - 81

## Programming Symbols Legend

-  82

## Glossary

-  83 - 86
Selecting the Proper Pressure Sensor

Selecting a Parker Pressure Sensor for an application is more than just selecting the correct operating range of the sensor. Electromechanical pressure sensors convert the applied pressure to an electrical signal. When pressure is applied, the diaphragm is deflected causing the diffused resistors to change resistance (piezoelectric effect), which yields an electrical signal proportional to the pressure change. Applications for pressure switches are numerous and important in today's high-tech manufacturing environment. Parker Pressure Sensors are solid state sensors and not mechanical switches. The outputs are either analog (1 –5vc, 4-20ma or 0-20ma) or PNP/NPN Open Collector Transistor Type Outputs. The application will determine if the Open Collector Output is used in a Hysteresis or Window Comparator Function. The output mode of the sensor, as well as whether the sensor is normally open (non-passing) or normally closed (passing), can be programmed by you to fit your application. In addition to electrical outputs, most of these sensors have additional programming options that can be integrated into the system logic for additional benefits. These programming options are listed at the bottom of the page and are detailed on the next pages. Choose the best Pressure Sensor for the application based on Pressure Range, Output Type and additional programming options.

<table>
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<tr>
<th>Programming Options</th>
<th>MPS 1</th>
<th>MPS 2</th>
<th>MPS 3</th>
<th>MPS 3 SS</th>
<th>MPS 31</th>
<th>MPS 4</th>
<th>MPS 5</th>
<th>MPS 6</th>
<th>MPS 71</th>
<th>MPS 74</th>
<th>MPS 8</th>
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<td>Peak Vacuum Error Message</td>
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<tr>
<td>Blow-off Time Error Message</td>
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</tbody>
</table>
Programming Options:

Outputs Change N.O. / N.C.
Pressure Sensor output function can be changed in the field. The status of the Output at 0 PSIG is either Normally Open (Non-Passing) or Normally Closed (Passing).

Units of Measure
Pressure Sensors have the option of displaying system pressure on an 8-segment LED display. The units of measure on the display can be changed to suit the application. Some choices are PSI, inHg, Bar, Kpa, Mpa or mmHg and are dependent on the pressure range of the sensor.

EZY Mode
Allows the user to adjust the set points of the pressure sensor while all other programming options are locked out.

Hysteresis Mode
This output mode provides one switch point (H) and a hysteresis pressure adjustment (h). When the switch point pressure is achieved, the output (NPN / PNP) is activated if normally open or deactivated if normally closed. Typically, this mode is used for pressure confirmation. For positive pressure applications, this operating mode does not provide any output or alarms beyond the switch point in the case of excessive pressures.

The hysteresis setting (h) is the difference in pressure below the switch point pressure which controls the on / off status of the output.

In the Air Driven Cabinet Cooler application below, H=10 PSIG, h=2 PSIG The unit will function properly above 10 PSIG and given some pressure variations, the sensor output will remain “on” until 8 PSIG. Below 8 PSIG the output will change to “off”, which will be an indication that the cabinet is not being cooled efficiently or not at all.

Some Pressure Sensor have 2 independent outputs. In nonporous Vacuum Applications, these outputs can be set to Hysteresis Mode to conserve compressed air, which reduces operating expense and noise level. In these Air Economizing applications, H-2 is used for part presence signal and H-1 is used to turn off the vacuum system. The system will turn back on when the degree of vacuum decreases to a level of H-1 minus h-1. The vacuum solenoid valve toggles “on and off” while maintaining a degree of vacuum above H-2.
Window Comparator Mode
This output mode provides two switch points (A) and (b) that control the output signals (NPN / PNP) between the two pressures. This creates a “window” of operation and is sometimes referred to as “high / low” setting. The Window Comparator Mode provides an output or alarm when pressures exceed the upper or lower limit.

The sensor in the below application monitors the pressure to the valve controlling a pneumatic gripper. If the pressure is below (A), the gripper may not have enough holding capacity for the application and the part could drop. If the pressure is above (b), the gripper may excerpt too much force on the part and damage the part. If the pressure is in the window of operation, in-between (A) and (b), the application is within design specification.

Auto Teach Mode
Programming feature that automatically sets switch points during the vacuum cycle.

Sets Output 1 to Hysteresis Mode and Output 2 to Window Comparator Mode. 60% of maximum vacuum level displayed during setup operation of the system.

Auto Surveillance Mode
The Auto Surveillance Mode is a failure prediction indicator. The Sensor automatically surveys vacuum cycle to determine if the Peak Vacuum Level was attained after H-1. Output 2 changes state if the Peak Vacuum Level of the system is not reached over a consecutive number of surveillance’s programmed. Peak Vacuum Level and number of surveillance’s are programmed at the end of the Automatic Teach Mode.

During a vacuum pick and place application, H-1 is part presence signal and P-1 is the peak degree of vacuum of the system. P-1 is automatically set in Automatic Teach Mode to a level of 80% of the maximum degree of vacuum the system. P-1 can be changed in the field to suit the application parameters. During the automation cycle, vacuum is turned “on” and H-1 is obtained to indicate part present, then P-1 is obtained. Vacuum is turned off and the pressure is decreased to a level below H-1 minus h-1. This is a good cycle because P-1 was obtained before the pressure sensor measured H-1 minus h-1. A bad cycle is determined when H-1 is obtained and P-1 is not measured before H-1 minus h-1 is measured. In a bad cycle, the second output of the sensor is turn “on” for 3 seconds. The sensor can monitor from 1 to 100 cycles. If set to 100 cycles, the sensor records each cycle up to 100 cycles or until P-1 is obtained. Once P-1 is obtained, the sensor resets itself. If P-1 is not obtained over 100 consecutive cycles, output 2 will be turned on for 3 seconds. It will reset after the output is turned on and repeat as programmed.

The sensor is used for preventative maintenance with an output to a PLC. The vacuum cycle is still obtaining H-1, but the peak degree of vacuum the system is decreasing over time. Without Auto Surveillance, the peak degree of vacuum can decrease to a point of dropping a part or to a degree that H-1 is not obtained. Both events can cause machine downtime.

Display Refresh Settings
The LED display is refreshed every 0.1 seconds. If the pressure is changing to quickly for the human eye to see, the display refresh time can be changed from 0.1 to 3 seconds. This will dampen the display but will not affect the output response time of the pressure sensor.

Output Response Time
Output response time is the time it takes for the output signal to change state after the pressure switch point is achieved. Sensor response time is typically less than 2.0 milliseconds. In some applications, pressure spikes that are faster than the actual mechanical application response time of the system can cause erroneous changes in the sensor outputs. The output response time of the sensor can be changed by a multiple of 2, 32, 256, or 512. The response time of 2 milliseconds can be changed to a high point of 2 x 512, or 1.24 seconds.
Display Peak / Bottom Difference Value
Display LED's indicate the current pressure of the system. The sensor can be programmed to indicate just the Peak (High), Bottom (Low) or the Difference Pressure of these pressures over a specific time period. The time period can be set from 2 to 99 seconds. Ever try to read a pressure gauge in a high cyclic application? Using the Peak Value or Bottom Value over time will show you just the High or Low Value over a specific time period. Difference Value can be used to determine if the pressure drop of the system is becoming too excessive which can slow the response time of the systems.

A gauge with a needle changing between 70 and 57 psi is indicating a dynamic pressure drop. The sensor can be set to display only the difference value of 13 psi. Visually monitoring the system becomes easier. If the display value is too high, then there is too much pressure drop in the system. Display value settings do not affect the sensor output functions.

Special Display Features
The LED display can be programmed with respect the status of the outputs. For example, when the output is closed, the LED can be blinking, or turned “OFF”. If it is open, the LED display can be turned off or crossed out. This can be visual alert to the status of the output and the pressure of the system.

Lockout Option
All sensor programming is locked out. Programming or LED Display cannot be changed when the sensor is locked out.

Peak Value at a Touch
With a touch of the Up Arrow Button, the maximum pressure that the sensor has measured since power was applied to the sensor will be displayed. This is a great help in machine set-up. Run the machine, open the safety guard and determine the maximum pressure of the system cycle. In Vacuum Applications, the sensor will display the Peak Degree of Vacuum. This can be used for trouble shooting and machine set-up.

Bottom Value at a Touch
With a touch of the Down Arrow Button, the minimum pressure that the sensor has measured since power was applied to the sensor will be displayed.

Zero Reset
Just like a pressure gauge, a pressure sensor measures the system pressure in relation to the atmospheric pressure. Pressure Sensors can be calibrated to the current atmospheric pressure by using the Zero Reset Function.

Red / Green LED Display Options
Display LED's change from Red to Green, or Green to Red when the output changes state. These 11mm LED's give a clear Green (GO) or Red (STOP) indication. In window comparator mode, if the system pressure is between the High and the Low pressure, everything is OK – LED Green. If the pressure is out of the “window” the sensor will change the output status and change the color of the Sensor LED from Green to Red.

Peak Surveillance Mode
Peak Surveillance Mode is very similar to Auto Surveillance Mode. Instead of an output being turned “on” for 3 seconds, the LED display will change from indicating current pressure to the blinking error code of PErr. In the below application, the MPS-74 display unit has 4 independent sensors attached to the unit. This provides 4 independent outputs to the PLC for part present signal on all 4 cups. If Peak Degree of vacuum is not obtained for one of the remote sensors, the MPS-74 display will change to the specific channel to indicate which cup did not obtain peak degree of vacuum and blink PErr. This allows maintenance to trouble shoot one-cup line instead the whole vacuum system.

Energy Savings Mode
Turning off the LED display will conserve power. By touching a button, the LED display is active and indicates current pressure of the system, but will turn off automatically.

Scan Mode
This is specific to the MPS-74 Sensor which can have up to 4 remote pressure sensors connected to the back of the unit. In scan mode, the display shows the pressure from one of the sensors for 3 seconds, and then switches to the next sensor and repeats.

Password Lockout
Lockouts the sensor from any programming changes. To unlock the sensor a user programmed 4 digit code must be entered into the sensor. This can be reset along with all programming of the sensor.

Error Output Mode
Switch Output can be used optionally as an error output to display pressure switch function errors. As an error output it is normally closed, and in case of errors (Err 1, Err 2, Err 3) it is open. At the same time LED II lights up. The display and the output remain active until the error is cleared.

Setting of Decimal Point
Depending on the units of measure, the decimal point can be adjusted up to three decimal points.
MPS-1

Features

- Pressure Ranges:
  - Vacuum Pressure ............. 0 to -30 inHg
  - Positive Pressure ............. 0 to 145 PSI

- Sensor Outputs
  - 1 Normally Open NPN or PNP Open Collector Transistor Output;
    30VDC, 125mA
  - 1 Analog 1 to 5 VDC

- Switch Output Adjusted with Potentiometer 3-Turn Trimmer
- Switch Hysteresis Adjusted with Potentiometer 3/4 Turn Trimmer
- Output Response Time Less Than 2.5 Milliseconds
- CE Marked
- Air and Non-Corrosive Gases

MPS-1 Programming Options

<table>
<thead>
<tr>
<th>Outputs Change N.O. / N.C.</th>
<th>Units of Measure change</th>
<th>EZY Mode</th>
<th>Hysteresis Mode</th>
<th>Window Comparator Mode</th>
<th>Auto Teach Mode</th>
<th>Auto Surveillance Mode</th>
<th>Display Refresh Settings</th>
<th>Output Response Time</th>
<th>Display Peak / Bottom Difference Value</th>
<th>Special Display Features</th>
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MPS-1 Basic
# MPS-1 Ordering Numbers

<table>
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<tr>
<th>Pressure Range</th>
<th>Port Size</th>
<th>Output Circuit</th>
<th>Electrical Connector</th>
<th>Part Number</th>
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<tbody>
<tr>
<td>0 to -30 inHg</td>
<td>Flange Mount with M5 Female</td>
<td>PNP Sourcing</td>
<td>4 Pin, M8</td>
<td>MPS-V1E-PC</td>
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<tr>
<td></td>
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<td>NPN Sinking</td>
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<td>MPS-V1E-NC</td>
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<td>1/8 NPT*, Male, M5 Female</td>
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<td>4 Pin, M8</td>
<td>MPS-V1N-PC</td>
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<td></td>
<td>NPN Sinking</td>
<td></td>
<td>MPS-V1N-NC</td>
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<td>0 to 145 PSI</td>
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<td>PNP Sourcing</td>
<td>4 Pin, M8</td>
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<td>NPN Sinking</td>
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<td>MPS-P1N-NC</td>
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</table>

* BSPP(G) and BSPT(R) are available. Replace N with G or R for port thread type.
Example: MPS-V1N-PC (NPT), MPS-V1G-PC (BSPP) or MPS-V1R-PC (BSPT)

## Specifications

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Vacuum (V)</th>
<th>Pressure (P)</th>
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<tr>
<td>Media</td>
<td>Air and Non-Corrosive Gases</td>
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<td>Pressure Port</td>
<td>(N) 1/8&quot; NPT, (E) Flange Mount with M5 Female (Consult Factory for BSPP or BSPT Port)</td>
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<td>Proof Pressure</td>
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<td>(P) 217.5 PSI</td>
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<td>Storage Temperature</td>
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<td>Humidity</td>
<td>35 to 85% RH</td>
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<td>Electrical Connection</td>
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<td>Power Supply</td>
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<td>Analog Output</td>
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<td>N.O., Switch Output Mode with Hysteresis Adjustment</td>
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<td>Output Circuit</td>
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<td>Switch Output Setting H</td>
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<td>Hysteresis Setting h</td>
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<td>Vibration Resistance</td>
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<td>Shock Resistance</td>
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<tr>
<td>Mass</td>
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</table>
Output Setting

Switch Output Setting

The Switch Point of the output signal is adjusted with a 3-turn potentiometer trimmer (S). To set the switch point pressure, rotate the trimmer clockwise to raise the switch pressure and rotate the trimmer counter clockwise to lower the switch pressure.

Hysteresis Setting

The Hysteresis setting is a 3/4 - turn potentiometer trimmer with a range of 3% to 20% below the switch point (S). Rotate the Hysteresis trimmer (H) clockwise to increase the Hysteresis range and rotate the trimmer counter clockwise to lower the Hysteresis range (h). A separate pressure gauge is necessary to accurately adjust these values.

For best results, set the switch point (H) of the output signal before adjusting the hysteresis range. For fine tuning the hysteresis range, re-adjust the switch point (S) of the output signal.

Cautions

The MPS-1 Pressure Sensor is designed to monitor pressure and is not a safety measure to prevent accidents.

The compatibility of the sensor is the responsibility of the designer of the system and specifications.

Potentiometer for the Switch Point Pressure and Hysteresis Range is sensitive. Excessive force or exceeding the limits of the trimmers may cause damage.

Operating Environment

- Parker / Convum Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

Installation

- Never insert an object into the pressure port other than an appropriate fluid connector.
- Avoid short-circuiting the sensor. Connect the brown lead to V+ and blue lead to 0V.
- Do not connect the output lead wires (black / white) to the power supply.
- Outputs not being used should be trimmed and insulated.
- Install using the metal mounting base.
- To achieve IP65 rating, connect the o-ring and barb to a normal environment with a 2mm I. D. tube and install screw as shown.

Sensor Pin Out

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<tr>
<th>Pin #</th>
<th>Pin Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Brown: 24VDC</td>
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<tr>
<td>2</td>
<td>White: Analog 1 to 5VDC Output</td>
</tr>
<tr>
<td>3</td>
<td>Blue: 0VDC</td>
</tr>
<tr>
<td>4</td>
<td>Black: NPN / PNP Open Collector Output</td>
</tr>
</tbody>
</table>

Lead Wiring

Internal Circuit
Dimensions

N, R, G
1/8" Male
M8, 4-Pin

E
Flange
Mount
M8, 4-Pin

Flange Bracket
for V1E Type
Part No. MPS-1E Bracket

Accessories
Cables

CB-M8-4P-2M, Female to Open Lead

CB-M8-4P-5M, Female to Open Lead

CB-M8-4P-5M-90, Female to Open Lead
MPS-2

Features

- **Pressure Ranges:**
  - Vacuum Pressure .......... 0 to -30 inHg
  - Compound Pressure.....-14.7 to 72.5 PSI

- **Sensor Outputs:**
  - 2 NPN or PNP Open Collector Transistor Output , 30VDC, 125mA

- **Hysteresis or Window Comparator Mode**

- **4 Selectable Units of Measure**
  - (mmHg, -bar, -kPa, inHg)
  - (kgf/cm², PSI, bar, kPa)

- **Output Response Time Less Than 2.0 Milliseconds**

- **CE Marked**

- **Air and Non-Corrosive Gases**

- **Error Message**

MPS-2 Programming Options

<table>
<thead>
<tr>
<th>Outputs Change N.O. / N.C.</th>
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</thead>
<tbody>
<tr>
<td>Units of Measure change</td>
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<tr>
<td>EZY Mode</td>
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<td>Hysteresis Mode</td>
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<td>Window Comparator Mode</td>
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<td>Auto Teach Mode</td>
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<td>Auto Surveillance Mode</td>
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<tr>
<td>Display Refresh Settings</td>
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<tr>
<td>Output Response Time</td>
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<tr>
<td>Display Peak / Bottom Difference Value</td>
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<tr>
<td>Special Display Features</td>
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<tr>
<td>Lockout Option</td>
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<tr>
<td>Peak Value at a Touch</td>
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</tr>
<tr>
<td>Bottom Value at a Touch</td>
<td>✓</td>
</tr>
<tr>
<td>Zero Reset</td>
<td>✓</td>
</tr>
<tr>
<td>Red / Green LED Display Options</td>
<td>✓</td>
</tr>
<tr>
<td>Peak Surveillance Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Energy Savings Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Scan Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Password Lockout</td>
<td>✓</td>
</tr>
<tr>
<td>Error Output Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Setting of Decimal Point</td>
<td>✓</td>
</tr>
</tbody>
</table>
## MPS-2 Ordering Numbers

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Port Size</th>
<th>Output Circuit</th>
<th>Electrical Connector</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to -30 inHg</td>
<td>1/8 NPT*, Male, M5 Female</td>
<td>PNP Sourcing, NPN Sinking</td>
<td>4 Pin, M8</td>
<td>MPS-V2N-PC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MPS-V2N-NC</td>
</tr>
<tr>
<td>-14.7 to 72.5 PSI</td>
<td>M5 DIN Rail Mounting</td>
<td>PNP Sourcing, NPN Sinking</td>
<td>2M Lead Wire</td>
<td>MPS-R2M5-PGR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MPS-R2M5-NGR</td>
</tr>
</tbody>
</table>

* BSPP(G) and BSPT(R) are available. Replace N with G or R for port thread type
Example: MPS-V2N-PC (NPT), MPS-V2G-PC (BSPP) or MPS-v2R-PC (BSPT)

## Specifications

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Vacuum (V)</th>
<th>Compound (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units of Measure</td>
<td>bar: 0.001</td>
<td>bar: 0.01</td>
</tr>
<tr>
<td>Display Resolution</td>
<td>kPa: 0.1</td>
<td>kPa: 1</td>
</tr>
<tr>
<td></td>
<td>mmHg: 1</td>
<td>kgf/cm²: 0.01</td>
</tr>
<tr>
<td></td>
<td>inHg: 0.1</td>
<td>PSI: 0.1</td>
</tr>
</tbody>
</table>

**Media**
Air and Non-Corrosive Gases

**Pressure Port**
(N) 1/8” NPT, (M5) M5 Female (Consult Factory for BSPP or BSPT Port)

**Proof Pressure**
(V) 72.5 PSI, (R) 116.0 PSI

**Operating Temperature**
32 to 122°F (0 to 50°C)

**Storage Temperature**
14 to 140°F (-10 to 60°C)

**Humidity**
35 to 85% RH

**Electrical Connection**
(C) 4-Pin, M8 Connector, (G) 2m Grommet Open Lead

**Power Supply**
10.8 to 30VDC, Ripple Vp-p 10% Max., Reverse Voltage Protection

**Display**
3-Digit, 7-Segment LED

**Display Refresh**
0.1 to 3.0 sec. (Factory set at 0.1)

**Output Circuit**
NPN (Sinking) or PNP (Sourcing) Output, Open Collector Transistor 30VDC, 125mA

**Switch Output**
2 Output Signals, NPN or PNP, Normally Open or Closed, LED Indicator

**Output Modes**
Hysteresis or Window Comparator

**Response Time**
< 2ms, with Programmable Increments 32, 128, 1024ms

**Repeatability**
± 0.2% F.S.

**Thermal Error**
1% over ±25°C (77°C) Temperature Change: Range 32 to 122°F (0 to 50°C)

**General Protection**
IP65 or IP40, CE Marked, EMC-EN55011 Class B, EN 50082-2

**Insulation Resistance**
> 100M ohms at 500VDC

**Vibration Resistance**
10 to 55Hz, 1.5mm, XYZ, 2 hrs.

**Shock Resistance**
10 G, XYZ

**Material**
Housing: Polycarbonate, Pressure Port: Zinc Die-cast

**Mass**
1.58 oz. (45g)
**Sensor Pin Out**

**Pin #**
1. Brown: 24VDC
2. White: NPN / PNP Open Collector Output 2
3. Blue: 0VDC
4. Black: NPN / PNP Open Collector Output 1

**Lead Wiring**

- **Brown**: V+ (PNP / NPN Output 2)
- **White**: NPN / PNP Output 2
- **Blue**: 0V
- **Black**: NPN / PNP Output 1

---

**Internal Circuit**

**NPN Sinking**

**PNP Sourcing**

---

**Cautions**

The MPS-2 Pressure Sensor is designed to monitor pressure and is not a safety measure to prevent accidents. The compatibility of the sensor is the responsibility of the designer of the system and specifications.

**Operating Environment**

- Parker / Convum Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

**Operations**

- Dedicate a power supply of 10.8 to 30VDC to the sensor and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
- A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.
- Verify the operating media is compatible with the specified sensor. Check the chemical make-up, operating temperatures, and maximum pressure ranges of the system before installing.
- Installation of air dryer system is recommended to remove moisture.

---

**Installation**

- Never insert an object into the pressure port other than an appropriate fluid connector.
- Avoid short-circuiting the sensor. Connect the brown lead to V+ and blue lead to 0V.
- Do not connect the output lead wires (black / white) to the power supply.
- Outputs not being used should be trimmed and insulated.
- Install as shown using the metal mounting base.
- To achieve IP65 rating, connect the O-ring and barb as shown to a normal environment with a 2mm I.D. tube.

---

**Error Messages**

<table>
<thead>
<tr>
<th>Display</th>
<th>Description</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Err</strong></td>
<td>Zero Reset Error</td>
<td>Reset Zero Below 3% of F.S.</td>
</tr>
<tr>
<td><strong>Er1</strong></td>
<td>System Error (Internal)</td>
<td>Contact Factory</td>
</tr>
<tr>
<td><strong>Er2</strong></td>
<td>Auto Teach Mode Error</td>
<td>Restart Function</td>
</tr>
<tr>
<td><strong>CE1</strong></td>
<td>Over current of Output 1</td>
<td>Load current exceeds maximum 125mA.</td>
</tr>
<tr>
<td><strong>CE2</strong></td>
<td>Over current of Output 2</td>
<td></td>
</tr>
<tr>
<td><strong>FFF</strong></td>
<td>Applied pressure exceeds pressure range</td>
<td>Apply pressures within the rating of the sensor</td>
</tr>
</tbody>
</table>
Dimensions

N, R, G,
1/8" Male
M8, 4-Pin

DIN Rail
M5 Female
Grommet
Programming Features

Pressure Sensors

MPS-2 Versatile

See page 82 for Symbol Explanation

1. Hold  
   Press 1x
   Output Set Open or Closed Selecting Units of Measure Easy Mode Activation
   Output 1 Setting  Output 2 Setting  Automatic Teach Mode & Auto Surveillance

2. Press 2x
   Output Mode 1 Hysteresis or Window Comparator
   Hysteresis or Window Comparator
   Output Mode 2

3. Press 4x
   Output Mode 2 Hysteresis or Window Comparator

4. Press 1x
   Output 1 Setting Hysteresis Mode
   Hysteresis Mode
   Low
   High

5. Press 3x
   Output 2 Setting Hysteresis Mode
   Hysteresis Mode
   Low
   High

6. Press 5x
   Automatic Teach Mode & Auto Surveillance
   Vacuum Cycle
   Release Cycle
   Note: When Auto Surveillance is turned on P1 is added to Output 1 setting. Output 2 is turned off and P-1 becomes Output 2.

7. Press 6x
   Display Refresh Settings / Output Response Time Interval
   Display Peak Value Bottom Value or Their Difference

8. Press 7x
   Display Peak Value Bottom Value or Their Difference

9. Press 8x
   Special Display Features
   Zero

10. Hold
    Press
    Lock

11. Press 1x
    Peak Value

12. Press 1x
    Bottom Value

Press 5x for 3 Seconds
Reset

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatic
Accessories

Cables

CB-M8-4P-2M, Female to Open Lead

CB-M8-4P-M12-2M, M8 Female to M12 Male

CB-M8-4P-5M, Female to Open Lead

CB-M8-4P-M8-2M, M8 Female to M8 Male

CB-M8-4P-5M-90, Female to Open Lead

Pin Out Connection

Female Interface
4-Pin, M8

Male Interface
4-Pin, M8

Male Interface
4-Pin, M12

MPS-ACCK4

Din Rail
MVS-201

The MVS-201 is a winning combination with the MC2, CVR-2, and CVK vacuum generators. The MVS-201 automatically provides an output signal for the blow-off function without the need of an additional output from the PLC. Begin the vacuum cycle with an output signal from the PLC to the “201” sensor. The “201” sensor has one NPN or PNP output for vacuum confirmation and a control output that interfaces directly with the blow-off release pilot valve. With programmable time control features and a special chip driver, the sensor automatically activates the blow-off release when the NPN or PNP vacuum signal from the PLC is discontinued. This eliminates, THE PREVIOUSLY REQUIRED, PLC output to activate the blow-off release. This new technology eliminates PLC output requirements by 50% and reduces installation to a simple 4 wire system by wiring the sensor only. There are 3 modes of operation for various applications. The output response time of the sensor is less than 2.5 msec. Peak limit prevention maintenance feature is automatically recorded internally.

Features

- Pressure Range: Compound Pressure.....-14.7 to 72.5 PSI
- Time Controlled Sensor
- Intelligent Simple 4-wire System
- Eliminate I/O for Release Valve
- 2 Functions with One Rung of Code
- Automatic Timer (0-9.9 sec.) Function by Sensor Control Driver for Vacuum Generating and Release Valves
- Peak Value Preventative Maintenance Confirmation
- Response Time Less Than 2 Milliseconds
- CE Marked

MVS-201 Programming Options

<table>
<thead>
<tr>
<th>Feature</th>
<th>Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outputs Change N.O. / N.C.</td>
<td>✔</td>
</tr>
<tr>
<td>Units of Measure change</td>
<td>✔</td>
</tr>
<tr>
<td>EZY Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Hysteresis Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Window Comparator Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Auto Teach Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Auto Surveillance Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Display Refresh Settings</td>
<td>✔</td>
</tr>
<tr>
<td>Output Response Time</td>
<td>✔</td>
</tr>
<tr>
<td>Display Peak / Bottom Difference Value</td>
<td>✔</td>
</tr>
<tr>
<td>Special Display Features</td>
<td>✔</td>
</tr>
<tr>
<td>Lockout Option</td>
<td>✔</td>
</tr>
<tr>
<td>Peak Value at a Touch</td>
<td>✔</td>
</tr>
<tr>
<td>Bottom Value at a Touch</td>
<td>✔</td>
</tr>
<tr>
<td>Zero Reset</td>
<td>✔</td>
</tr>
<tr>
<td>Red / Green LED Display Options</td>
<td>✔</td>
</tr>
<tr>
<td>Peak Surveillance Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Energy Savings Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Scan Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Password Lockout</td>
<td>✔</td>
</tr>
<tr>
<td>Error Output Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Setting of Decimal Point</td>
<td>✔</td>
</tr>
<tr>
<td>Air Conservation / Blow-Off Timer</td>
<td>✔</td>
</tr>
<tr>
<td>Vacuum Timer Option</td>
<td>✔</td>
</tr>
<tr>
<td>Signal Controlled Vacuum</td>
<td>✔</td>
</tr>
<tr>
<td>Blow-off Activation Timer</td>
<td>✔</td>
</tr>
<tr>
<td>Blow-off Timer</td>
<td>✔</td>
</tr>
<tr>
<td>Vacuum Confirmation Signal</td>
<td>✔</td>
</tr>
<tr>
<td>Blow-off Confirmation Signal</td>
<td>✔</td>
</tr>
<tr>
<td>Peak Vacuum Error Message</td>
<td>✔</td>
</tr>
<tr>
<td>Vacuum Response Error Message</td>
<td>✔</td>
</tr>
<tr>
<td>Blow-off Time Error Message</td>
<td>✔</td>
</tr>
</tbody>
</table>

MVS-201

Basic PLC System

<table>
<thead>
<tr>
<th>Sensor Output 1</th>
<th>Sensor Output 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacuum Pilot</td>
<td>Blow-Off Pilot</td>
</tr>
</tbody>
</table>

PLC System with 201 Sensor

<table>
<thead>
<tr>
<th>Sensor Output 1</th>
<th>Sensor Output 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacuum Pilot</td>
<td>Blow-Off Pilot</td>
</tr>
</tbody>
</table>
MVS-201 Ordering Numbers

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Output Circuit</th>
<th>Input Circuit</th>
<th>Electrical Connector</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>-14.7 to 72.5 PSI</td>
<td>PNP Sourcing</td>
<td>NPN Sinking</td>
<td>4 Pin, M8</td>
<td>MVS-201-PC</td>
</tr>
<tr>
<td></td>
<td>PNP Sourcing</td>
<td>NPN Sinking</td>
<td></td>
<td>MVS-201-PCP</td>
</tr>
<tr>
<td></td>
<td>NPN Sinking</td>
<td>PNP Sourcing</td>
<td></td>
<td>MVS-201-NC</td>
</tr>
<tr>
<td></td>
<td>NPN Sourcing</td>
<td>PNP Sourcing</td>
<td></td>
<td>MVS-201-NCP</td>
</tr>
</tbody>
</table>

* Requires Sensor to Valve Electrical Connector

Note: Output Circuit provides vacuum and blow-off confirmation signal (Input Signal to PLC). Input Circuit controls vacuum solenoid valve (Output Signal from PLC).

Sensor to Valve Electrical Connector

<table>
<thead>
<tr>
<th>Generator Series</th>
<th>Sensor Connection</th>
<th>Valve Connection</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>MC2</td>
<td>5 Pin Clip Type</td>
<td>2 with Clip Type</td>
<td>MC2-C201G</td>
</tr>
<tr>
<td>CVR2</td>
<td></td>
<td>2 Wire Leads</td>
<td>CVR2-C201G</td>
</tr>
<tr>
<td>CVK</td>
<td></td>
<td></td>
<td>CVK-D201G</td>
</tr>
</tbody>
</table>

Specifications

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Compound (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>bar</td>
<td>0.01</td>
</tr>
<tr>
<td>kPa</td>
<td>1</td>
</tr>
<tr>
<td>kgf/cm²</td>
<td>0.01</td>
</tr>
<tr>
<td>PSI</td>
<td>0.1</td>
</tr>
<tr>
<td>Media</td>
<td>Non-Lubricated Air and Non-Corrosive Gases</td>
</tr>
<tr>
<td>Proof Pressure</td>
<td>116.0 PSI</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32 to 122°F (0 to 50°C)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>14 to 140°F (-10 to 60°C)</td>
</tr>
<tr>
<td>Humidity</td>
<td>35 to 85% RH</td>
</tr>
<tr>
<td>Electrical Connection</td>
<td>(C) 4-Pin, M8 Connector</td>
</tr>
<tr>
<td>Power Supply</td>
<td>10.8 to 30VDC, Ripple Vp-p 10% Max., Reverse Voltage Protection</td>
</tr>
<tr>
<td>Display</td>
<td>3-Digit, 7-Segment LED</td>
</tr>
<tr>
<td>Display Frequency</td>
<td>5Hz</td>
</tr>
<tr>
<td>Circuit</td>
<td>NPN (Sinking), PNP (Sourcing) Open Collector Transistor</td>
</tr>
<tr>
<td>Digital Output</td>
<td>Individually Selectable N.O. or N.C., max 125mA, 30V, with Overcurrent Protection</td>
</tr>
<tr>
<td>Mode</td>
<td>OP1, OP2, OP3 Hysteresis: 0 to 100% of Switch Point</td>
</tr>
<tr>
<td>Response Time</td>
<td>&lt; 2ms</td>
</tr>
<tr>
<td>Repeatability</td>
<td>± 0.3% F.S.</td>
</tr>
<tr>
<td>Thermal Error</td>
<td>±0.2% F.S. in Temperature Range: 32 to 122°F (0 to 50°C)</td>
</tr>
<tr>
<td>General Protection</td>
<td>IP40, CE Marked, EMC-EN55011 Class B, EN50082-1</td>
</tr>
<tr>
<td>Current Consumption</td>
<td>&lt; 45mA, &lt; 25mA When Utilizing Screen Saver Option</td>
</tr>
<tr>
<td>Spike Protection</td>
<td>350 Vp, 1, μs</td>
</tr>
<tr>
<td>Dielectric Strength</td>
<td>1000 VAC 1 min.</td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>&gt; 100M ohms at 500VDC</td>
</tr>
<tr>
<td>Vibration Resistance</td>
<td>10 to 55Hz, 1.5mm, XYZ, 2 hrs.</td>
</tr>
<tr>
<td>Shock Resistance</td>
<td>10 G, XYZ</td>
</tr>
<tr>
<td>Material</td>
<td>Body: Polycarbonate</td>
</tr>
<tr>
<td>Mass</td>
<td>1.7 oz. (45g)</td>
</tr>
</tbody>
</table>
Operating Modes

Description of operation modes and terms on page 20.

Mode: OP1 “Air Conservation / Timer”

This Vacuum valve control with the use of timing features conserves air consumption via the vacuum generator non-return check valve and sensor hysteresis function. Vacuum time (t1) can be used to control the vacuum valve for a specific length of time (0.0-9.9 sec.) after output 1 vacuum level is reached. The vacuum timing function (t1) will remove the signal from the sensor to the vacuum valve allowing the generator check valve system to conserve air consumption and vacuum. The vacuum valve will re-open for the same length of time (t1) when the pressure level drops to the hysteresis setting (h-v). The operation will continue until the input signal is stopped. Optional delay timer between vacuum / blow-off (t2) and blow-off (bt) timer is available. After selecting OP1, set bt, t1, and t2 values by using arrow “UP” and “DOWN” keys. To bypass any of these timing function operations, simply enter 0.00 seconds and the sensor will automatically proceed to the next function.

Mode: OP2 “Vacuum Timer Option”

This mode is ideal for use with CONVUM generators without check valves. Vacuum timer (t1) can be used to control the vacuum for a specific length of time (0.00 – 9.9sec.) after output 1 is reached. Optional delay timer between vacuum / blow-off (t2) and blow-off (bt) timer is available. After selecting OP2, set bt, t1, and t2 values by using arrow “UP” and “DOWN” keys. To bypass any of these timing function operations, simply enter 0.00 seconds and the sensor will automatically proceed to the next function.

Note:
Output Circuit provides vacuum and blow-off confirmation signal (Input Signal to PLC).
Input Circuit controls vacuum solenoid valve (Output Signal from PLC).
Operating Modes
Description of operation modes and terms on page 20.

Mode: OP3 “Signal Controlled Vacuum”
H-V / H-d: Switchpoints
h-v / h-d: Switchpoints
P-V: Peak Value

Timer Mode OP3
“Signal Controlled Vacuum”
The vacuum timer option (t1) is omitted and the PLC controls the input signal time for the vacuum operation. The delay timer between vacuum / blow-off (t2) and the blow-off (bt) timers are still available. After selecting OP3, set bt and t2 values by using arrow “UP” and “DOWN” keys. To bypass any of these timing function operations, simply enter 0.00 seconds and the sensor will automatically proceed to the next function.

Additional Sensor Features
(Available in All Operating Modes)

Screen Saver Function
This reduces current consumption by 20mA and will activate after 10 seconds.

Peak Value Level (P-v)
The sensor records this value for preventative maintenance issues. If this value is not reached the sensor will display an error message (ALP) indicating leaks or wear in the system.

Vacuum Level Response Time (ut)
The sensor records the time (sec) to reach Output 1 and will display an error message (ALu) indicating Output 1 has not been reached within the acceptable time (sec) set by the user.

Blow-off Time (dt)
The sensor records the time (sec) to complete blow-off cycle and will display an error message (ALd) indicating (dt) has not reacting within the acceptable time (sec) set by the user.

Note:
Output Circuit provides vacuum and blow-off confirmation signal (Input Signal to PLC).
Input Circuit controls vacuum solenoid valve (Output Signal from PLC).
Wiring Diagram

M8 Pin #
1. Brown: 24VDC
2. White: Input; NPN (0VDC) / PNP (24VDC)
3. Blue: 0VDC
4. Black: Output; NPN / PNP Open Collector Output

201 Pin #
1. Red: Vacuum Solenoid Valve + V
2. Black: Gnd
3. Red: Blow-Off Solenoid Valve + V
4. Black: Gnd

Sensor Male Pin Out

Internal Circuit

Cautions

The MVS-201 Pressure Sensor is designed to monitor pressure and is not a safety measure to prevent accidents. The compatibility of the sensor is the responsibility of the designer of the system and specifications.

Operating Environment

- Parker / Convum Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

Operations

- Dedicate a power supply of 10.8 to 30VDC to the sensor and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
- A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.
- Verify the operating media is compatible with the specified sensor. Check the chemical make-up, operating temperatures, and maximum pressure ranges of the system before installing.
- Installation of air dryer system is recommended to remove moisture.

Installation

- Never insert an object into the pressure port other than an appropriate fluid connector.
- Avoid short-circuiting the sensor. Connect the brown lead to V+ and blue lead to 0V.
- Do not connect the output lead wires (black / white) to the power supply.
- Outputs not being used should be trimmed and insulated.

Error Messages

<table>
<thead>
<tr>
<th>Display</th>
<th>Description</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Err</td>
<td>Zero Reset Error</td>
<td>Reset Zero Below 3% of F.S.</td>
</tr>
<tr>
<td>Er1</td>
<td>System Error (Internal)</td>
<td>Contact Factory</td>
</tr>
<tr>
<td>CE1</td>
<td>Over current of Output 1</td>
<td>Load current exceeds maximum 125mA.</td>
</tr>
<tr>
<td>FFF</td>
<td>Applied pressure exceeds</td>
<td>Apply pressures within the rating of the sensor</td>
</tr>
<tr>
<td>–FF</td>
<td>pressure range</td>
<td></td>
</tr>
</tbody>
</table>
Dimensions

M8, 4-Pin

[Diagram showing dimensions of M8, 4-Pin pressure sensors]
Programming Symbols Legend

- **OP1**: Operation 1: Air Conservation / Timer
- **OP2**: Operation 2: Vacuum Timer Option
- **OP3**: Operation 3: Signal Controlled Vacuum
- **bt**: Blow-Off Timer
- **t1**: Controlled Vacuum Signal with Timer
- **t2**: Blow-Off Activation Timer
- **Hu**: Switch Output Value (H-v)
- **hu**: Switch Output Hysteresis Value (h-v)
- **Hd**: Blow-off Output Value (H-d)
- **hd**: Blow-off Output Hysteresis Value (h-d)
- **ALP**: Error Message - Peak Vacuum Level
- **ALU**: Error Message - Vacuum Response Time
- **Rld**: Error Message - Blow-off Time
- **ou**: Output 1
- **ouu**: Vacuum Valve (Leave NO)
- **ouuu**: Blow-off Release Valve (Leave NO)
- **sou**: Screen Saver Function
- **P-u**: Peak Vacuum Level Recorder (P-v)
- **ut**: Vacuum Response Time Recorder
- **dt**: Blow-Off Time Recorder
- **no**: Normally Open
- **nc**: Normally Closed
- **Ed9**: Low or High Signal to Vacuum Valve

Note: **Ed9** setting
Set to **Lo** for NPN Output Circuit
or **Hi** for PNP Output Circuit.
Accessories

M8 Cables for Sensor

**CB-M8-4P-2M, Female to Open Lead**

```
.196 (5) Dia

6.56 ft
(2m)

1.26
(32)
```

**CB-M8-4P-5M, Female to Open Lead**

```
.196 (5) Dia

16.40 ft
(5m)

1.26
(32)
```

**CB-M8-4P-5M-90, Female to Open Lead**

```
.196 (5) Dia

16.40 ft
(5m)

.87
(22)
```

**CB-M8-4P-M8-2M, M8 Female to M8 Male**

```
.196 (5) Dia

6.56 ft
(2m)

1.26
(32)
```

**CB-M8-4P-M12-2M, M8 Female to M12 Male**

```
.196 (5) Dia

6.56 ft
(2m)

2.09
(53)
```

**Pin Out Connection**

- **Female Interface**
  - 4-Pin, M8
  - Cable Pin: 1 Brown, 2 White, 3 Blue, 4 Black
- **Male Interface**
  - 4-Pin, M8
  - Male Interface 4-Pin, M12

**MVS-201 Cables**

(Connects Sensor to Vacuum & Blow-off Release Pilot Valves)

**For CVK**

- **CVK-D201G**

  - Vacuum Valve
  - 6" (152 mm)
  - Vacuum Blow-off Valve
  - 9" (229 mm)

**For CVR2**

- **CVR2-C201G**

  - Vacuum Valve
  - Vacuum Blow-off Valve

**For MC2**

- **MC2-C201G**

  - Vacuum Valve
  - Black
  - Blue
  - Vacuum Blow-off Valve

---

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatic
MPS-3 Versatile Panel Mount

Features

• Pressure Ranges:
  - Vacuum Pressure ............. 0 to -30 inHg
  - Compound ..................... -14.7 to 72.5 PSI
  - Low Pressure ................... 0 to 14.7 PSI
  - Positive Pressure .......... 0 to 145 PSI

• Sensor Outputs:
  - 2 NPN or PNP Open Collector
  - Transistor Output, 30VDC, 125mA
  - Optional Analog, 1 to 5 VDC

• Hysteresis or Window Comparator Mode
• 4 Selectable Units of Measure
  - (mmHg, -bar, -kPa, inHg)
  - (kgf/cm², PSI, bar, kPa)
• Output Response Time Less Than 2.0 Milliseconds
• CE Marked
• Air and Non-Corrosive Gases
• Error Message

MPS-3 Programming Options

| Outputs Change N.O. / N.C. | ✓ |
| Units of Measure change | ✓ |
| EZY Mode | ✓ |
| Hysteresis Mode | ✓ |
| Window Comparator Mode | ✓ |
| Auto Teach Mode | ✓ |
| Auto Surveillance Mode | ✓ |
| Display Refresh Settings | ✓ |
| Output Response Time | ✓ |
| Display Peak / Bottom Difference Value | ✓ |
| Special Display Features | ✓ |
| Lockout Option | ✓ |
| Peak Value at a Touch | ✓ |
| Bottom Value at a Touch | ✓ |
| Zero Reset | ✓ |
| Red / Green LED Display Options | ✓ |
| Peak Surveillance Mode | ✓ |
| Energy Savings Mode | ✓ |
| Scan Mode | ✓ |
| Password Lockout | ✓ |
| Error Output Mode | ✓ |
| Setting of Decimal Point | ✓ |
**MPS-3 Ordering Numbers**

| Pressure Range | Port Size | Output Circuit | Electrical Connector | Part Number** 
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to -30 inHg</td>
<td>1/8 NPSF*</td>
<td>PNP Sourcing</td>
<td>4 Pin, M8</td>
<td>MPS-V3N-PC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2M Lead Wire</td>
<td>MPS-V3N-PG</td>
</tr>
<tr>
<td></td>
<td>1/8 NPSF*</td>
<td>NPN Sinking</td>
<td>4 Pin, M8</td>
<td>MPS-V3N-NC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2M Lead Wire</td>
<td>MPS-V3N-NG</td>
</tr>
<tr>
<td>-14.7 to 72.5 PSI</td>
<td>1/8 NPSF*</td>
<td>PNP Sourcing</td>
<td>4 Pin, M8</td>
<td>MPS-R3N-PC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2M Lead Wire</td>
<td>MPS-R3N-PG</td>
</tr>
<tr>
<td></td>
<td>1/8 NPSF*</td>
<td>NPN Sinking</td>
<td>4 Pin, M8</td>
<td>MPS-R3N-NC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2M Lead Wire</td>
<td>MPS-R3N-NG</td>
</tr>
<tr>
<td>0 to 14 PSI</td>
<td>1/8 NPSF*</td>
<td>PNP Sourcing</td>
<td>4 Pin, M8</td>
<td>MPS-P3N-PC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 Pin, M12</td>
<td>MPS-P3N-PXS2H</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2M Lead Wire</td>
<td>MPS-P3N-PG</td>
</tr>
<tr>
<td></td>
<td>1/8 NPSF*</td>
<td>NPN Sinking</td>
<td>4 Pin, M8</td>
<td>MPS-P3N-NC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2M Lead Wire</td>
<td>MPS-P3N-NG</td>
</tr>
<tr>
<td>0 to 145 PSI</td>
<td>1/8 NPSF*</td>
<td>PNP Sourcing with 1-5 VDC</td>
<td>4 Pin, M8</td>
<td>MPS-P3N-PCA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sinking with 1-5 VDC</td>
<td>4 Pin, M8</td>
<td>MPS-P3N-NCA</td>
</tr>
</tbody>
</table>

* BSPP(G) and BSPT(R) are available. Replace N with G or R for port thread type
Example: MPS-V1N-PC (NPT), MPS-V1G-PC (BSPP) or MPS-V1R-PC (BSPT)

** Mounting Bracket Included

**Specifications**

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Vacuum (V)</th>
<th>Positive (P)</th>
<th>Compound (R)</th>
<th>Low (L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units of Measure</td>
<td>bar: 0.001</td>
<td>bar: 0.01</td>
<td>bar: 0.01</td>
<td>bar: 0.001</td>
</tr>
<tr>
<td>Display Resolution</td>
<td>kPa: 0.1</td>
<td>MPa: 0.001</td>
<td>kPa: 1</td>
<td>kPa: 0.1</td>
</tr>
<tr>
<td></td>
<td>mmHg: 1</td>
<td>kgf/cm²: 0.01</td>
<td>kgf/cm²: 0.01</td>
<td>kgf/cm²: 0.001</td>
</tr>
<tr>
<td></td>
<td>inHg: 0.1</td>
<td>PSI: 1</td>
<td>PSI: 0.1</td>
<td>PSI: 0.1</td>
</tr>
</tbody>
</table>

**Media**
Air and Non-Corrosive Gases

**Pressure Port**
(N) 1/8" NPSF (Consult Factory for BSPP or BSPT Port)

**Proof Pressure**
(V) 145 PSI, (P) 290 PSI, (R) 217 PSI, (L) 145 PSI

**Operating Temperature**
32 to 122°F (0 to 50°C)

**Storage Temperature**
14 to 140°F (-10 to 60°C)

**Humidity**
35 to 85% RH

**Electrical Connection**
(C) 4-Pin, M8 Connector, (G) Grommet Open Lead, (XS2H) M12, 4-Pin

**Power Supply**
10.8 to 30VDC, Ripple Vp-p 10% Max., Reverse Voltage Protection

**Display**
3-Digit, 7-Segment LED

**Display Refresh**
.1 to 3.0 sec. (Factory set at 0.1)

**Output Circuit**
NPN (Sinking), PNP (Sourcing) Open Collector Transistor, 30VDC, 125mA

**Switch Outputs**
2 Output Signals, NPN or PNP, Normally Open or Closed, LED Indicator

**Linear Output**
Optional Analog Output 1 to 5VDC

**Output Modes**
Hysteresis or Window Comparator

**Output Response Time**
< 2ms with Programmable Increment 32, 128, 1024ms

**Repeatability**
± 0.2% F.S.

**Thermal Error**
1% over ±25°C (77°F) Temperature Change: Range 32 to 122°F (0 to 50°C)

**General Protection**
IP65 or IP 40, CE Marked, EMC-EN55011 Class B, EN 50082-2

**Current Consumption**
< 55mA

**Vibration Resistance**
10 to 55Hz, 1.5mm, XYZ, 2 hrs.

**Shock Resistance**
10 G, XYZ

**Material**
Housing: Polycarbonate, Pressure Port: Zinc Die-cast

**Mass**
1.58 oz. (45g)
**Pressure Sensors**

**MPS-3 Versatile Panel Mount**

### Sensor Pin Out

<table>
<thead>
<tr>
<th>Pin #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brown: 24VDC</td>
</tr>
<tr>
<td>2</td>
<td>White: NPN / PNP Open Collector Output 2</td>
</tr>
<tr>
<td>3</td>
<td>Blue: 0VDC</td>
</tr>
<tr>
<td>4</td>
<td>Black: NPN / PNP Open Collector Output 1</td>
</tr>
</tbody>
</table>

### Lead Wiring

![Lead Wiring Diagram](image)

### Internal Circuit for Open Collector and Analog Output Wiring

![Internal Circuit Diagram](image)

---

### Cautions

The MPS-3 Pressure Sensor is designed to monitor pressure and is not a safety measure to prevent accidents. The compatibility of the sensor is the responsibility of the designer of the system and specifications.

#### Operating Environment

- Parker / Convum Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

#### Operations

- Dedicate a power supply of 10.8 to 30VDC to the sensor and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
- A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.
- Verify the operating media is compatible with the specified sensor. Check the chemical make-up, operating temperatures, and maximum pressure ranges of the system before installing.
- Installation of air dryer system is recommended to remove moisture.

---

### Installation

- Never insert an object into the pressure port other than an appropriate fluid connector.
- Avoid short-circuiting the sensor. Connect the brown lead to V+ and blue lead to 0V.
- Do not connect the output lead wires (black / white) to the power supply.
- Outputs not being used should be trimmed and insulated.
- Install as shown using the metal mounting bracket.
- To achieve IP65 rating, connect the o-ring and barb as shown to a normal environment with a 2mm I. D. tube.

### Error Messages

<table>
<thead>
<tr>
<th>Display</th>
<th>Description</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Err</td>
<td>Zero Reset Error</td>
<td>Reset Zero Below 3% of F.S.</td>
</tr>
<tr>
<td>Er1</td>
<td>System Error (Internal)</td>
<td>Contact Factory</td>
</tr>
<tr>
<td>Er2</td>
<td>Auto Teach Mode Error</td>
<td>Restart Function</td>
</tr>
<tr>
<td>CE1</td>
<td>Over current of Output 1</td>
<td>Load current exceeds maximum 125mA.</td>
</tr>
<tr>
<td>CE2</td>
<td>Over current of Output 2</td>
<td></td>
</tr>
<tr>
<td>FFF</td>
<td>Applied pressure exceeds pressure range</td>
<td>Apply pressures within the rating of the sensor</td>
</tr>
<tr>
<td>–FF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Dimensions

N, R, G
1/8" Female

MPS-ACCK1
Mounting Brackets
(Included)
Programming Features

See page 82 for Symbol Explanation

1. Hold Press 1x
   Output Set Open or Closed Selecting Units of Measure Easy Mode Activation

2. Press 2x
   Output Mode 1 Hysteresis or Window Comparator

3. Press 4x
   Output Mode 2 Hysteresis or Window Comparator

4. Press 1x
   Output 1 Switch Point Setting Hysteresis Mode

5. Press 3x
   Output 2 Switch Point Setting Hysteresis Mode

6. Press 5x
   Automatic Teach Mode & Auto Surveillance

- Press 6x
  Display Refresh Settings / Output Response Time Interval

- Press 7x
  Display Peak Value Bottom Value or Their Difference

- Hold Press 1x
  Lock

- Hold Press 1x
  Unlock

- Press 1x
  Peak Value

- Press 1x
  Bottom Value

- Press for 3 Seconds
  Zero Reset

Note: When Auto Surveillance is turned on P1 is added to Output 1 setting, Output 2 is turned off and P-1 becomes Output.
Accessories

Cables

CB-M8-4P-2M, Female to Open Lead

CB-M8-4P-M12-2M, M8 Female to M12 Male

CB-M8-4P-5M, Female to Open Lead

CB-M8-4P-M8-2M, M8 Female to M8 Male

CB-M8-4P-5M-90, Female to Open Lead

Pin Out Connection

Female Interface 4-Pin, M8

Male Interface 4-Pin, M8

Male Interface 4-Pin, M12

MPS-ACCH7

Panel Mounting Bracket

Knockout
## MPS-3 Stainless Steel

**Features**
- Fluids Non-Corrosive to Stainless Steel
  - SUS 316L or SUS 630
  - Air, Freons, Ammonia, Brake Fluids, Helium, Hydraulic Fluids
- Pressure Ranges:
  - Vacuum Pressure: 0 to -30 inHg
  - Compound Pressure: -14.7 to 72.5 PSI
  - Positive Pressure: 0 to 145 PSI
- Sensor Outputs:
  - 2 NPN or PNP Open Collector
  - Transistor Outputs, 30VDC, 125mA
  - Optional Analog Output, 1 to 5 VDC
- Switch Point and High-low Programming
- 4 Selectable Units of Measure
  - (mmHg, -bar, -kPa, inHg)
  - (kgf/cm², PSI, bar, kPa)
- Output Response Time Less Than 2.0 Milliseconds
- CE Marked
- Error Message

### MPS-3 Programming Options

<table>
<thead>
<tr>
<th>Feature</th>
<th>Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outputs Change N.O. / N.C.</td>
<td>✔</td>
</tr>
<tr>
<td>Units of Measure change</td>
<td>✔</td>
</tr>
<tr>
<td>EZY Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Hysteresis Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Window Comparator Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Auto Teach Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Auto Surveillance Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Display Refresh Settings</td>
<td>✔</td>
</tr>
<tr>
<td>Output Response Time</td>
<td>✔</td>
</tr>
<tr>
<td>Display Peak / Bottom Difference Value</td>
<td>✔</td>
</tr>
<tr>
<td>Special Display Features</td>
<td>✔</td>
</tr>
<tr>
<td>Lockout Option</td>
<td>✔</td>
</tr>
<tr>
<td>Peak Value at a Touch</td>
<td>✔</td>
</tr>
<tr>
<td>Bottom Value at a Touch</td>
<td>✔</td>
</tr>
<tr>
<td>Zero Reset</td>
<td>✔</td>
</tr>
<tr>
<td>Red / Green LED Display Options</td>
<td>✔</td>
</tr>
<tr>
<td>Peak Surveillance Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Energy Savings Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Scan Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Password Lockout</td>
<td>✔</td>
</tr>
<tr>
<td>Error Output Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Setting of Decimal Point</td>
<td>✔</td>
</tr>
</tbody>
</table>

Mounting Bracket MPS-ACCK1 Included with Sensors.
### MPS-3 Stainless Steel Ordering Numbers

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Port Size</th>
<th>Output Circuit</th>
<th>Electrical Connector</th>
<th>Part Number**</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to -30 inHg</td>
<td>1/8 NPSF*</td>
<td>PNP Sourcing with 1-5VDC analog</td>
<td>4 Pin, M8</td>
<td>MPS-V3F5-PCA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sinking with 1-5VDC analog</td>
<td></td>
<td>MPS-V3F5-NCA</td>
</tr>
<tr>
<td>-14.7 to 72.5 PSI</td>
<td>1/8 NPSF*</td>
<td>PNP Sourcing with 1-5VDC analog</td>
<td>4 Pin, M8</td>
<td>MPS-R3F5-PCA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sinking with 1-5VDC analog</td>
<td></td>
<td>MPS-R3F5-NCA</td>
</tr>
<tr>
<td>0 to 145 PSI</td>
<td>1/8 NPSF*</td>
<td>PNP Sourcing with 1-5VDC analog</td>
<td>4 Pin, M8</td>
<td>MPS-P3S5-PCA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sinking with 1-5VDC analog</td>
<td></td>
<td>MPS-P3S5-NCA</td>
</tr>
</tbody>
</table>

### Specifications

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Vacuum (V3F)</th>
<th>Positive (P3S)</th>
<th>Compound (R3F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units of Measure</td>
<td>bar: 0.001</td>
<td>bar: 0.01</td>
<td>bar: 0.01</td>
</tr>
<tr>
<td>Display Resolution</td>
<td>kPa: 0.1</td>
<td>MPa: 0.001</td>
<td>kPa: 1</td>
</tr>
<tr>
<td></td>
<td>mmHg: 1</td>
<td>kgf/cm²: 0.01</td>
<td>kgf/cm²: 0.01</td>
</tr>
<tr>
<td></td>
<td>inHg: 0.1</td>
<td>PSI: 1</td>
<td>PSI: 0.1</td>
</tr>
</tbody>
</table>

| Media                  | Fluids, Non-Corrosive to 316L or 630 SUS |
| Pressure Port          | (5) M5F                                              |
| Proof Pressure         | (V3F) 145 PSI, (R3F) 217.5 PSI, (P3S) 290 PSI       |
| Operating Temperature  | 32 to 122°F (0 to 50°C)                               |
| Storage Temperature    | 14 to 140°F (-10 to 60°C)                            |
| Humidity               | 35 to 85% RH                                         |
| Electrical Connection  | (C) 4-Pin, M8 Connector                              |
| Power Supply           | 10.8 to 30VDC, Ripple Vp-p 10% Max., Reverse Voltage Protection |
| Display                | 3-Digit, 7-Segment LED                               |
| Display Refresh        | .1 to 3.0 sec. (Factory set at 0.1)                  |
| Output Circuit         | NPN (Sinking), PNP (Sourcing) Open Collector Transistor; 30VDC, 125mA |
| Switch Outputs         | 2 Output Signals, NPN or PNP Normally Open or Closed, LED Indicator |
| Linear Output          | Optional Analog Output 1 to 5VDC                     |
| Output Modes           | Hysteresis or Window Comparator                      |
| Output Response Time   | < 2ms with Programmable Increment 32, 128, 1024ms    |
| Repeatability         | ± 0.2% F.S.                                          |
| Thermal Error          | 1% over ±25°C (77°F) Temperature Change: Range 32 to 122°F (0 to 50°C) |
| General Protection     | IP 65 or IP 40, CE Marked, EMC-EN55011 Class B, EN 50082-2 |
| Current Consumption    | < 55mA                                               |
| Vibration Resistance   | 10 to 55Hz, 1.5mm, XYZ, 2 hrs.                       |
| Shock Resistance       | 10 G, XYZ                                            |
| Material               | Housing: Polycarbonate, Wetted Parts: P: 316L or V,R: 630 SUS (Diaphragm) |
| Mass                   | 4.4 oz. (110g)                                       |
Cautions

The MPS-3 Stainless Steel Pressure Sensor is designed to monitor pressure and is not a safety measure to prevent accidents. The compatibility of the sensor is the responsibility of the designer of the system and specifications.

Operating Environment

- Parker / Convum Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

Operations

- Dedicate a power supply of 10.8 to 30VDC to the sensor and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
- A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.
- Verify the operating media is compatible with the specified sensor. Check the chemical make-up, operating temperatures, and maximum pressure ranges of the system before installing.
- Installation of air dryer system is recommended to remove moisture.

Installation

- Never insert an object into the pressure port other than an appropriate fluid connector.
- Avoid short-circuiting the sensor. Connect the brown lead to V+ and blue lead to 0V.
- Do not connect the output lead wires (black / white) to the power supply.
- Outputs not being used should be trimmed and insulated.
- Install using the metal mounting base.
- To achieve IP65 rating, connect the o-ring and barb to a normal environment with a 2mm I. D. tube.

Error Messages

<table>
<thead>
<tr>
<th>Display</th>
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<th>Solutions</th>
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<td>System Error (Internal)</td>
<td>Contact Factory</td>
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<tr>
<td>Er2</td>
<td>Auto Teach Mode Error</td>
<td>Restart Function</td>
</tr>
<tr>
<td>CE1</td>
<td>Over current of Output 1</td>
<td>Load current exceeds maximum 125mA.</td>
</tr>
<tr>
<td>CE2</td>
<td>Over current of Output 2</td>
<td></td>
</tr>
<tr>
<td>FFF</td>
<td>Applied pressure exceeds pressure range</td>
<td>Apply pressures within the rating of the sensor</td>
</tr>
<tr>
<td>–FF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Dimensions

M8, 4-Pin
M5 Back & Bottom Ports

MPS-ACCK1
Mounting Brackets
(Included)
Programming Features

Pressure Sensors

MPS-3 Stainless Steel

See page 82 for Symbol Explanation

1. Hold  Press 1x
   Output Set Open or Closed Selecting Units of Measure
   Easy Mode Activation

2. Press 2x
   Output Mode 1 Hysteresis or Window Comparator

3. Press 4x
   Output Mode 2 Hysteresis or Window Comparator

4. Press 1x
   Output 1 Switch Point Setting
   Hysteresis Mode

5. Press 3x
   Output 2 Switch Point Setting
   Hysteresis Mode

6. Press 5x
   Automatic Teach Mode & Auto Surveillance

7. Press 6x
   Display Refresh Settings / Output Response Time Interval

8. Press 7x
   Display Peak Value Bottom Value or Their Difference

9. Hold  Press 1x
   Lock

10. Hold  Press 1x
    Unlock

11. Press 1x
    PE
    Press 1x
    Bottom Value

12. Press 8x
    Special Display Features

Note: When Auto Surveillance is turned on P1 is added to Output 1 setting. Output 2 is turned off and P-1 becomes Output.
Accessories

Cables

CB-M8-4P-2M, Female to Open Lead

CB-M8-4P-M12-2M, M8 Female to M12 Male

CB-M8-4P-5M, Female to Open Lead

CB-M8-4P-M8-2M, M8 Female to M8 Male

CB-M8-4P-5M-90, Female to Open Lead

Pin Out Connection

MPS-ACCH1
Panel Mounting Bracket

Knockout

MPS-3 Stainless Steel

Pressure Sensors

Accessories

Catalog 0802-3/USA

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatic

Pneumatic Division
Richland, Michigan
www.parker.com/pneumatic

37
MPS-31

Features

- Pressure Ranges:
  - Vacuum Pressure .............. 0 to -30 inHg
  - Compound .................. -14.7 to 72.5 PSI
  - Positive Pressure .......... 0 to 145 PSI

- Sensor Output:
  - 1 NPN or PNP Open Collector Transistor Output, 30VDC, 125mA
  - Optional Analog Output, 4 to 20mA

- Switch Point and Window Comparator Mode

- 4 Selectable Units of Measure
  - (mmHg, -bar, -kPa, inHg)
  - (kgf/cm², PSI, bar, kPa)

- Output Response Time Less Than 2.0 Milliseconds

- CE Marked

- Air and Non-Corrosive Gases

- Error Message

MPS-31 Programming Options

<table>
<thead>
<tr>
<th>Outputs Change N.O. / N.C.</th>
<th>✔</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units of Measure change</td>
<td>✔</td>
</tr>
<tr>
<td>EZY Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Hysteresis Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Window Comparator Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Auto Teach Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Auto Surveillance Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Display Refresh Settings</td>
<td>✔</td>
</tr>
<tr>
<td>Output Response Time</td>
<td>✔</td>
</tr>
<tr>
<td>Display Peak / Bottom Difference Value</td>
<td>✔</td>
</tr>
<tr>
<td>Special Display Features</td>
<td>✔</td>
</tr>
<tr>
<td>Lockout Option</td>
<td>✔</td>
</tr>
<tr>
<td>Peak Value at a Touch</td>
<td>✔</td>
</tr>
<tr>
<td>Bottom Value at a Touch</td>
<td>✔</td>
</tr>
<tr>
<td>Zero Reset</td>
<td>✔</td>
</tr>
<tr>
<td>Red / Green LED Display Options</td>
<td>✔</td>
</tr>
<tr>
<td>Peak Surveillance Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Energy Savings Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Scan Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Password Lockout</td>
<td>✔</td>
</tr>
<tr>
<td>Error Output Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Setting of Decimal Point</td>
<td>✔</td>
</tr>
</tbody>
</table>
**Specifications**

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Port Size</th>
<th>Output Circuit</th>
<th>Electrical Connector</th>
<th>Part Number**</th>
<th>** BSPP(G) and BSPT(R) are available. Replace N with G or R for port thread type. Example: MPS-V1N-PC (NPT), MPS-V1G-PC (BSPP) or MPS-V1R-PC (BSPT) ** Mounting Bracket Included</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to -30 inHg</td>
<td>1/8 NPSF*</td>
<td>PNP Sourcing</td>
<td>4 Pin, M8</td>
<td>MPS-V31N-PC</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sinking</td>
<td>2M Lead Wire</td>
<td>MPS-V31N-PG</td>
<td></td>
</tr>
<tr>
<td>-14.7 to 72.5 PSI</td>
<td>1/8 NPSF*</td>
<td>PNP Sinking</td>
<td>4 Pin, M8</td>
<td>MPS-R31N-PC</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sinking</td>
<td>2M Lead Wire</td>
<td>MPS-R31N-NC</td>
<td></td>
</tr>
<tr>
<td>0 to 145 PSI</td>
<td>1/8 NPSF*</td>
<td>PNP Sourcing</td>
<td>4 Pin, M8</td>
<td>MPS-P31N-PC</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sinking</td>
<td>2M Lead Wire</td>
<td>MPS-P31N-PG</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sourcing with 4-20mA</td>
<td>4 Pin, M8</td>
<td>MPS-P31N-PC</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sourcing with 4-20mA</td>
<td>2M Lead Wire</td>
<td>MPS-P31N-NC</td>
<td></td>
</tr>
</tbody>
</table>

**Sensor Specifications**

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Units of Measure</th>
<th>Display Resolution</th>
<th>Media</th>
<th>Pressure Port</th>
<th>Proof Pressure</th>
<th>Operating Temperature</th>
<th>Storage Temperature</th>
<th>Humidity</th>
<th>Electrical Connection</th>
<th>Output Circuit</th>
<th>Switch Output</th>
<th>Output Modes</th>
<th>Output Response Time</th>
<th>Repeatability</th>
<th>Analog Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to -30 inHg</td>
<td>bar: 0.001</td>
<td>3-Digit, 7-Segment LED</td>
<td>Air and Non-Corrosive Gases</td>
<td>(N) 1/8 NPSF (Consult Factory for BSPP or BSPT Port)</td>
<td>(V) 145 PSI, (P) 217.5 PSI, (R) 145 PSI</td>
<td>32 to 122°F (0 to 50°C)</td>
<td>14 to 140°F (-10 to 60°C)</td>
<td>35 to 85% RH</td>
<td>(C) 4-Pin, M8 Connector, (G) Grommet Open Lead</td>
<td>NPN (Sinking), PNP (Sourcing) Open Collector Transitior, 30VDC, 125mA</td>
<td>Output Signal, NPN or PNP, Normally Open or Closed, LED Indicator</td>
<td>Hysteresis or Window Comparator</td>
<td>&lt; 2ms, 32, 256, 512ms Programmable (Factory set 2ms)</td>
<td>± 0.2% F.S.</td>
<td>Maximum Load Impedance: 300Ω with power supply voltage of 12V; 600Ω with power supply voltage of 12V; Minimum Load Impedance: 50Ω</td>
</tr>
</tbody>
</table>
Sensor Pin Out

Pin #  
1 Brown: 24VDC  
2 White: Not Used  
3 Blue: 0VDC  
4 Black: NPN / PNP Open Collector Output 1

Lead Wiring

Internal Circuit for Open Collector and Analog Output Wiring

Cautions

The MPS-31 Pressure Sensor is designed to monitor pressure and is not a safety measure to prevent accidents. The compatibility of the sensor is the responsibility of the designer of the system and specifications.

Operating Environment

- Parker / Convum Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

Operations

- Dedicate a power supply of 10.8 to 30VDC to the sensor and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
- A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.
- Verify the operating media is compatible with the specified sensor. Check the chemical make-up, operating temperatures, and maximum pressure ranges of the system before installing.
- Installation of air dryer system is recommended to remove moisture.

Installation

- Never insert an object into the pressure port other than an appropriate fluid connector.
- Avoid short-circuiting the sensor. Connect the brown lead to V+ and blue lead to 0V.
- Do not connect the output lead wires (black / white) to the power supply.
- Outputs not being used should be trimmed and insulated.
- Install as shown using the metal mounting bracket.

Error Messages

<table>
<thead>
<tr>
<th>Display</th>
<th>Description</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Err</td>
<td>Zero Reset Error</td>
<td>Reset Zero Below 3% of F.S.</td>
</tr>
<tr>
<td>Er1</td>
<td>System Error (Internal)</td>
<td>Contact Factory</td>
</tr>
<tr>
<td>CE1</td>
<td>Over current of Output 1</td>
<td>Load current exceeds maximum 125mA.</td>
</tr>
<tr>
<td>FFF - FF</td>
<td>Applied pressure exceeds pressure range</td>
<td>Apply pressures within the rating of the sensor</td>
</tr>
</tbody>
</table>

Lead Wiring

Sensor Pin Out with Analog Output

Pin #  
1 Brown: 24VDC  
2 White: 4 to 20mA  
3 Blue: 0VDC  
4 Black: NPN / PNP Open Collector Output 1

Lead Wiring

Internal Circuit for Open Collector and Analog Output Wiring
Dimensions

N, R, G
1/8" Female

MPS-ACCK1
Mounting Brackets
(Included)
Programming Features

Pressure Sensors

MPS-31 2-Color Panel Mount

See page 82 for Symbol Explanation

1. Press \(\Delta\) for 3 Seconds

   Begin Programming

   Operating Output Mode

   Or Press \(\Delta\) 1x to Proceed

   Wait 3 Seconds

   \(\text{Out} \) = \(\text{HZS} \) \(\text{EnP} \) \(\text{off} \)

   \(\text{End} \)

2. Press \(\Delta\) 1x

   Switch Output Setting and Low Setting

   \(\text{SEL} \) Will Display for 1 Second

   Hysteresis Mode

   \(\text{H} - \text{L} \) = \(145 \) \(0 \)

   Window Comparator Mode

   Low \(\text{L} - \text{L} \) = \(42 \) \(0 \)

   Wait 5 Seconds \(\text{End} \)

3. Press \(\Delta\) 1x

   Hysteresis Setting and High Setting

   \(\text{SEL} \) Will Display for 1 Second

   Hysteresis Mode

   \(\text{H} - \text{L} \) = \(145 \) \(0 \)

   Window Comparator Mode

   High \(\text{L} - \text{L} \) = \(71 \) \(0 \)

   Wait 5 Seconds \(\text{End} \)

4. Hold \(\Delta\) Press \(\Delta\) 1x

   Hold \(\Delta\) Press \(\Delta\) 1x

   Lock

   Unlock

   \(\text{Loc} \) \(\text{Unc} \)

5. Zero Reset

   \(\text{Press} \) \(\Delta\) for 3 Sec.

   \(\text{End} \)
Accessories

Cables

CB-M8-4P-2M, Female to Open Lead

CB-M8-4P-M12-2M, M8 Female to M12 Male

CB-M8-4P-5M, Female to Open Lead

CB-M8-4P-M8-2M, M8 Female to M8 Male

CB-M8-4P-5M-90, Female to Open Lead

Pin Out Connection

Female Interface
4-Pin, M8

Male Interface
4-Pin, M8
4-Pin, M12

MPS-ACCH7
Panel Mounting Bracket

Knockout
Features

• Pressure Ranges:
  Vacuum Pressure .......... 0 to -29.8 inHg
  Positive Pressure .......... -8 to 8 inH₂O

• Sensor Outputs:
  2 NPN or PNP Open Collector
  Transistor Output, 30VDC, 125mA
  Optional Analog Output, 1 to 5 VDC

• Switch Point and High-low Programming

• Selectable Units of Measure

• Output Response Time Less Than 2.5 Milliseconds

• CE Marked

• Air and Non-Corrosive Gases

• Dual Ports for Reference Pressure

MPS-4 Programming Options

<table>
<thead>
<tr>
<th>Outputs Change N.O. / N.C.</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units of Measure change</td>
<td>✓</td>
</tr>
<tr>
<td>EZY Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Hysteresis Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Window Comparator Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Auto Teach Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Auto Surveillance Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Display Refresh Settings</td>
<td>✓</td>
</tr>
<tr>
<td>Output Response Time</td>
<td>✓</td>
</tr>
<tr>
<td>Display Peak / Bottom Difference Value</td>
<td>✓</td>
</tr>
<tr>
<td>Special Display Features</td>
<td>✓</td>
</tr>
<tr>
<td>Lockout Option</td>
<td>✓</td>
</tr>
<tr>
<td>Peak Value at a Touch</td>
<td>✓</td>
</tr>
<tr>
<td>Bottom Value at a Touch</td>
<td>✓</td>
</tr>
<tr>
<td>Zero Reset</td>
<td>✓</td>
</tr>
<tr>
<td>Red / Green LED Display Options</td>
<td>✓</td>
</tr>
<tr>
<td>Peak Surveillance Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Energy Savings Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Scan Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Password Lockout</td>
<td>✓</td>
</tr>
<tr>
<td>Error Output Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Setting of Decimal Point</td>
<td>✓</td>
</tr>
</tbody>
</table>
MPS-4 Ordering Numbers

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Port Size</th>
<th>Output Circuit</th>
<th>Electrical Connector</th>
<th>Part Number**</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to -30 inHg</td>
<td>M5 Female</td>
<td>PNP Sourcing with 1-5VDC analog</td>
<td>2M Lead Wire</td>
<td>MPS-V4M5-PGA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sinking with 1-5VDC analog</td>
<td></td>
<td>MPS-V4M5-NGA</td>
</tr>
<tr>
<td>-8 to 8 inH2O</td>
<td>M5 Female</td>
<td>PNP Sourcing with 1-5VDC analog</td>
<td>2M Lead Wire</td>
<td>MPS-D4M5-PGA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sinking with 1-5VDC analog</td>
<td></td>
<td>MPS-D4M5-NGA</td>
</tr>
</tbody>
</table>

** Mounting Bracket Included

Specifications

<table>
<thead>
<tr>
<th>Media</th>
<th>Air and Non-Corrosive Gases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Port</td>
<td>M5 Female (2 qty.)</td>
</tr>
<tr>
<td>Proof Pressure</td>
<td>(V) 29 PSI, (D) 3.9</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32 to 122°F (0 to 50°C)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>14 to 140°F (-10 to 60°C)</td>
</tr>
<tr>
<td>Humidity</td>
<td>35 to 85% RH</td>
</tr>
<tr>
<td>Electrical Connection</td>
<td>(G) Grommet Lead, (C) 4-Pin, M8 Connector</td>
</tr>
<tr>
<td>Power Supply</td>
<td>10.8 to 30VDC, Ripple Vp-p 10% Max., Reverse Voltage Protection</td>
</tr>
<tr>
<td>Display</td>
<td>3-Digit, 7-Segment LED</td>
</tr>
<tr>
<td>Resolution &amp; Units of Measure</td>
<td>kPa: 0.01, mmH2O: 1, inH2O: 0.1, inHg: 0.1</td>
</tr>
<tr>
<td>Display Refresh</td>
<td>.1 to 3.0 sec. (Factory set at 0.1)</td>
</tr>
<tr>
<td>Output Circuit</td>
<td>NPN (Sinking), PNP (Sourcing) Open Collector Transistor, 30VDC, 125mA</td>
</tr>
<tr>
<td>Switch Outputs</td>
<td>2 Output Signals, Normally Open or Closed, LED Indicator</td>
</tr>
<tr>
<td>Linear Output</td>
<td>Optional Analog Output 1-5VDC, ± 0.2% Linear Accuracy 0.5% F.S.</td>
</tr>
<tr>
<td>Output Modes</td>
<td>Hysteresis or Window Comparator</td>
</tr>
<tr>
<td>Output Response Time</td>
<td>D: &lt; 2.5ms</td>
</tr>
<tr>
<td>Repeatability</td>
<td>D: &lt; ± 0.5% F.S.</td>
</tr>
<tr>
<td>Thermal Error</td>
<td>Max. ±3% F.S. In Temperature: Range 32 to 122°F (0 to 50°C)</td>
</tr>
<tr>
<td>General Protection</td>
<td>IP40, CE Marked, EMC rating: EN55011 Class B, EN50082-2</td>
</tr>
<tr>
<td>Current Consumption</td>
<td>&lt; 45mA</td>
</tr>
<tr>
<td>Vibration Resistance</td>
<td>10 to 55Hz, 1.5mm, XYZ, 2 hrs.</td>
</tr>
<tr>
<td>Shock Resistance</td>
<td>10 G, XYZ</td>
</tr>
<tr>
<td>Material</td>
<td>Housing: Polycarbonate, Pressure Port: Anodized Aluminum</td>
</tr>
<tr>
<td>Mass</td>
<td>1.6 oz. (45g)</td>
</tr>
</tbody>
</table>
**Sensor Pin Out**

Pin #
1. Brown: 24VDC
2. White: NPN / PNP Open Collector Output 2
3. Blue: 0VDC
4. Black: NPN / PNP Open Collector Output 1

**Lead Wiring**

Internal Circuit for Open Collector and Analog Output Wiring

---

**Cautions**

The MPS-4 Differential Pressure Sensor is designed to monitor pressure and is not a safety measure to prevent accidents. The compatibility of the sensor is the responsibility of the designer of the system and specifications.

**Operating Environment**

- Parker / Convum Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

**Operations**

- Dedicate a power supply of 10.8 to 30VDC to the sensor and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
- A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.
- Verify the operating media is compatible with the specified sensor. Check the chemical make-up, operating temperatures, and maximum pressure ranges of the system before installing.
- Installation of air dryer system is recommended to remove moisture.

**Error Messages**

<table>
<thead>
<tr>
<th>Display</th>
<th>Description</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Err</td>
<td>Zero Reset Error</td>
<td>Reset Zero Below 3% of F.S.</td>
</tr>
<tr>
<td>Er1</td>
<td>System Error (Internal)</td>
<td>Contact Factory</td>
</tr>
<tr>
<td>Er2</td>
<td>Auto Teach Mode Error</td>
<td>Restart Function</td>
</tr>
<tr>
<td>CE1</td>
<td>Over current of Output 1</td>
<td>Load current exceeds maximum 125mA</td>
</tr>
<tr>
<td>CE2</td>
<td>Over current of Output 2</td>
<td></td>
</tr>
<tr>
<td>FFF</td>
<td>Applied pressure exceeds pressure range</td>
<td>Apply pressures within the rating of the sensor</td>
</tr>
<tr>
<td>–FF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Sensor Pin-Out with Analog Output**

Pin #
1. Brown: 24VDC
2. White: Analog 1 to 5VDC Output
3. Blue: 0VDC
4. Black: NPN / PNP Open Collector Output 1

**Lead Wiring**

---

**Installation**

- Never insert an object into the pressure port other than an appropriate fluid connector.
- Avoid short-circuiting the sensor. Connect the brown lead to V+ and blue lead to 0V.
- Do not connect the output lead wires (black / white) to the power supply.
- Outputs not being used should be trimmed and insulated.
- Install using the metal mounting bracket.
Dimensions

M5 Female

MPS-ACCK1

Mounting Brackets (Included)
Programming Features

Differential Pressure Sensors

MPS-4 Sensitive

See page 82 for Symbol Explanation

1. Hold  Press 1x
   Output Set Open or Closed Selecting Units of Measure

2. Press 2x
   Output Mode 1 Hysteresis or Window Comparator

3. Press 4x
   Output Mode 2 Hysteresis or Window Comparator

4. Press 1x
   Output 1 Switch Point Setting Hysteresis Mode

5. Press 3x
   Output 2 Switch Point Setting Hysteresis Mode

6. Press 5x
   Port Reference Selection

7. Press 6x
   Display Refresh Settings / Output Response Time Interval

8. Press 7x
   Display Peak Value Bottom Value or Their Difference

9. Hold  Press 1x
   Peak Value

10. Press 1x
    Bottom Value

11. Hold for 3 Seconds
    Zero Reset
Accessories

Cables

CB-M8-4P-2M, Female to Open Lead

CB-M8-4P-M12-2M, M8 Female to M12 Male

CB-M8-4P-5M, Female to Open Lead

CB-M8-4P-M8-2M, M8 Female to M8 Male

CB-M8-4P-5M-90, Female to Open Lead

Pin Out Connection

Female Interface
4-Pin, M8

Male Interface
4-Pin, M8

Male Interface
4-Pin, M12

MPS-ACCH1
Panel Mounting Bracket

Knockout
MPS-5
Stainless

Features

- **Pressure Ranges:**
  - Vacuum Pressure .............. 0 to -30 inHg
  - Positive Pressure ............. 0 to 145 PSI

- **Sensor Output:**
  1 to 5 VDC

- 316L SUS Diaphragm (Positive)
- 630 SUS Diaphragm (Vacuum)
- Compatible with MPS-7 Display for Remote Sensing
- CE Marked

**MPS-5 Programming Options**

<table>
<thead>
<tr>
<th>Options</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Outputs Change N.O. / N.C.</td>
<td></td>
</tr>
<tr>
<td>Units of Measure change</td>
<td></td>
</tr>
<tr>
<td>EZY Mode</td>
<td></td>
</tr>
<tr>
<td>Hysteresis Mode</td>
<td></td>
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<tr>
<td>Window Comparator Mode</td>
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<tr>
<td>Auto Teach Mode</td>
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<tr>
<td>Auto Surveillance Mode</td>
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<tr>
<td>Display Refresh Settings</td>
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<tr>
<td>Output Response Time</td>
<td></td>
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<tr>
<td>Display Peak / Bottom Difference Value</td>
<td></td>
</tr>
<tr>
<td>Special Display Features</td>
<td></td>
</tr>
<tr>
<td>Lockout Option</td>
<td></td>
</tr>
<tr>
<td>Peak Value at a Touch</td>
<td></td>
</tr>
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<td></td>
</tr>
<tr>
<td>Zero Reset</td>
<td></td>
</tr>
<tr>
<td>Red / Green LED Display Options</td>
<td></td>
</tr>
<tr>
<td>Peak Surveillance Mode</td>
<td></td>
</tr>
<tr>
<td>Energy Savings Mode</td>
<td></td>
</tr>
<tr>
<td>Scan Mode</td>
<td></td>
</tr>
<tr>
<td>Password Lockout</td>
<td></td>
</tr>
<tr>
<td>Error Output Mode</td>
<td></td>
</tr>
<tr>
<td>Setting of Decimal Point</td>
<td></td>
</tr>
</tbody>
</table>

Mounting Bracket MPS-ACCK1 Included with Sensors.
MPS-5 Ordering Numbers

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Port Size</th>
<th>Output Circuit</th>
<th>Electrical Connector</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to -30 inHg</td>
<td>1/8 NPT Male</td>
<td>1-5vdc analog</td>
<td>4 Pin, M8</td>
<td>MPS-V5FN-AC</td>
</tr>
<tr>
<td>0 to 145 PSI</td>
<td></td>
<td></td>
<td></td>
<td>MPS-P5N-AC</td>
</tr>
</tbody>
</table>

* BSPP(G) and BSPT(R) are available. Replace N with G or R for port thread type
Example: MPS-P5N-PC (NPT), MPS-P5G-PC (BSPP) or MPS-P5R-PC (BSPT)

Note: To connect MPS-5 Series Analog Sensor to MPS-7 Series Remote Panel Display, use M8 to AMP Connector Cable CB-M8-4P-2E.

Specifications

<table>
<thead>
<tr>
<th>Media</th>
<th>Liquids and Gases Non-Corrosive to 316SS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Port</td>
<td>(N) 1/4&quot; Male NPT with M5 Female (Consult Factory for BSPT Port)</td>
</tr>
<tr>
<td>Proof Pressure</td>
<td>(V) 145 PSI, (P) 290 PSI</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32 to 122°F (0 to 50°C)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>14 to 140°F (-10 to 60°C)</td>
</tr>
<tr>
<td>Humidity</td>
<td>35 to 85% RH</td>
</tr>
<tr>
<td>Electrical Connection</td>
<td>(C) 4-Pin, M8 Connector, (G) Grommet Open Lead, (GE) Clip Type for use with MPS-7</td>
</tr>
<tr>
<td>Power Supply</td>
<td>10.8 to 30VDC, Ripple Vp-p 10% Max., Reverse Voltage Protection</td>
</tr>
<tr>
<td>Linear Output</td>
<td>Analog Output 1 to 5VDC</td>
</tr>
<tr>
<td>Thermal Error</td>
<td>1% over ±25°C (77°F) Temperature Change: Range 32 to 122°F (0 to 50°C)</td>
</tr>
<tr>
<td>General Protection</td>
<td>IP65 or IP40, CE Marked, EMC Rating: EN55011 Class B, EN50082-2</td>
</tr>
<tr>
<td>Current Consumption</td>
<td>&lt; 20mA</td>
</tr>
<tr>
<td>Spike Protection</td>
<td>400 VP, 1 μs</td>
</tr>
<tr>
<td>Dielectric Strength</td>
<td>1000VAC, 1min.</td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>&gt; 100M ohms at 500VDC</td>
</tr>
<tr>
<td>Vibration Resistance</td>
<td>10 to 55Hz, 1.5mm, XYZ, 2 hrs.</td>
</tr>
<tr>
<td>Shock Resistance</td>
<td>10 G, XYZ</td>
</tr>
<tr>
<td>Material</td>
<td>Housing: 303SUS, Wetted Parts: P5: 316L SUS, V5F: 630 SUS (Diaphragm)</td>
</tr>
<tr>
<td>Mass</td>
<td>3.88 oz. (110g)</td>
</tr>
</tbody>
</table>
Sensor Pin Out

<table>
<thead>
<tr>
<th>Pin #</th>
<th>Brown</th>
<th>Black</th>
<th>Blue</th>
<th>Not Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Analog-1-5VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0VDC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Not Used</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lead Wiring

- Brown: V+
- White: Not Used
- Blue: 0V
- Black: Output

Internal Circuit

Cautions

The MPS-5 Pressure Sensor is designed to monitor pressure and is not a safety measure to prevent accidents. The compatibility of the sensor is the responsibility of the designer of the system and specifications.

Operating Environment

- Parker / Convum Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

Operations

- Dedicate a power supply of 10.8 to 30VDC to the sensor and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
- A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.
- Verify the operating media is compatible with the specified sensor. Check the chemical make-up, operating temperatures, and maximum pressure ranges of the system before installing.

Installation

- Depending on the system fluid and design, it may be necessary to protect the diaphragm against pressure spikes by installing a flow restriction upstream from the sensor.
- Never insert an object into the pressure port other than an appropriate fluid connector.
- Avoid short-circuiting the sensor. Connect the brown lead to V+ and blue lead to 0V.
- Do not connect the output lead wires (black / white) to the power supply.
- Outputs not being used should be trimmed and insulated.
- Install using the metal mounting base.
- To achieve IP65 rating, connect the o-ring and barb to a normal environment with a 2mm I. D. tube.
**Dimensions**

N, R

1/4” Male

4-Pin, M8 Connector

**Accessories**

**Cables**

CB-M8-4P-2M, Female to Open Lead

| .196 (5) Dia | 6.56 ft (2m) | 1.26 (32) |

CB-M8-4P-5M, Female to Open Lead

| .196 (5) Dia | 16.40 ft (5m) | 1.26 (32) |

CB-M8-4P-5M-90, Female to Open Lead

| .196 (5) Dia | 16.40 ft (5m) | .87 (22) |

CB-M8-4P-M8-2M, M8 Female to M8 Male

| .38 (9,7) Dia | 6.56 ft (2m) | 1.26 (32) |

CB-M8-4P-M8-5M, M8 Female to M12 Male

| .38 (9,7) Dia | 6.56 ft (2m) | 2.09 (53) |

CB-M8-4P-M12-2M, M8 Female to M12 Male

| .38 (9,7) Dia | 6.40 ft (5m) | .87 (22) |

**Housing**

(AMP) 78-5

(AMP) 7004-5

**Shield**

**Connector**

(AMP) 170204-15

**Female Interface**

4-Pin, M8

**Male Interface**

4-Pin, M8

4-Pin, M12

**Cable Pin Color**

1 - Brown

2 - White

3 - Blue

4 - Black
MPS-6

Features

• Pressure Ranges:
  - Vacuum Pressure .......... 0 to -30 inHg
  - Positive Pressure .......... 0 to 145 PSI

• Sensor Outputs:
  - 1 Open and 1 Closed NPN or PNP Open Collector Transistor Output, 30VDC, 125mA
  - 1 Analog Output, 1 to 5 VDC

• Switch Point 2/3 Trimmer

• Fixed Hysteresis 2%

• Output Response Time Less Than 1 Millisecond

• Analog Output Type Compatible with MPS-7 Display

• CE Marked

• Air and Non-Corrosive Gases

MPS-6 Programming Options

<table>
<thead>
<tr>
<th>Fixed Outputs</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units of Measure change</td>
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<tr>
<td>EZY Mode</td>
<td></td>
</tr>
<tr>
<td>Hysteresis Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Window Comparator Mode</td>
<td></td>
</tr>
<tr>
<td>Auto Teach Mode</td>
<td></td>
</tr>
<tr>
<td>Auto Surveillance Mode</td>
<td></td>
</tr>
<tr>
<td>Display Refresh Settings</td>
<td></td>
</tr>
<tr>
<td>Output Response Time</td>
<td></td>
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<tr>
<td>Display Peak / Bottom Difference Value</td>
<td></td>
</tr>
<tr>
<td>Special Display Features</td>
<td></td>
</tr>
<tr>
<td>Lockout Option</td>
<td></td>
</tr>
<tr>
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<tr>
<td>Bottom Value at a Touch</td>
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</tr>
<tr>
<td>Zero Reset</td>
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<td>Energy Savings Mode</td>
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<td>Scan Mode</td>
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<tr>
<td>Error Output Mode</td>
<td></td>
</tr>
<tr>
<td>Setting of Decimal Point</td>
<td></td>
</tr>
</tbody>
</table>
MPS-6 Ordering Numbers

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Port Size</th>
<th>Output Circuit</th>
<th>Electrical Connector</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to -30 inHg</td>
<td>1/8 NPSF*</td>
<td>PNP Sourcing</td>
<td>4 Pin, M8</td>
<td>MPS-V6N-PC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sinking</td>
<td></td>
<td>MPS-V6N-NC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-5VDC analog</td>
<td></td>
<td>MPS-V6N-AC</td>
</tr>
<tr>
<td>6mm Tube Stud</td>
<td></td>
<td>PNP Sourcing</td>
<td>4 Pin, M8</td>
<td>MPS-V6T-PC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sinking</td>
<td></td>
<td>MPS-V6T-NC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-5VDC analog</td>
<td></td>
<td>MPS-V6T-AC</td>
</tr>
<tr>
<td>0 to 145 PSI</td>
<td>1/8 NPSF*</td>
<td>PNP Sourcing</td>
<td>4 Pin, M8</td>
<td>MPS-P6N-PC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sinking</td>
<td></td>
<td>MPS-P6N-NC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-5VDC analog</td>
<td></td>
<td>MPS-P6N-AC</td>
</tr>
<tr>
<td>6mm Tube Stud</td>
<td></td>
<td>PNP Sourcing</td>
<td>4 Pin, M8</td>
<td>MPS-P6T-PC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sinking</td>
<td></td>
<td>MPS-P6T-NC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-5VDC analog</td>
<td></td>
<td>MPS-P6T-AC</td>
</tr>
</tbody>
</table>

* BSPP(G) and BSPT(R) are available. Replace N with G or R for port thread type.
Example: MPS-V6N-PC (NPT), MPS-V6G-PC (BSPP) or MPS-V6R-PC (BSPT).

Note: To connect MPS-6 Series Analog Sensor to MPS-7 Series Remote Panel Display, use M8 to AMP Connector Cable CB-M8-4P-2E.

Specifications

<table>
<thead>
<tr>
<th>Media</th>
<th>Air and Non-Corrosives Gases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Port</td>
<td>(N) 1/8&quot; NPT Male, (T) 6mm Tube Stud (Consult Factory for BSPP or BSPT Port)</td>
</tr>
<tr>
<td>Proof Pressure</td>
<td>(V) 72.5 PSI, (P) 217.5 PSI</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>32 to 122°F (0 to 50°C)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>14 to 140°F (-10 to 60°C)</td>
</tr>
<tr>
<td>Humidity</td>
<td>35 to 85% RH</td>
</tr>
<tr>
<td>Electrical Connection</td>
<td>(C) 4-Pin, M8 Connector</td>
</tr>
<tr>
<td>Power Supply</td>
<td>10.8 to 30 VDC, Ripple Vp-p 10% max., Reverse Voltage Protection</td>
</tr>
<tr>
<td>Switch Output</td>
<td>1 Output Signal Open and Closed, NPN or PNP, 30VDC, 125mA</td>
</tr>
<tr>
<td>Linear Output</td>
<td>Analog Output 1 to 5 VDC</td>
</tr>
<tr>
<td>Switch Point Setting</td>
<td>2/3 Turn Trimmer</td>
</tr>
<tr>
<td>Hysteresis Setting</td>
<td>≤ 2% of F.S.</td>
</tr>
<tr>
<td>Output Response Time</td>
<td>&lt;1ms</td>
</tr>
<tr>
<td>Repeatability</td>
<td>≤0.2% F.S.</td>
</tr>
<tr>
<td>Thermal Error</td>
<td>1% over ±25°C (77°C) Temperature Change: Range 32 to 122°F (0 to 50°C)</td>
</tr>
<tr>
<td>General Protection</td>
<td>IP40, CE Marked, EN55011 Class B, EN50082-2</td>
</tr>
<tr>
<td>Current Consumption</td>
<td>&lt; 20mA</td>
</tr>
<tr>
<td>Spike Protection</td>
<td>400 VP, 1 μs, Surge Protection</td>
</tr>
<tr>
<td>Dielectric Strength</td>
<td>1000VAC, 1min.</td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>&gt; 100M ohm at 500VDC</td>
</tr>
<tr>
<td>Vibration Resistance</td>
<td>10 to 55Hz, 0.75mm Amplitude, XYZ, 2 hrs.</td>
</tr>
<tr>
<td>Shock Resistance</td>
<td>100 G, XYZ</td>
</tr>
<tr>
<td>Material</td>
<td>Housing: Polycarbonate, Pressure Port: Zinc Die-cast</td>
</tr>
<tr>
<td>Mass</td>
<td>T Port: 0.25 oz. (7g), N, R, G Port: 0.88 oz (25g)</td>
</tr>
</tbody>
</table>
Pressure Sensors
MPS-6 Compact

Sensor Pin Out

Pin #
1 Brown: 24VDC
2 White: NPN / PNP Open Collector Output
3 Blue: 0VDC
4 Black: NPN / PNP Open Collector Output

Sensor Pin Out with Analog Output

Pin #
1 Brown: 24VDC
2 White: LED In 5VDC
3 Blue: 0VDC
4 Black: Analog 1 to 5VDC

Internal Circuit

Main Circuit
LED
(White) Input for LED lighting (5VDC)
(Brown) +V
(DC 0.8V to 30V)

Main Circuit
Tr
Tr
ZD
ZD
(Brown) Out  (N.C.)
(Blue) OV
(Black) Out  (N.O.)
(Brown) +V
(DC 0.8V to 30V)

LOAD
Max. 5mA

LOAD
Max. 5mA

LOAD
Max. 125mA

LOAD
Max. 125mA

- DC 10.8V to 30V

NPN Open Collector

Analog

Parker / Convum Sensors have not been investigated for explosion-proof construction in hazardous environments.
Do not use with flammable gases, liquids, or in hazardous environments.
Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

Cautions

The MPS-6 Pressure Sensor is designed to monitor pressure and is not a safety measure to prevent accidents.
The compatibility of the sensor is the responsibility of the designer of the system and specifications.

Operating Environment

- Parker / Convum Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

Operations

- Dedicate a power supply of 10.8 to 30VDC to the sensor and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
- A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.
- Verify the operating media is compatible with the specified sensor. Check the chemical make-up, operating temperatures, and maximum pressure ranges of the system before installing.
- Installation of air dryer system is recommended to remove moisture.

Installation

- Never insert an object into the pressure port other than an appropriate fluid connector.
- Avoid short-circuiting the sensor. Connect the brown lead to V+ and blue lead to 0V.
- Do not connect the output lead wires (black / white) to the power supply.
- Outputs not being used should be trimmed and insulated.

Trimmer Adjustment

Rotate the potentiometer trimmer to increase or decrease pressure switch point output. Excessive force or exceeding the limits of the trimmers may cause damage.
Dimensions

N, R, G
1/8" Male, M5 Female, M8, 4-Pin

T6
Tube Stud, M8, 4-Pin

Accessories

Cables

CB-M8-4P-2M, Female to Open Lead

CB-M8-4P-M12-2M, M8 Female to M12 Male

CB-M8-4P-5M, Female to Open Lead

CB-M8-4P-M8-2M, M8 Female to M8 Male

CB-M8-4P-5M-90, Female to Open Lead

CB-M8-4P-2E, M8 Female

Housing (AMP) 171822-5

Connector (AMP) 170204-15

Shield

Female Interface
4-Pin, M8

Male Interface
4-Pin, M8

Male Interface
4-Pin, M12

<table>
<thead>
<tr>
<th>Cable Pin</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brown</td>
</tr>
<tr>
<td>2</td>
<td>White</td>
</tr>
<tr>
<td>3</td>
<td>Blue</td>
</tr>
<tr>
<td>4</td>
<td>Black</td>
</tr>
</tbody>
</table>
MPS-7

Features

- One Display with Output Programming Capability for MPS-5, 6, or 8 Analog Sensors
- Displays Pressure and Converts Analog Signal from Remote Sensor to NPN or PNP Open Collector Transistor Output, 30VDC, 125mA
- Compatible with 1 to 4 Remote Sensors
- MPS-71 Response Time Less Than 2.0 Milliseconds
- MPS-74 Response Time Less Than 5 Milliseconds
- CE Marked

Programming Options

<table>
<thead>
<tr>
<th></th>
<th>MPS-71</th>
<th>MPS-74</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outputs Change N.O. / N.C.</td>
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<td>✓</td>
</tr>
<tr>
<td>Units of Measure change</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>EZY Mode</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Hysteresis Mode</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Window Comparator Mode</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Auto Teach Mode</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Auto Surveillance Mode</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Display Refresh Settings</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Output Response Time</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Display Peak / Bottom Difference Value</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Special Display Features</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Lockout Option</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Peak Value at a Touch</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Bottom Value at a Touch</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Zero Reset</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Red / Green LED Display Options</td>
<td>✓</td>
<td></td>
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<tr>
<td>Peak Surveillance Mode</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Energy Savings Mode</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Scan Mode</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Password Lockout</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error Output Mode</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Setting of Decimal Point</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mounting Bracket Included with Sensors.
MPS-7 Ordering Numbers

<table>
<thead>
<tr>
<th>Number of Remote Sensors</th>
<th>Outputs per Remote Sensor</th>
<th>Output Circuit</th>
<th>Electrical Connector</th>
<th>Part Number**</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Remote Sensor</td>
<td>2</td>
<td>PNP Sourcing</td>
<td>4 Pin, M8</td>
<td>MPS-71E-PC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sinking</td>
<td></td>
<td>MPS-71E-NC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PNP Sourcing</td>
<td>2M Lead Wire</td>
<td>MPS-71E-PG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sinking</td>
<td></td>
<td>MPS-71E-NG</td>
</tr>
<tr>
<td>4 Remote Sensors</td>
<td>1</td>
<td>PNP Sourcing</td>
<td>2M Lead Wire</td>
<td>MPS-74E-PG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sinking</td>
<td></td>
<td>MPS-74E-NG</td>
</tr>
</tbody>
</table>

** Mounting Bracket Included

Note: To connect MPS-7 Series Remote Panel Display to MPS-5 or MPS-6 Series Analog Sensors, use M8 to AMP Connector Cable CB-M8-4P-2E.

Note: To connect MPS-7 Series Remote Panel Display to MPS-8 Series Analog Sensors, order MPS-8 Sen.

Specifications

<table>
<thead>
<tr>
<th>Remote Pressure Range</th>
<th>Vacuum (V)</th>
<th>Positive (P)</th>
<th>Compound (R)</th>
<th>Low (L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units of Measure Display Resolution</td>
<td>bar: 0.001</td>
<td>bar: 0.01</td>
<td>bar: 0.01</td>
<td>bar: 0.001</td>
</tr>
<tr>
<td></td>
<td>kPa: 0.1</td>
<td>MPa: 0.001</td>
<td>kPa: 1</td>
<td>kPa: 0.1</td>
</tr>
<tr>
<td></td>
<td>mmHg: 1</td>
<td>kgf/cm²: 0.01</td>
<td>kgf/cm²: 0.01</td>
<td>kgf/cm²: 0.001</td>
</tr>
<tr>
<td></td>
<td>inHg: 0.1</td>
<td>PSI: 0.1</td>
<td>PSI: 0.1</td>
<td>PSI: 0.1</td>
</tr>
</tbody>
</table>

Proof Pressure: See Remote Sensor Specifications

Operating Temperature: 32 to 122°F (0 to 50°C)

Storage Temperature: 14 to 140°F (-10 to 60°C)

Humidity: 35 to 85% RH

Electrical Connection: (G) Grommet Open Lead, (C) M8

Power Supply: 10.8 to 30VDC, Ripple (P-P) 10% Max., Reverse Voltage Protection

Display: MPS-71: 3-Digit, 7-Segment LED, MPS-74: 4-Digit, 7-Segment LED

Display Refresh: MPS-71: 0.1 to 3.0 sec. (Factory set at 0.1), MPS-74: 0.2 Fixed

Circuit: NPN (Sinking), PNP (Sourcing) Open Collector Transistor, 30VDC, 125mA

74 - 1 Switch Output
71 - 2 Switch Outputs: Output Signals, NPN or PNP, LED Indicator

Response Time: MPS-71 <2ms, MPS-74 <5ms

Repeatability: ± 0.2% F.S.

Thermal Error: 1% over ±25°C (77°F) Temperature Change: Range 32 to 122°F (0 to 50°C)

General Protection: IP40, CE Marked

Current Consumption: MPS-71 <45mA, MPS-74 <75mA

Vibration Resistance: 10 to 55Hz, 1.5mm, XYZ, 2 hrs.

Shock Resistance: 10 G, XYZ

Material: Body: Polycarbonate

Mass: MPS-71: .90 oz. (25g), MPS-74: 1.0 oz. (30g)
MPS-71 Open Collector
Wiring
Pin #  Grommet Lead Only
1 Brown: 24VDC
2 Black: NPN / PNP Open Collector 1
3 Blue: 0VDC
4 White: NPN / PNP Open Collector 2

Sensor Male Pin Out

Internal Circuit

MPS-74 Open Collector
Wiring
Pin #  Grommet Lead Only
Brown: 24VDC
Black: NPN / PNP Open Collector 1
Blue: 0VDC
White: NPN / PNP Open Collector 2
Pink: NPN / PNP Open Collector 3
Orange: NPN / PNP Open Collector 4

Cautions
The MPS-7 Central Display is designed to monitor pressure and is not a safety measure to prevent accidents. The compatibility of the sensor is the responsibility of the designer of the system and specifications.

Operating Environment
• Parker / Convum Sensors have not been investigated for explosion-proof construction in hazardous environments.
• Do not use with flammable gases, liquids, or in hazardous environments.
• Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

Operations
• Dedicate a power supply of 10.8 to 30VDC to the MPS-7 Series and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
• A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.

Error Messages

<table>
<thead>
<tr>
<th>Display</th>
<th>Description</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Err</td>
<td>Zero Reset Error</td>
<td>Reset Zero Below 3% of F.S.</td>
</tr>
<tr>
<td>PErr</td>
<td>Peak Value Error</td>
<td>Check Vacuum Source</td>
</tr>
<tr>
<td>Er1</td>
<td>System Error (Internal)</td>
<td>Contact Factory</td>
</tr>
<tr>
<td>CE1</td>
<td>Over current of Output 1</td>
<td>Load current exceeds maximum 125mA.</td>
</tr>
<tr>
<td>CE2</td>
<td>Over current of Output 2</td>
<td></td>
</tr>
<tr>
<td>CE3</td>
<td>Over current of Output 3 (MPS-7A)</td>
<td></td>
</tr>
<tr>
<td>CE4</td>
<td>Over current of Output 4 (MPS-7A)</td>
<td></td>
</tr>
<tr>
<td>FFF</td>
<td>Applied pressure exceeds pressure range</td>
<td>Apply pressures within the rating of the sensor</td>
</tr>
</tbody>
</table>

Installation
• Avoid short-circuiting the MPS-7 Series. Connect the brown lead to V+ and blue lead to 0V.
• Do not connect the output lead wires (black / white) to the power supply.
• Outputs not being used should be trimmed and insulated.
• Install using Panel Mount Bracket or Back Mount Brackets.
See page 82 for Symbol Explanation
MPS74 Series Programming Features

**Multi-Pressure Sensors**

**MPS-7 Display**

1. **Hold**
   - Press \(\downarrow\) 1x

   Output Selection
   - Normally Open / Normally Closed

2. **Press \(\uparrow\) 1x**

   Select Output Mode
   - Hysteresis or Window Comparator
   - Peak Surveillance
   - (Repeat Procedure for Each Channel)

   Hysteresis Mode
   - \(\overline{HYS}\)
   - \(\overline{EnP}\)
   - \(\overline{off}\)

   Window Comparator Mode
   - \(\overline{Low}\)
   - \(\overline{Hi}\)
   - \(\overline{End}\)

   Low Pressure
   - \(\overline{70}\)
   - \(\overline{145}\)

   High Pressure
   - \(\overline{42}\)
   - \(\overline{144}\)

3. **Press \(\uparrow\) 2x**

   Select Remote Pressure
   - \(\overline{-2}\)

   Select Unit of Measure
   - \(\overline{Vacuum}\)
   - \(\overline{Low}\)
   - \(\overline{Standard Pressure}\)
   - \(\overline{Compound Pressure}\)

   Vacuum
   - \(\overline{P}\)
   - \(\overline{-PR}\)
   - \(\overline{-bR}\)
   - \(\overline{-F9}\)
   - \(\overline{-H9}\)
   - \(\overline{-H}\)

   Low Pressure
   - \(\overline{P2}\)
   - \(\overline{PR}\)
   - \(\overline{bR}\)
   - \(\overline{F9}\)
   - \(\overline{H9}\)
   - \(\overline{PS}\)

   Standard Pressure
   - \(\overline{P3}\)
   - \(\overline{PR}\)
   - \(\overline{bR}\)
   - \(\overline{F9}\)
   - \(\overline{H9}\)
   - \(\overline{PS}\)

   Compound Pressure
   - \(\overline{P4}\)
   - \(\overline{PR}\)
   - \(\overline{bR}\)
   - \(\overline{F9}\)
   - \(\overline{H9}\)
   - \(\overline{PS}\)

   \(\overline{Off}\)
   - \(\overline{End}\)

4. **Press \(\uparrow\) 3x**

   Energy Saving Mode
   - \(\overline{SRwE}\)
   - \(\overline{on}\)

   Digital IN Mode (Remote Zero Reset)
   - \(\overline{Opt}\)
   - \(\overline{d\ in\ dch}\)

   \(\overline{End}\)

5. **Press \(\uparrow\) and Hold 3 Seconds**

   Scan Mode
   - 3 Second Intervals
   - \(\overline{3\ Scan}\)

6. **Hold \(\downarrow\) Press \(\uparrow\) 1x**

   Lock

   Unlock
Accessories

Cables (Applicable to MPS-71E Display Units Only)

CB-M8-4P-2M, Female to Open Lead

CB-M8-4P-M12-2M, M8 Female to M12 Male

CB-M8-4P-5M, Female to Open Lead

CB-M8-4P-M8-2M, M8 Female to M8 Male

CB-M8-4P-5M-90, Female to Open Lead

CB-M8-4P-2E, M8 Female

Housing

Connector (AMP) 171822-5

Shield

Connector (AMP) 170204-15

5 - N/A or Not Used
4 - White
3 - Black
2 - Blue
1 - Brown

Female Interface
4-Pin, M8

Male Interface
4-Pin, M8

Male Interface
4-Pin, M12

Cable Pin Color
1 - Brown
2 - White
3 - Blue
4 - Black
Accessories

MPS-ACCH4
Panel Mounting Bracket for MPS-71

MPS-ACCH5
Panel Mounting Bracket for MPS-74
### MPS-8

#### Features

- **Pressure Ranges:**
  - Vacuum Pressure: 0 to -30 inHg
  - Compound: -14.7 to 72.5 PSI

- **Sensor Outputs:**
  - 1 NPN / PNP Open Collector Transistor Output, 30VDC, 125mA
  - 1 Analog Output, 1 to 5VDC

- **Switch Point 2/3 Trimmer Adjustment**
- **Fixed Hysteresis 2%**
- **10mm Wide**
- **Compatible with MPS-7 Display**
- **CE Marked**
- **Air and Non-Corrosive Gases**

#### MPS-8 Programming Options

<table>
<thead>
<tr>
<th>Feature</th>
<th>MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Outputs</td>
<td>✔</td>
</tr>
<tr>
<td>Units of Measure change</td>
<td></td>
</tr>
<tr>
<td>EZY Mode</td>
<td></td>
</tr>
<tr>
<td>Hysteresis Mode</td>
<td>✔</td>
</tr>
<tr>
<td>Window Comparator Mode</td>
<td></td>
</tr>
<tr>
<td>Auto Teach Mode</td>
<td></td>
</tr>
<tr>
<td>Auto Surveillance Mode</td>
<td></td>
</tr>
<tr>
<td>Display Refresh Settings</td>
<td></td>
</tr>
<tr>
<td>Output Response Time</td>
<td></td>
</tr>
<tr>
<td>Display Peak / Bottom Difference Value</td>
<td></td>
</tr>
<tr>
<td>Special Display Features</td>
<td></td>
</tr>
<tr>
<td>Lockout Option</td>
<td></td>
</tr>
<tr>
<td>Peak Value at a Touch</td>
<td></td>
</tr>
<tr>
<td>Bottom Value at a Touch</td>
<td></td>
</tr>
<tr>
<td>Zero Reset</td>
<td></td>
</tr>
<tr>
<td>Red / Green LED Display Options</td>
<td></td>
</tr>
<tr>
<td>Peak Surveillance Mode</td>
<td></td>
</tr>
<tr>
<td>Energy Savings Mode</td>
<td></td>
</tr>
<tr>
<td>Scan Mode</td>
<td></td>
</tr>
<tr>
<td>Password Lockout</td>
<td></td>
</tr>
<tr>
<td>Error Output Mode</td>
<td></td>
</tr>
<tr>
<td>Setting of Decimal Point</td>
<td></td>
</tr>
</tbody>
</table>
MPS-8 Ordering Numbers

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Port Size</th>
<th>Output Circuit</th>
<th>Electrical Connector</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to -30 inHg</td>
<td>M5 Bottom Swivel Male</td>
<td>PNP Sourcing</td>
<td>4 Pin, M8</td>
<td>MPS-V8U-PG</td>
</tr>
<tr>
<td></td>
<td>M5 Bottom Swivel Male</td>
<td>NPN Sinking</td>
<td></td>
<td>MPS-V8U-NG</td>
</tr>
<tr>
<td></td>
<td>M5 Bottom Swivel Male</td>
<td>1-5VDC Analog</td>
<td>2m grommet,</td>
<td>MPS-V8U-A GE</td>
</tr>
<tr>
<td></td>
<td>M5 Bottom Swivel Male</td>
<td>1-5VDC Analog</td>
<td>2m grommet,</td>
<td>MPS-V8T-A GE</td>
</tr>
<tr>
<td></td>
<td>4mm Tube Stud</td>
<td>PNP Sourcing</td>
<td>4 Pin, M8</td>
<td>MPS-V8T-PG</td>
</tr>
<tr>
<td></td>
<td>4mm Tube Stud</td>
<td>NPN Sinking</td>
<td></td>
<td>MPS-V8T-NG</td>
</tr>
<tr>
<td></td>
<td>4mm Tube Stud</td>
<td>1-5VDC Analog</td>
<td>2m grommet,</td>
<td>MPS-V8T-A GE</td>
</tr>
<tr>
<td>-14.7 to 72.5 PSI</td>
<td>M5 Bottom Swivel Male</td>
<td>1-5VDC Analog</td>
<td>2m grommet,</td>
<td>MPS-R8U-A GE</td>
</tr>
<tr>
<td></td>
<td>4mm Tube Stud</td>
<td>1-5VDC Analog</td>
<td>2m grommet,</td>
<td>MPS-R8T-A GE</td>
</tr>
</tbody>
</table>

* For 2m Grommet Only Connection, cut off GE connector for lead wires

Specifications

<table>
<thead>
<tr>
<th>Media</th>
<th>Air and Non-Corrosive Gases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Port</td>
<td>M5 Female, M5 Male Swivel, 4mm Tube Stud</td>
</tr>
<tr>
<td>Proof Pressure</td>
<td>(V) 72.5 PSI, (R) 116 PSI</td>
</tr>
<tr>
<td>Operating Temp</td>
<td>32 to 122°F (0 to 50°C)</td>
</tr>
<tr>
<td>Storage Temp</td>
<td>14 to 140°F (-10 to 60°C)</td>
</tr>
<tr>
<td>Humidity</td>
<td>35 to 85% RH</td>
</tr>
<tr>
<td>Electrical Conn</td>
<td>(G) Grommet Open Lead; (GE) Clip Type for use with MPS-7 Series</td>
</tr>
<tr>
<td>Power Supply</td>
<td>10.8 to 30VDC, Ripple Vp-p 10% Max., Reverse Voltage Protection</td>
</tr>
<tr>
<td>Switch Output</td>
<td>1 Output, Normally Open, NPN or PNP Open Collector Transistor, 30VDC, 125mA</td>
</tr>
<tr>
<td>Linear Output</td>
<td>Analog Output 1 to 5VDC</td>
</tr>
<tr>
<td>Switch Point Setting</td>
<td>2/3 Trimmer</td>
</tr>
<tr>
<td>Hysteresis</td>
<td>≤ 2% of F.S. Fixed</td>
</tr>
<tr>
<td>Response Time</td>
<td>≤ 1ms</td>
</tr>
<tr>
<td>Repeatability</td>
<td>≤ 0.2% F.S.</td>
</tr>
<tr>
<td>Thermal Error</td>
<td>1% over ±25°C (77°C) Temperature Change: Range 32 to 122°F (0 to 50°C)</td>
</tr>
<tr>
<td>General Protection</td>
<td>IP40, CE Marked, EMC Rating: EN55011 Class B, EN50082-2</td>
</tr>
<tr>
<td>Current Consumption</td>
<td>&lt; 20mA</td>
</tr>
<tr>
<td>Spike Protection</td>
<td>Vp-p 400v, 0.5ms Surge Protection</td>
</tr>
<tr>
<td>Dielectric Strength</td>
<td>1000VAC, 1min.</td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>&gt; 100M ohms at 500VDC</td>
</tr>
<tr>
<td>Vibration Resistance</td>
<td>10 to 55Hz, 1.5mm amplitude, XYZ, 2 hrs.</td>
</tr>
<tr>
<td>Shock Resistance</td>
<td>100 G, XYZ</td>
</tr>
<tr>
<td>Material Body</td>
<td>Polycarbonate</td>
</tr>
<tr>
<td>Mass</td>
<td>0.14 oz. (4g)</td>
</tr>
</tbody>
</table>
**Open Collector Wiring**

Grommet Lead Only
Brown: 24VDC
Blue: 0VDC
Black: NPN / PNP Open Collector

**Analog Wiring**

Grommet Lead Only
Brown: 24VDC
Blue: 0VDC
Black: Analog 1 to 5VDC

---

**Main Circuit**

- **D** Tr ZD (Blue) OV
- **(Black) Out** (N.O.)
- **(Brown) +V**

**LOAD**
Max. 125mA
DC 0.8V to 30V

**LOAD**
Max. 5mA

---

**Internal Circuit**

**NPN Open Collector**

- **(Brown) +V**
- **(Black) Analog 1 to 5V Output**
- **(Blue) OV**

**PNP Open Collector**

- **(Brown) +V**
- **(Black) Out 1 (N.O.)**
- **(Blue) OV**

---

**Cautions**

The MPS-8 Pressure Sensor is designed to monitor pressure and is not a safety measure to prevent accidents. The compatibility of the sensor is the responsibility of the designer of the system and specifications.

**Operating Environment**

- Parker / Convum Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

**Operations**

- Dedicate a power supply of 10.8 to 30VDC to the sensor and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
- A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.
- Verify the operating media is compatible with the specified sensor. Check the chemical make-up, operating temperatures, and maximum pressure ranges of the system before installing.
- Installation of air dryer system is recommended to remove moisture.

**Installation**

- Never insert an object into the pressure port other than an appropriate fluid connector.
- Avoid short-circuiting the sensor. Connect the brown lead to V+ and blue lead to 0V.
- Do not connect the output lead wires (black / white) to the power supply.
- Outputs not being used should be trimmed and insulated.
- Install using the metal mounting base.
Dimensions

MPS-8T
4mm Tube Stud

Dimensions

MPS-8U
M5 Male Swivel, Grommet

2m Grommet
MPS-7 Connector
MPS-9

Features

- Pressure Ranges:
  - Vacuum Pressure .............. 0 to -30 inHg
  - Compound ...................... -14.7 to 72.5 PSI

- Switch Output:
  - 1 NPN or PNP Open Collector 30VDC, 125mA Switch Point
  - 1 Analog Output, 1 to 5VDC

- Switch Point Programming
- Adjustable Hysteresis
- Output Response Time Less Than 1.5 Milliseconds
- CE Marked
- Air and Non-Corrosive Gases

MPS-9 Programming Options

<table>
<thead>
<tr>
<th>Outputs Change N.O. / N.C.</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units of Measure change</td>
<td>✓</td>
</tr>
<tr>
<td>EZY Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Hysteresis Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Window Comparator Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Auto Teach Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Auto Surveillance Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Display Refresh Settings</td>
<td>✓</td>
</tr>
<tr>
<td>Output Response Time</td>
<td>✓</td>
</tr>
<tr>
<td>Display Peak / Bottom Difference Value</td>
<td>✓</td>
</tr>
<tr>
<td>Special Display Features</td>
<td>✓</td>
</tr>
<tr>
<td>Lockout Option</td>
<td>✓</td>
</tr>
<tr>
<td>Peak Value at a Touch</td>
<td>✓</td>
</tr>
<tr>
<td>Bottom Value at a Touch</td>
<td>✓</td>
</tr>
<tr>
<td>Zero Reset</td>
<td>✓</td>
</tr>
<tr>
<td>Red / Green LED Display Options</td>
<td>✓</td>
</tr>
<tr>
<td>Peak Surveillance Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Energy Savings Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Scan Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Password Lockout</td>
<td>✓</td>
</tr>
<tr>
<td>Error Output Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Setting of Decimal Point</td>
<td>✓</td>
</tr>
</tbody>
</table>
MPS-9 Ordering Numbers

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Port Size</th>
<th>Output Circuit</th>
<th>Electrical Connector</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to -30 inHg</td>
<td>M5</td>
<td>PNP Sourcing with 1-5VDC analog</td>
<td>2m grommet</td>
<td>MPS-V9M-PGA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sinking with 1-5VDC analog</td>
<td></td>
<td>MPS-V9M-NGA</td>
</tr>
<tr>
<td>-14.7 to 72.5 PSI</td>
<td></td>
<td>PNP Sourcing with 1-5VDC analog</td>
<td></td>
<td>MPS-R9M-PGA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPN Sinking with 1-5VDC analog</td>
<td></td>
<td>MPS-R9M-NGA</td>
</tr>
</tbody>
</table>

Specifications

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Vacuum (V)</th>
<th>Compound (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units of Measure</td>
<td>bar: 0.001</td>
<td>bar: 0.01</td>
</tr>
<tr>
<td>Display Resolution</td>
<td>kPa: 0.1</td>
<td>kPa: 1</td>
</tr>
<tr>
<td></td>
<td>mmHg: 1</td>
<td>kgf/cm²: 0.01</td>
</tr>
<tr>
<td></td>
<td>inHg: 0.1</td>
<td>PSI: 0.1</td>
</tr>
</tbody>
</table>

- **Media**: Air and Non-Corrosive Gases
- **Pressure Port**: M5 Female
- **Proof Pressure**: (V) 72.5 PSI, (R) 116 PSI
- **Operating Temperature**: 32 to 122°F (0 to 50°C)
- **Storage Temperature**: 14 to 140°F (-10 to 60°C)
- **Humidity**: 35 to 85% RH
- **Electrical Connection**: 2m Grommet Open Lead
- **Power Supply**: 10.8 to 30VDC, Ripple Vp-p 10% Max., Reverse Voltage Protection
- **Display**: 3-Digit, 7-Segment LED
- **Display Refresh**: 0.2 sec. Fixed
- **Output Circuit**: NPN (Sinking) or PNP (Sourcing) Open Collector Transistor, 30VDC, 125mA
- **Linear Outputs**: Analog Output 1 to 5VDC
- **Switch Outputs**: 1 Switch Output, Normally Open, NPN or PNP, LED Indicator
- **Output Mode**: Hysteresis: 0 to 100% of Switch Point Comparative: 2 limits selectable over full range
- **Output Response Time**: < 1.5ms
- **Repeatability**: ± 0.2% F.S.
- **Thermal Error**: 1% over ±25°C (77°F) Temperature Change: Range 32 to 122°F (0 to 50°C)
- **General Protection**: IP65, CE Marked, EMC Rating: EN55011 Class B, EN50082-2
- **Current Consumption**: < 60mA
- **Vibration Resistance**: 10 to 55Hz, 1.5mm, XYZ, 2 hrs.
- **Shock Resistance**: 10 G, XYZ
- **Material**: Body: Polycarbonate; Pressure Port: Anodized Aluminum
- **Mass**: 0.53 oz. (15g)
### Open Collector and Analog Wiring

**Grommet Lead Only**
- Brown: 24VDC
- Blue: 0VDC
- Black: NPN / PNP Open Collector Output 1
- White: Analog 1 to 5VDC

---

### Internal Circuit

**NPN Open Collector with Analog Option**

Subject to internal voltage drop.

**PNP Open Collector with Analog Option**

Subject to internal voltage drop.

---

### Cautions

The MPS-9 Pressure Sensor is designed to monitor pressure and is not a safety measure to prevent accidents.

The compatibility of the sensor is the responsibility of the designer of the system and specifications.

### Operating Environment

- Parker / Convum Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

### Operations

- Dedicate a power supply of 10.8 to 30VDC to the sensor and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
- A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.
- Verify the operating media is compatible with the specified sensor. Check the chemical make-up, operating temperatures, and maximum pressure ranges of the system before installing.
- Installation of air dryer system is recommended to remove moisture.

---

### Error Messages

<table>
<thead>
<tr>
<th>Display</th>
<th>Description</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Err</td>
<td>Zero Reset Error</td>
<td>Reset Zero Below 3% of F.S.</td>
</tr>
<tr>
<td>Er1</td>
<td>System Error (Internal)</td>
<td>Contact Factory</td>
</tr>
<tr>
<td>CE1</td>
<td>Over current of Output 1</td>
<td>Load current exceeds maximum 125mA.</td>
</tr>
<tr>
<td>FFF</td>
<td>Applied pressure exceeds pressure range</td>
<td>Apply pressures within the rating of the sensor</td>
</tr>
<tr>
<td>–FF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Dimensions

M5 Female, Grommet

Programming Features

See page 82 for Symbol Explanation

1. Press (1x) SET Will Display for 1 Second
   Set will Display for 1 Second

2. Press for 3 Seconds Hysteresis Setting
   Will Display for 1 Second

3. Lock
   Unlock

4. Press for 3 Seconds Zero Reset
   Power Supply Off

5. Selecting Units of Measure
   Will Display for 3 Seconds

Press for 3 Seconds

Negative Pressure

Compound Pressure

Press when Powering Up

-PA kPa
-RA bar
-H9 mmHg
-

-PSI

End

Power Supply Off

Wait 5 Seconds

Reset

Negative Pressure

Compound Pressure

End

Positive Pressure

Zero

Positive Pressure

End
Features

• Stainless Steel or Ceramic Diaphragms
• UL Listed and CE Marked
• Pressure Ranges
  -14.7 to 250 PSI .................. 0 to 3000 PSI
  0 to 1000 PSI .................. 0 to 5000 PSI
  0 to 2000 PSI .................. 0 to 9000 PSI
• Sensor Outputs
  2 PNP Open Collector Transistor
  Output, 30 VDC, 100mA
  Optional Additional Current, 4 to 20mA
• Selectable Units of Measure
  PSI, bar, Mpa
• Output Response Time Less than 5.0ms
• Error Message
• Polarity Protected
• Short Circuit Protected
• 4 Digit LED
• Display Swivels 290°

SCPSD Programming Options

<table>
<thead>
<tr>
<th>Outputs Change N.O. / N.C.</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units of Measure change</td>
<td>✓</td>
</tr>
<tr>
<td>EZY Mode</td>
<td></td>
</tr>
<tr>
<td>Hysteresis Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Window Comparator Mode</td>
<td></td>
</tr>
<tr>
<td>Auto Teach Mode</td>
<td></td>
</tr>
<tr>
<td>Auto Surveillance Mode</td>
<td></td>
</tr>
<tr>
<td>Display Refresh Settings</td>
<td>✓</td>
</tr>
<tr>
<td>Output Response Time</td>
<td>✓</td>
</tr>
<tr>
<td>Display Peak / Bottom Difference Value</td>
<td>✓</td>
</tr>
<tr>
<td>Special Display Features</td>
<td></td>
</tr>
<tr>
<td>Lockout Option</td>
<td></td>
</tr>
<tr>
<td>Peak Value at a Touch</td>
<td></td>
</tr>
<tr>
<td>Bottom Value at a Touch</td>
<td></td>
</tr>
<tr>
<td>Zero Reset</td>
<td>✓</td>
</tr>
<tr>
<td>Red / Green LED Display Options</td>
<td></td>
</tr>
<tr>
<td>Peak Surveillance Mode</td>
<td></td>
</tr>
<tr>
<td>Energy Savings Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Scan Mode</td>
<td></td>
</tr>
<tr>
<td>Password Lockout</td>
<td>✓</td>
</tr>
<tr>
<td>Error Output Mode</td>
<td>✓</td>
</tr>
<tr>
<td>Setting of Decimal Point</td>
<td>✓</td>
</tr>
</tbody>
</table>
Specifications

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0100</td>
<td>PSI, bar, MPA</td>
<td>-14.7 to 100</td>
<td>360</td>
<td>360</td>
<td>Ceramic</td>
<td>Stainless Steel</td>
<td>100 Million</td>
<td>&lt;10 ms</td>
<td>15 to 30VDC, Class 2</td>
<td>Yes, 2.4 Amp</td>
<td>Open Collector Output</td>
<td>Yes</td>
<td>Yes</td>
<td>&lt;100mA</td>
<td>2 PNP (Sourcing) Open Collector Transistor</td>
<td>0.4…20mA, Programmable, freely scaleable</td>
<td>Hysteresis, Window Comparator</td>
<td>-1.5VDC</td>
<td>1A with 2 Open Collector Outputs, .5A per Output</td>
<td>±0.5% F.S. Typ., ± 1% Max.</td>
<td>±0.5% F.S. Typ., ± 1 Digit</td>
<td>±0.03% F.S. at -4 to 185°F (-20 to 85°C)</td>
<td>Pressure Die-cast Zinc Z 410: Surface-finishing</td>
<td>Polyester</td>
<td>IP 67, EN60529, UL, CE Marked, EMC-EN50082-2 Class B, EN 50081-2</td>
<td>-4 to 185°F (-20 to 85°C)</td>
<td>-4 to 185°F (-20 to 85°C)</td>
<td>-40 to 212°F (-40 to 100°C)</td>
<td>4-Digit, 7-Segment LED, Red, 9mm Height</td>
<td>35Nm</td>
</tr>
</tbody>
</table>
Internal Circuit

M12, 4-Pin, (2) PNP Outputs

![Diagram of M12, 4-Pin, (2) PNP Outputs]

M12, 4-Pin, (1) PNP Output with 4 to 20mA Analog

![Diagram of M12, 4-Pin, (1) PNP Output with 4 to 20mA Analog]

M12, 5-Pin, (2) PNP Outputs with 4 to 20mA Analog

![Diagram of M12, 5-Pin, (2) PNP Outputs with 4 to 20mA Analog]

Note: M12, 5-Pin Female Cable Connector will fit on both M12, 4-Pin and 5-Pin Male Sensor Connector.

Installation

Mechanical:

⚠️ CAUTION: Install and de-install the SCPSD only when there is no pressure present.

Attach the SCPSD to the appropriate process connection. Installation should be undertaken only with a 22mm, across flats spanner. Ensure that the digital display is placed in the best viewing position by using the rotational housing adjustment. Turn the SCPSD manually to the required position. Maximum 90°.

Excessive turning beyond the easily detectable end stop will lead to damage.

The housing can be attached:

- with self-tapping screws into two blind holes at the back of the housing
- with the mounting plate provided
- with cable ties

Electrical:

⚠️ CAUTION: The SCPSD may be installed only by a qualified electrician in accordance with the respective national and international regulations.

Protect the SCPSD from electromagnetic influences and over-voltages.

Optional installation tips which are shown by experience to reduce the influence of interference:

- Use shorter cables
- Avoid short distances between connecting leads and power consuming devices and interference generating electrical and electronic equipment
- Use free running diodes

Avoid static and dynamic over-pressures which exceed the specified overload pressure. Even when the overload pressure is exceeded only for a short time the SCPSD may be damaged. Parker SensoControl diagnostic systems are recommended for measuring pressure peaks exactly.

If there is a danger of excessively high pressure peaks, it is recommended to:

- use an SCPSD with a higher nominal instrument pressure (analog output can then be correspondingly matched)
- install a standard throttling device upstream from the SCPSD

Error Messages

<table>
<thead>
<tr>
<th>Display</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Att</td>
<td>The set value is lower than the other respective parameters. When Enter is activated, the smaller value is matched up.</td>
</tr>
<tr>
<td>Err1</td>
<td>System Error (Internal)</td>
</tr>
<tr>
<td>Err2</td>
<td>Nominal instrument pressure range was exceeded by 10%. Please check system pressure.</td>
</tr>
<tr>
<td>Err3</td>
<td>Nominal instrument pressure range has been exceeded Error in analog electronics. Please check system pressure.</td>
</tr>
</tbody>
</table>
Cables (IP 67 Rated)

CB-M12-4P-2M, Female to Open Lead
CB-M12-5P-2M, Female to Open Lead

Dimensions

Switch Output 1
Switch Output 2 (Also Error Output)

Switch Output 1
Switch Output 2 (Also Error Output)
Parameters Shown in Digital Display

To program switch outputs in menu **S1** (**S1** = output 1) or **S2** (**S2** = output 2), press ▲ and hold, then press ▼ . Pro6 will be displayed for 2 seconds.

**PRS**
This is dedicated to a password. Entry into the programming mode can be secured only when the correct figures have been entered.

**Menu for programming the switch outputs:**

- **S1** = Switch output 1
- **S2** = Switch output 2 (Menu is not active if S2 is being used as an error output)

**Switching point (SP):** upper limiting value / pressure, at which the switch output changes its status.

- **SP1** = Switch output 1; input as pressure value (e.g. 400 bar)
- **SP2** = Switch output 2; input as pressure value (e.g. 430 bar)

**Reverse switching point (rSP):** lower limiting value/pressure at which switch output changes its status.

- **rSP1** = Reverse switching point (rSP1) of switch output 1; input as pressure value (e.g. 390 bar)
- **rSP2** = Reverse switching point (rSP2) of switch output 2; input as pressure value (e.g. 420 bar)

The reverse switching point is always smaller than its respective switching point. If the reverse switching point is set higher than the switching point, the reverse switching point will be set automatically 0.5% of the instrument nominal pressure below the switching point. The warning sign **Att** (attention) will appear, which can be cleared with Enter.

**Options Program (See Next Page)**
**Settings for Options Program**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>oP</strong></td>
<td>Options program</td>
</tr>
<tr>
<td><strong>PA5</strong></td>
<td>Password input&lt;br&gt;0000 = no password&lt;br&gt;Example password 1234 = 1234</td>
</tr>
<tr>
<td><strong>uni</strong></td>
<td>Setting of units:&lt;br&gt;bAr = bar&lt;br&gt;MPa = MPa&lt;br&gt;PSi = PSI</td>
</tr>
<tr>
<td><strong>dIS</strong></td>
<td>Display: Value which will be shown on the digital display in run mode.&lt;br&gt;Act = Actual system pressure&lt;br&gt;Nin = Minimum system pressure; (pressure troughs)&lt;br&gt;NA = Maximum system pressure; (pressure peaks)&lt;br&gt;SP1 = Switch point 1&lt;br&gt;SP2 = Switch point 2&lt;br&gt;OFF = off indication</td>
</tr>
<tr>
<td><strong>AnA</strong></td>
<td>Setting of analog output (see point 4)&lt;br&gt;0-20 = 0-20 mA&lt;br&gt;4-20 = 4-20 mA</td>
</tr>
<tr>
<td><strong>FroN</strong></td>
<td>Calibration of starting value (0 or 4 mA) for the analog output.&lt;br&gt;Settable from 0 to nominal instrument pressure.&lt;br&gt;Example for AnA = 4-20:&lt;br&gt;0000 = at 0 bar the analog output yields 4 mA.&lt;br&gt;The starting value is always smaller than the end value. If the starting value is set greater than the end value, then the starting value will be automatically set 5% of the nominal instrument pressure below that of the end value. The warning sign Att 1 will appear, which can be cleared with the Enter sign.</td>
</tr>
<tr>
<td><strong>to</strong></td>
<td>Calibration of end value (20mA) for the analog output.&lt;br&gt;Settable from 0 up to nominal instrument pressure.&lt;br&gt;0010 = at 10 bar the analogue output yields 20 mA.</td>
</tr>
</tbody>
</table>

**Electrical Test Unit (M12, 5-Pin)**
SCSN-450-PSD

**SCPSD Programming Kit**
SCSD-PRG-KIT

Optical Interface Device that allows read / write and storing of SCPSD configuration data. Kit includes optical interface device, electrical test unit with PC cable (RS232 connector) and software.
Pressure Sensor Cables

Common Part Numbers

<table>
<thead>
<tr>
<th>Item</th>
<th>Connector</th>
<th>Contacts</th>
<th>Length</th>
<th>Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>CB-M8-4P-2M</td>
<td>M8 Female</td>
<td>4</td>
<td>2m</td>
<td>PVC</td>
</tr>
<tr>
<td>CB-M8-4P-5M</td>
<td>M8 Female</td>
<td>4</td>
<td>5m</td>
<td>PUR</td>
</tr>
<tr>
<td>CB-M8-4P-5M-90</td>
<td>M8 Angled Female</td>
<td>4</td>
<td>5m</td>
<td>PUR</td>
</tr>
<tr>
<td>CB-M8-4P-M12-2M</td>
<td>M8 Female to M12 Male</td>
<td>4</td>
<td>2m</td>
<td>PVC</td>
</tr>
<tr>
<td>CB-M8-4P-M8-2M</td>
<td>M8 Female to M8 Male</td>
<td>4</td>
<td>2m</td>
<td>PVC</td>
</tr>
<tr>
<td>CB-M8-4P-2E</td>
<td>M8 Female to MPS-7 Connector</td>
<td>4</td>
<td>2m</td>
<td>PVC</td>
</tr>
<tr>
<td>CB-M12-4P-2M</td>
<td>M12 Female</td>
<td>4</td>
<td>2m</td>
<td>PVC</td>
</tr>
<tr>
<td>CB-M12-5P-2M</td>
<td>M12 Female</td>
<td>5</td>
<td>2m</td>
<td>PVC</td>
</tr>
<tr>
<td>CB-M12-4P-M12-2M</td>
<td>M12 Female to M12 Male</td>
<td>4</td>
<td>2m</td>
<td>PVC</td>
</tr>
<tr>
<td>CB-M12-5P-M12-2M</td>
<td>M12 Female to M12 Male</td>
<td>5</td>
<td>2m</td>
<td>PVC</td>
</tr>
</tbody>
</table>

Features
- M8, M12 Male / Female Connector
- Length: 2m or 5m
- Cover: PVC or PUR
- Connection Type: Swivel Straight or Angled
- IP 67 Swivel Connector
Panel Mounting Kits

<table>
<thead>
<tr>
<th>Description</th>
<th>For Use With</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPS-ACCH1</td>
<td>MPS-3 Stainless Steel</td>
</tr>
<tr>
<td></td>
<td>MPS-4</td>
</tr>
<tr>
<td>MPS-ACCH7</td>
<td>MPS-3</td>
</tr>
<tr>
<td></td>
<td>MPS-31</td>
</tr>
<tr>
<td>MPS-ACCH4</td>
<td>MPS-71</td>
</tr>
<tr>
<td>MPS-ACCH5</td>
<td>MPS-74</td>
</tr>
</tbody>
</table>

Panel Knockout Dimensions

MPS-ACCH1, MPS-ACCH7, MPS-ACCH4

MPS-ACCH5
Programming Symbols Legend

- **Output 1**: Output 1
- **Output 2**: Output 2
- **Output 3**: Output 3
- **Output 4**: Output 4
- **Output Normally Closed (Passing)**: Output Normally Closed (Passing)
- **Output Normally Open (Non-Passing)**: Output Normally Open (Non-Passing)
- **Pressure Units (Pascal)**: Pressure Units (Pascal)
- **Pressure Units (Bar)**: Pressure Units (Bar)
- **Pressure Units (mm.Hg)**: Pressure Units (mm.Hg)
- **Pressure Units (in.Hg)**: Pressure Units (in.Hg)
- **Pressure Units (kgf/cm²)**: Pressure Units (kgf/cm²)
- **Pressure Units (PSI)**: Pressure Units (PSI)
- **Easy Mode**: Easy Mode. Sensor will only allow changes to set points
- **Off**: Off, or Energy Saving Display; reduces current consumption of Sensor
- **On**: On
- **Hysteresis Mode**: Select Hysteresis Mode and Hysteresis Range
- **Windows Comparative Mode**: Select High and Low Set Point
- **Hysteresis Mode Set Point, Output 1**: Hysteresis Mode Set Point, Output 1
- **Hysteresis Mode Set Point, Output 2**: Hysteresis Mode Set Point, Output 2
- **Hysteresis Mode, Hysteresis Range Output 1**: Hysteresis Mode, Hysteresis Range Output 1
- **Hysteresis Mode, Hysteresis Range Output 2**: Hysteresis Mode, Hysteresis Range Output 2
- **Windows Comparative Mode, Low Set Point Output 1**: Windows Comparative Mode, Low Set Point Output 1
- **Windows Comparative Mode, High Set Point Output 1**: Windows Comparative Mode, High Set Point Output 1
- **Windows Comparative Mode, Low Set Point Output 2**: Windows Comparative Mode, Low Set Point Output 2
- **Windows Comparative Mode, High Set Point Output 2**: Windows Comparative Mode, High Set Point Output 2
- **Automatic Teach Mode**: Automatically sets Outputs 1 and 2 while cycling system. Output 1 set to Hysteresis Mode, Output 2 set to Window Comparative Mode
- **Auto Surveillance Mode On/Off**: Auto Surveillance Mode On/Off. Set after Automatic Teach
- **Auto Surveillance based on cycles times**: Auto Surveillance based on cycles times. Provides output if Peak Value is not obtained in a specified number of cycles. (1-100)
- **Display Refresh Setting**: Display Refresh Setting. Display updates from .1 to 1 sec. .3 sec factory set. Does not affect Sensor Response Time
- **Output Response Time**: Output Response Time. Multiplies the sensor response time. Increases sensor response time. (Anti-chatter Mode)
- **Display Function**: Displays Pressure Value for a specific time period and then updates for next time period
- **Time Range for Pressure Value Display Mode**: Time Range for Pressure Value Display Mode
- **Value Setting for Pressure Value Display Mode**: Value Setting for Pressure Value Display Mode
- **Display Peak Value over selected time range**: Display Peak Value over selected time range
- **Display Bottom Value over selected time range**: Display Bottom Value over selected time range
- **Display Difference over selected time range**: Display Difference over selected time range
- **Display Function Mode On/Off**: Display Function Mode On/Off
- **Display Function**: Select display types
- **Display blinks pressure when Output 1 is Passing Normal when Output 1 is Non-Passing**: Display blinks pressure when Output 1 is Passing Normal when Output 1 is Non-Passing
- **Display blinks pressure when Output 2 is Passing Normal when Output 2 is Non-Passing**: Display blinks pressure when Output 2 is Passing Normal when Output 2 is Non-Passing
- **Display shows pressure when Output 1 is Passing Displays special screen when Non-Passing**: Display shows pressure when Output 1 is Passing Displays special screen when Non-Passing
- **Display shows pressure when Output 2 is Passing Displays special screen when Non-Passing**: Display shows pressure when Output 2 is Passing Displays special screen when Non-Passing
- **Select Switch Output setting for MPS-31**: Select Switch Output setting for MPS-31
- **Color Setting for MPS-31**: Color Setting for MPS-31
- **MPS-4, Port Reference Selection**: MPS-4, Port Reference Selection
- **MPS-4, Display change of B port to A port static**: MPS-4, Display change of B port to A port static
- **MPS-4, Display change of A port to B port static**: MPS-4, Display change of A port to B port static
- **MPS-4, Display change of A port to change of B port**: MPS-4, Display change of A port to change of B port
- **MPS-7, Pressure Range Selection Vacuum**: MPS-7, Pressure Range Selection Vacuum
- **MPS-7, Pressure Range Selection Low Pressure**: MPS-7, Pressure Range Selection Low Pressure
- **MPS-7, Pressure Range Selection Positive Pressure**: MPS-7, Pressure Range Selection Positive Pressure
- **MPS-7, Pressure Range Selection Compound Pressure**: MPS-7, Pressure Range Selection Compound Pressure
- **MPS-7, Energy Savings Mode, reduces current consumption**: MPS-7, Energy Savings Mode, reduces current consumption
- **MPS-7, Peak Surveillance**: MPS-7, Peak Surveillance
- **Digital Input**: Digital Input
- **Digital Channel**: Digital Channel
- **MPS-7 Scan Mode**: MPS-7 Scan Mode. Sensor scans and displays each channel for 3 sec.
- **Locked**: Locked. Sensor programs cannot be changed
- **Unlocked**: Unlocked. Sensor programs can be changed
- **Zero Reset**: Zero Reset. Sets Sensors reference point to current atmospheric conditions
__A__

Accuracy
The PERCENTAGE difference between the true value and that indicated by an instrument is the measure of the instrument’s accuracy. It is expressed as a percentage of the full-scale value of the reading according to the type of instrument.

Analog Output
An analog output provides an output voltage that is proportional and linear to the pressure measured by the sensor. This output signal provides continuous feedback to the analog card of the PLC.

__B__

Automatic Surveillance Mode
Sensor automatically surveys vacuum cycle to determine if the Peak Vacuum Level was attained after H-1. Output 2 changes state if the Peak Vacuum Level of the system is not reached over a consecutive number of surveillance’s programmed. Up to 100 consecutive cycles can be programmed.

Peak Vacuum Level and number of surveillance’s are programmed at the end of the Automatic Teach Mode.

Automatic Teach Mode
Programming feature that automatically sets switch points during the vacuum cycle.

Sets Output 1 to Hysteresis Mode and Output 2 to Window Comparator Mode. 60% of maximum vacuum level displayed during setup operation of the system.

Output 1: Hysteresis Mode
\[
H-1 = (\text{Peak Vacuum Level} - \text{Bottom Vacuum Level}) \\
x 0.6 + \text{Bottom Vacuum Level}
\]

\[
h-1 = (H-1) \times 0.05
\]

Output 2: Window Comparator Mode
\[
A-2 = (H-1) \times 0.8
\]

\[
B-2 = \text{Peak Vacuum Level} \times 0.8
\]

__C__

Cable Connector Type
4-Pin, M8 cable connector referred to as PICO or Micro connector. 4-Pin, 5-Pin, M12 cable connector referred to as Mini connector.

Channel Selection
The MPS-74 display allows the user to select up to 4 separate channels to monitor remote sensors.

__D__

Display Resolution
Resolution is 1/1024. The least possible measurable unit to display on the display. This will vary with the units of measure and is adjustable on some sensors.

Shown below are the different unit increments displayed for different pressures.

<table>
<thead>
<tr>
<th>Compound</th>
<th>Low Pressure</th>
<th>Vacuum</th>
<th>Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>bar: 0.01</td>
<td>bar: 0.001</td>
<td>bar: 0.01</td>
<td>bar: 0.01</td>
</tr>
<tr>
<td>kPa: 1</td>
<td>kPa: 0.1</td>
<td>mPa: 0.001</td>
<td></td>
</tr>
<tr>
<td>kgf/cm²: 0.01</td>
<td>kgf/cm²: 0.001</td>
<td>mmHg: 1</td>
<td></td>
</tr>
<tr>
<td>PSI: 0.1</td>
<td>PSI: 0.1</td>
<td>kgf/cm²: 0.01</td>
<td></td>
</tr>
</tbody>
</table>

__E__

Dielectric Strength
Sensors ability to withstand excess voltages.

__F__

Full Scale
Abbreviated as F.S. this is the operating pressure scale of the sensor.

__G__

Grommet Type
Electrical lead from the sensor.
Hysteresis
The difference in pressure below the switch point pressure which controls the ON-OFF status of the output signal. (See Output Modes)

Input Impedance
The source of the electrical response of the sensing element expressed in ohms.

IP Ratings
IP40 - Protected against solid foreign objects of 0.04" (1mm) and greater.
Non-protected against the penetration of liquids.
IP65 - Dust tight.
Protected against water jets.
IP67 - Dust tight.
Protected against the effects of temporary immersion water.

Insulation Resistance
Resistance between electrical circuit and the body, expressed in ohms at a voltage rating.

Internal Voltage Drop
Caused by the resistance of an electrical part in an electronic circuit. Example is a 2-wire pneumatic pressure switch.

LED
Electronic Display Technology

Load Current
Amount of current flowing through the sensor once the output is activated.

Lock-Out Mode
Prevents accidental changes to the sensor settings.

Maximum Operating Pressure
Maximum operating pressure the sensor is rated for. Exceeding this pressure could damage the unit and will display FFF.

Noise Resistance
Amount of electrical noise in the surrounding environment that could affect the sensor performance.

NPN Pressure Sensor Output
NPN type open collector transistor outputs are solid state circuits that provide sinking output capabilities. When

the transistor is on, the current for the load flows into the transistor. This output “sinks” toward 0VDC, 0mA.

NPN Output (With Analog Output)

ON / OFF Output
The electrical state of the output signal.

Open Collector Transistor
Output circuit that sinks (NPN) or sources (PNP) at the pressure switch-point setting.

Operating Humidity Range
Humidity range for proper operation of equipment.

Operating Indicator Light
LED indicator is on when ON-OFF output is ON.

Operating Pressure Range
The pressure range the unit was designed to operate in.

Operating Temperature Range
Acceptable temperature range for the specifications listed in the catalog.

Operating Voltage
Voltage range for normal operation.

Output Modes
Switch Point with Hysteresis Settings
This output mode provides one switch point (H) and a hysteresis pressure adjustment. When the switch point pressure is achieved, the output (NPN / PNP) is activated if normally open or deactivated if normally closed. Typically, this mode is used for pressure confirmation. For positive pressure applications, this operating mode does not provide any output or alarms beyond the switch point in the case of excessive pressures.
The hysteresis setting \((h)\) is the difference in pressure below the switch point pressure which controls the on / off status of the output.

**Window Comparator Setting**

This output mode provides two switch points \((A)\) and \((b)\) that control the output signals (NPN / PNP) between the two pressures. This creates a "window" that the sensor can provide an output and is sometimes referred to as "high / low" setting. The window comparator Mode provides an output or alarm when pressures exceed the upper limit.

**Output Response Time**

Response time of the output signal after the pressure switch point is achieved. Measured in milliseconds.

**Output Settings**

Maximize the difference between the “Part -Off” and “Part-On” vacuum levels by selecting the appropriate tubing I.D. and length from the generator to the cup. The part present output must be set between the “Part -Off” and “Part-On” vacuum levels. If the difference between the “Part -Off” and “Part-On” vacuum levels is minimal, remote sensing at the suction cup is recommended with MPS-6 or MPS-8 sensors.

For most material handling applications, the part present output can be set near the upper limit of the output range. For high speed pick and place applications, the part present output can be set near the lower limit of the output range. This reduces the output response time of the sensor. Output response and accuracy are critical to the overall performance of the system. Remote sensors are recommended here.

**Peak Surveillance**

Maintenance function that can monitor peak values of the system. During the pressure cycle, if peak pressure \((P-1)\) is not attained after set point \((H-1)\) is attained, an error code \(PErr\) is displayed on the sensor.

**PNP Pressure Sensor Output**

PNP type open collector transistor outputs are solid state circuits that provide sourcing output capabilities. When the transistor is on, the current for the load flows out of the transistor. This output "sources" toward 24VDC, 125mA.

**Reverse Voltage Protection**

Diode circuitry to prevent "cross-wire" damage during installation of the sensor.
**Setpoints**
The number of the ON-OFF output signals in one product. Product with 2 setting points means 2 output type.

**Shock Resistance**
The amount of vibration the sensor can withstand without affecting performance.

**Silicon Diaphragm**
This type of sensor is used for air and non-corrosive gas applications.

**Stainless Steel Diaphragm**
This type of sensor is used for liquids, non-corrosive to 316L or 630 stainless steel.

**Switch Output**
This is a reference to a digital or NPN / PNP open collector transistor output from the sensor. The technology is binary logic.

**Wetted Parts**
Sensor body parts that are in contact with process-type fluids are referred to as wetted parts.

**Zero Reset**
The sensor technology is PSIA. Periodically, the sensor's atmospheric reference may need to be adjusted manually or automatically as a result of small changes in the atmospheric reference point.

**Thermal Error**
Temperature characteristics vary with applications. The performance of the sensor can be affected by changes in ambient temperatures. The sensor rating is represented by a percentage of the F.S.