



## Section C

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Sensors



## Pressure Unit Table

Units	Units								
	Pa	bar	PSI	kgf/cm <sup>2</sup>	atm	mm H <sub>2</sub> O	in H <sub>2</sub> O	mm Hg	in Hg
Pa	1	10 <sup>-5</sup>	0.145x10 <sup>-3</sup>	1.0197x10 <sup>-5</sup>	0.987x10 <sup>-5</sup>	0.10197	0.402x10 <sup>-2</sup>	0.750x10 <sup>-2</sup>	0.295x10 <sup>-3</sup>
bar	10 <sup>5</sup>	1	14.5038	1.01972	0.98692	10197.16	401.46	750.062	29.53
PSI	6894.76	0.06895	1	0.07031	0.6805	703.07	27.68	51.715	2.036
kgf/cm <sup>2</sup>	98066.5	0.9807	14.2233	1	0.96784	10000	393.70	735.56	28.96
atm	1.013x10 <sup>-5</sup>	1.01325	14.696	1.03323	1	10332	406.77	760	29.92
mm H <sub>2</sub> O	9.807	0.098x10 <sup>-3</sup>	0.00142	0.0001	0.097x10 <sup>-3</sup>	1	0.0394	0.07355	0.29x10 <sup>-2</sup>
in H <sub>2</sub> O	249.09	0.249x10 <sup>-2</sup>	0.0361	0.00254	0.246x10 <sup>-2</sup>	25.4	1	1.868	0.07355
mm Hg	133.322	0.00133	0.01934	0.00136	0.00132	13.5951	0.535	1	0.0394
in Hg	3386.4	0.03378	0.4912	0.0345	0.03353	345.32	13.589	25.4	1



	Pressure Range	Output Type	Media	Maximum IP Rating	Hysteresis Output Mode Adjustment	Output Setting	Display	Page Number
<b>Technical Data</b>								4 - 7
<b>MPS-1</b> 	0 to -30 inHg 0 to 14 PSI 0 to 145 PSI	(1) NPN / PNP With Analog	Air, Non-Corrosive Gas	65	Variable, 3 to 20% F.S.	Trim Pot	—	8 - 11
<b>MPS-2</b> 	0 to -30 inHg -14.7 to 72.5 PSI	(2) NPN / PNP	Air, Non-Corrosive Gas	65	Variable, 100%F.S.	Push Button	LED Display (Red)	12 - 17
<b>MVS-201</b> 	0 to -30 inHg -14.7 to 72.5 PSI	(1) NPN / PNP	Air, Non-Corrosive Gas	40	Variable, 100%F.S.	Push Button	LED Display (Red)	18 - 25
<b>MPS-3</b> 	0 to -30inHg 0 to 14 PSI -14.7 to 72.5 PSI 0 to 145 PSI	(2) NPN / PNP Analog Option	Air, Non-Corrosive Gas	65	Variable, 100%F.S.	Push Button	LED Display (Red)	26 - 31
<b>MPS-3 Stainless Steel</b> 	0 to -30inHg -14.7 to 72.5 PSI 0 to 145 PSI	(2) NPN / PNP Analog Option	Fluid, Non-Corrosive to 316L or 630 SUS	65	Variable, 100%F.S.	Push Button	LED Display (Red)	32 - 37
<b>MPS-31</b> 	0 to -30inHg -14.7 to 72.5 PSI 0 to 145 PSI	(1) NPN / PNP	Air, Non-Corrosive Gas	65	Variable, 100%F.S.	Push Button	LED Display (Red / Green)	38 - 43
<b>MPS-4</b> 	-8 to 8 inH2O 0 to -29.8 inHg	(2) NPN / PNP Analog Option	Air, Non-Corrosive Gas	40	Variable, 100%F.S.	Push Button	LED Display (Red)	44 - 49
<b>MPS-5</b> 	0 to -30inHg 0 to 145 PSI	Analog	Fluid, Non-Corrosive to 316L or 630 SUS	65	—	—	—	50 - 53
<b>MPS-6</b> 	0 to -30inHg 0 to 14.7 PSI 0 to 145 PSI	(1) NPN / PNP or (1) Analog	Air, Non-Corrosive Gas	40	—	Trim Pot	—	54 - 57
<b>MPS-7</b> 	Remote Panel: Use with MPS-5,6,8	71: (2) NPN/PNP Analog Option 74: (1) NPN/PNP	—	40	Variable, 100% F.S.	Push Button	LED Display (Red)	58 - 65
<b>MPS-8</b> 	0 to -30inHg -14.7 to 72.5 PSI	(1) NPN / PNP or (1) Analog	Air, Non-Corrosive Gas	40	Fixed, < 2% F.S.	Trim Pot	—	66 - 69
<b>MPS-9</b> 	0 to -30inHg -14.7 to 72.5 PSI	(1) NPN / PNP with Analog	Air, Non-Corrosive Gas	65	Variable, 100% F.S.	Push Button	LED Display (Red)	70 - 73
<b>SCPSD</b> 	-14.7 PSI to 250 PSI 0 to 1000 PSI 0 to 2000 PSI 0 to 3000 PSI 0 to 5000 PSI 0 to 9000 PSI	(1 or 2) PNP Analog Option	Non- Corrosive to 316L SUS	67	Variable, 100% F.S.	Push Button	LED Display (Red)	74 - 79
<b>Accessories</b>								80 - 81
<b>Programming Symbols Legend</b>								82
<b>Glossary</b>								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.

## Programming Options

	MPS 1	MPS 2	MVS 201	MPS 3	MPS 3 SS	MPS 31	MPS 4	MPS 5	MPS 6	MPS 71	MPS 74	MPS 8	MPS 9	SCPSD
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														✓
Air Conservation / Blow-Off Timer			✓											
Vacuum Timer Option			✓											
Signal Controlled Vacuum			✓											
Blow-off Activation Timer			✓											
Blow-off Timer			✓											
Vacuum Confirmation Signal			✓											
Blow-off Confirmation Signal			✓											
Peak Vacuum Error Message			✓											
Vacuum Response Error Message			✓											
Blow-off Time Error Message			✓											



## 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

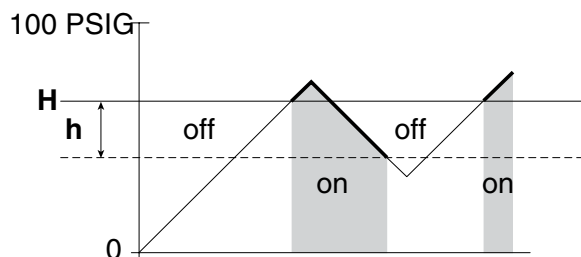
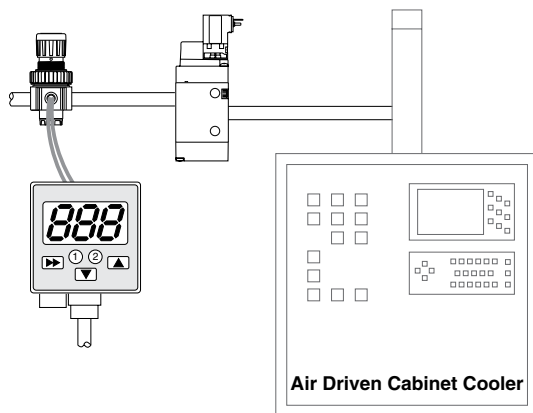
Allows the user to adjust the set points of the pressure sensor while all other programming options are locked out.

### Hysteresis Mode

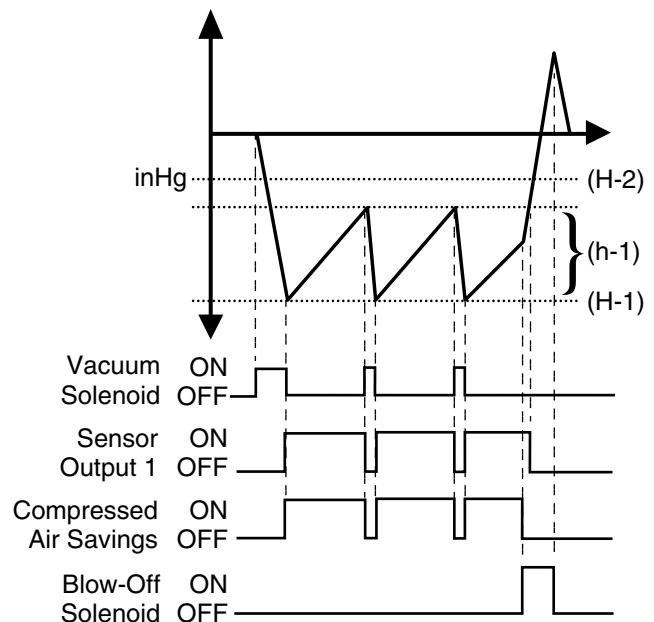
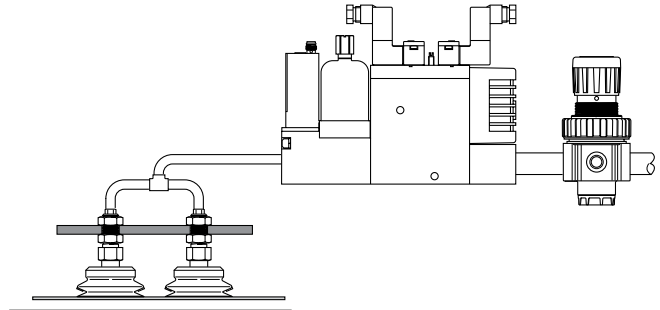
This output mode provides one switch point (H) and a hysteresis pressure adjustment (h). When the switch point pressure is achieved, the output (NPN / PNP) is activated if normally open or deactivated if normally closed. Typically, this mode is used for pressure confirmation. For positive pressure applications, 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.

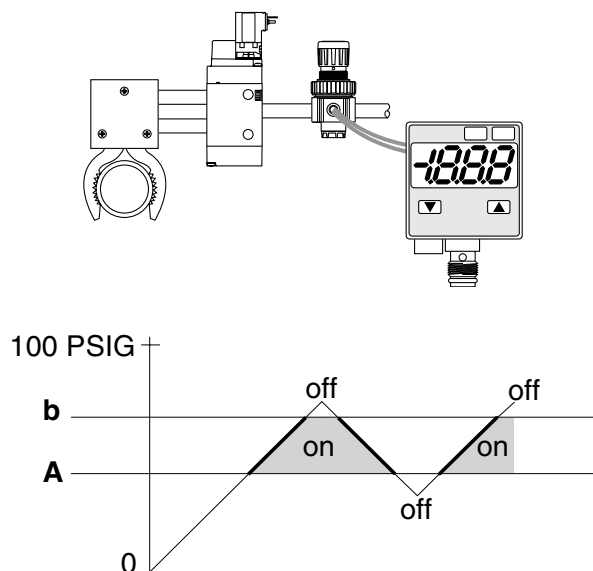




## Window Comparator Mode

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 exert 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.

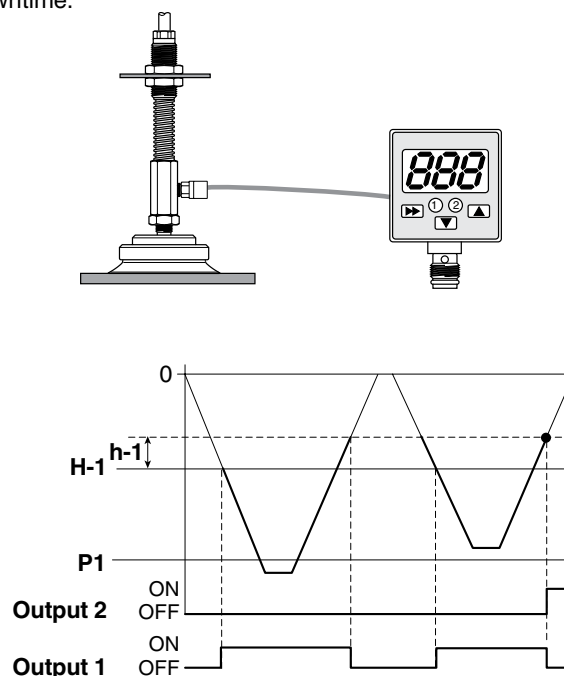
## Auto Surveillance Mode

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 too 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 "ON". 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

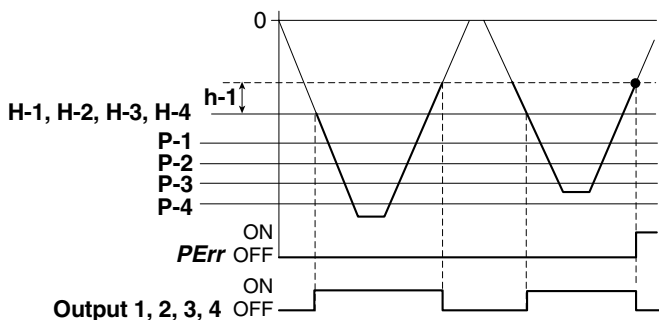
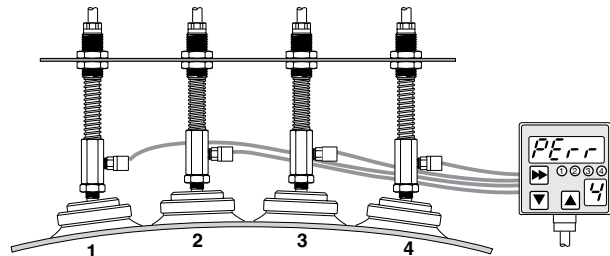
Just like a pressure gauge, a pressure sensor measures the system pressure in relation to the atmospheric pressure. Pressure Sensors can be calibrated to the current atmospheric pressure by using the Zero Reset Function.

## 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 sensor displays 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

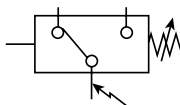
Switch Output can be used optionally as an error output to display pressure switch function errors. As an error output it is normally closed, and in case of errors (*Err 1*, *Err 2*, *Err 3*) it is open. At the same time LED II lights up. The display and the output remain active until the error is cleared.

## Setting of Decimal Point

Depending on the units of measure, the decimal point can be adjusted up to three decimal points.



# MPS-1



**MPS-V1E-PC**



**MPS-L1N-PC**

## 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

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-1 Ordering Numbers

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

\* 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

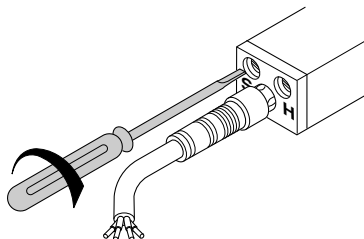
Pressure Range	Vacuum (V)	Pressure (P)
<b>Media</b>	Air and Non-Corrosive Gases	
<b>Pressure Port</b>	<b>(N)</b> 1/8" NPT, <b>(E)</b> Flange Mount with M5 Female (Consult Factory for BSPP or BSPT Port)	
<b>Proof Pressure</b>	<b>(V)</b> 72.5 PSI	<b>(P)</b> 217.5 PSI
<b>Operating Temperature</b>	32 to 122°F (0 to 50°C)	
<b>Storage Temperature</b>	14 to 140°F (-10 to 60°C)	
<b>Humidity</b>	35 to 85% RH	
<b>Electrical Connection</b>	4-Pin, M8 Connector with Built-in LED	
<b>Power Supply</b>	10.8 to 30 VDC, Ripple Vp-p 10% Max., Reverse Voltage Protection	
<b>Analog Output</b>	1 to 5 VDC $\pm 0.04$ , Accuracy Linear 0.5% F.S.	
<b>Switch Output</b>	N.O., Switch Output Mode with Hysteresis Adjustment	
<b>Output Circuit</b>	NPN (Sinking), PNP (Sourcing) Open Collector Transistor 30VAC, 80mA	
<b>Switch Output Setting H</b>	3-Turn Trimmer	
<b>Hysteresis Setting h</b>	3/4-Turn Trimmer (3 to 20% of Switch Output Setting)	
<b>Response Time</b>	< 2.5ms	
<b>Repeatability</b>	$\pm 1\%$ F.S.	
<b>Thermal Error</b>	1% over $\pm 25^\circ\text{C}$ (77°C) Temperature Change: Range 32 to 122°F (0 to 50°C)	
<b>General Protection</b>	IP65 or IP40, CE Marked, EMC Rating: EN55011 Class B, EN50082-2	
<b>Current Consumption</b>	< 20mA	
<b>Spike Protection</b>	400 VP, 1 $\mu\text{s}$	
<b>Dielectric Strength</b>	1000VAC, 1min.	
<b>Insulation Resistance</b>	> 100M ohms at 500VDC	
<b>Vibration Resistance</b>	10 to 55Hz, 1.5mm, XYZ, 2 hrs.	
<b>Shock Resistance</b>	100 G, XYZ	
<b>Material</b>	<b>Housing:</b> Polycarbonate, <b>Pressure Port:</b> Zinc Die-cast	
<b>Mass</b>	1.06 oz. (30g)	



## Output Setting

### Switch Output Setting

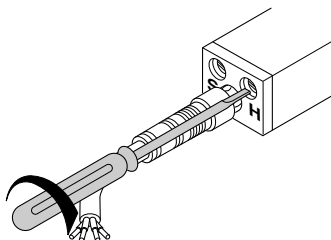
The Switch Point of the output signal is adjusted with a 3-turn potentiometer trimmer (**S**). To set the switch point pressure, rotate the trimmer clockwise to raise the switch pressure and rotate the trimmer counter clockwise to lower the switch pressure.



### 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.

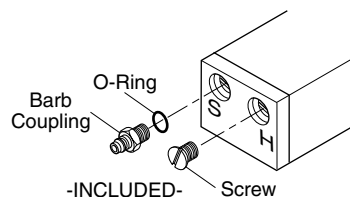
Potentiometer for the Switch Point Pressure and Hysteresis Range is sensitive. Excessive force or exceeding the limits of the trimmers may cause damage.

## 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

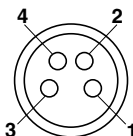
- Never insert an object into the pressure port other than an appropriate fluid connector.
- Avoid short-circuiting the sensor. Connect the brown lead to V+ and blue lead to 0V.
- Do not connect the output lead wires (black / white) to the power supply.
- Outputs not being used should be trimmed and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



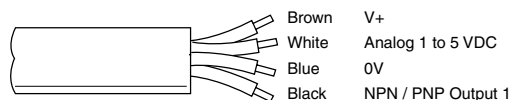
## Sensor Pin Out

### Pin #

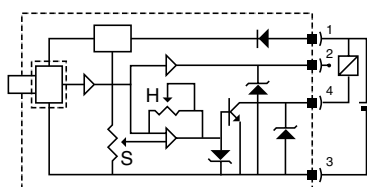
- 1 Brown: 24VDC
- 2 White: Analog 1 to 5VDC Output
- 3 Blue: 0VDC
- 4 Black: NPN / PNP Open Collector Output



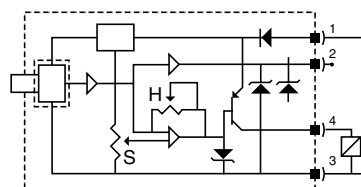
## Lead Wiring



## Internal Circuit



NPN (Sinking)



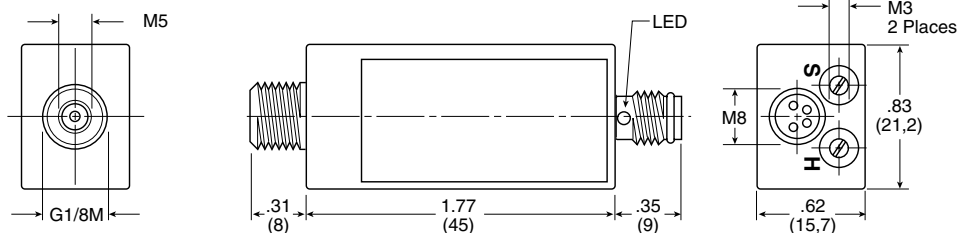
PNP (Sourcing)



## Dimensions

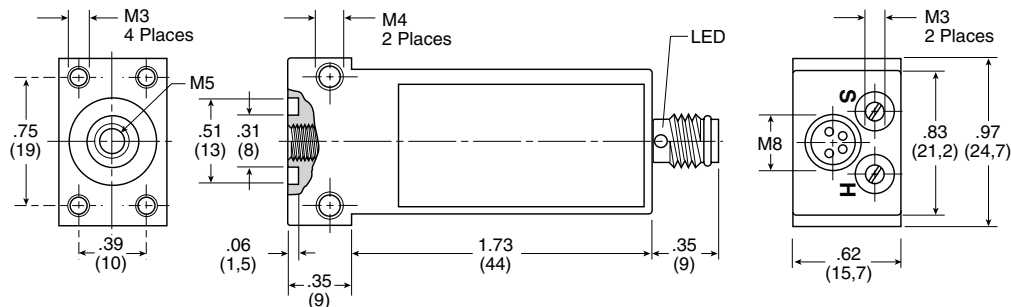
**N, R, G**

**1/8" Male  
M8, 4-Pin**

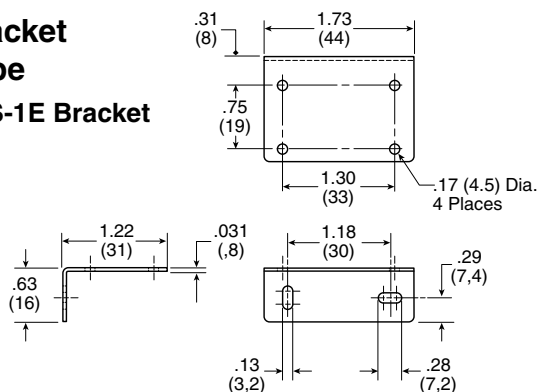


**E**

**Flange  
Mount  
M8, 4-Pin**



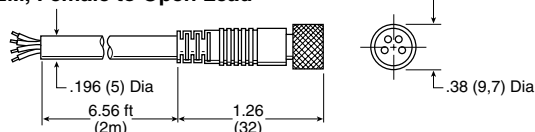
**Flange Bracket  
for V1E Type  
Part No. MPS-1E Bracket**



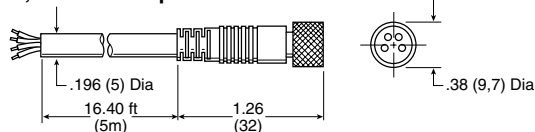
## Accessories

**Cables**

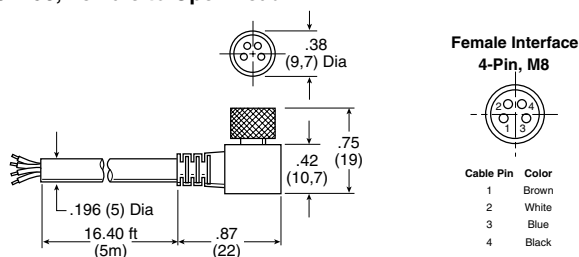
**CB-M8-4P-2M, Female to Open Lead**



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



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



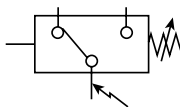
**Female Interface  
4-Pin, M8**



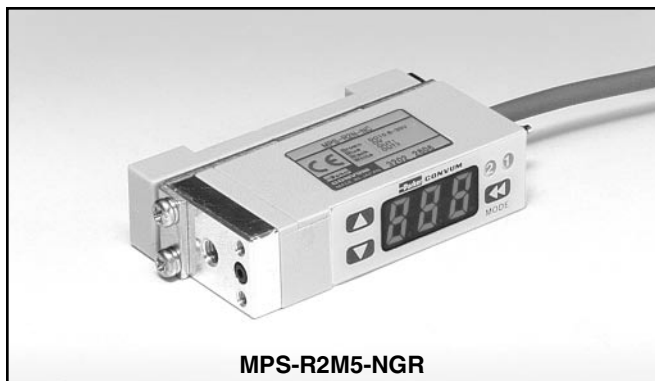
Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black



# MPS-2



MPS-V2N-PC



MPS-R2M5-NGR

## 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/cm<sup>2</sup>, PSI, bar, kPa)
- **Output Response Time Less Than 2.0 Milliseconds**
- **CE Marked**
- **Air and Non-Corrosive Gases**
- **Error Message**

## MPS-2 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-2 Ordering Numbers

Pressure Range	Port Size	Output Circuit	Electrical Connector	Part Number
0 to -30 inHg	1/8 NPT*, Male, M5 Female	PNP Sourcing	4 Pin, M8	<b>MPS-V2N-PC</b>
		NPN Sinking		<b>MPS-V2N-NC</b>
-14.7 to 72.5 PSI		PNP Sourcing	4 Pin, M8	<b>MPS-R2N-PC</b>
		NPN Sinking		<b>MPS-R2N-NC</b>
	M5 DIN Rail Mounting	PNP Sourcing	2M Lead Wire	<b>MPS-R2M5-PGR</b>
		NPN Sinking		MPS-R2M5-NGR

\* 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

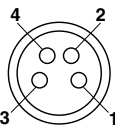
Pressure Range	Vacuum (V)	Compound (R)
<b>Units of Measure</b> <b>Display Resolution</b>	bar: 0.001	bar: 0.01
	kPa: 0.1	kPa: 1
	mmHg: 1	kgf/cm <sup>2</sup> : 0.01
	inHg: 0.1	PSI: 0.1
<b>Media</b>	Air and Non-Corrosive Gases	
<b>Pressure Port</b>	<b>(N)</b> 1/8" NPT, <b>(M5)</b> M5 Female (Consult Factory for BSPP or BSPT Port)	
<b>Proof Pressure</b>	<b>(V)</b> 72.5 PSI, <b>(R)</b> 116.0 PSI	
<b>Operating Temperature</b>	32 to 122°F (0 to 50°C)	
<b>Storage Temperature</b>	14 to 140°F (-10 to 60°C)	
<b>Humidity</b>	35 to 85% RH	
<b>Electrical Connection</b>	<b>(C)</b> 4-Pin, M8 Connector, <b>(G)</b> 2m Grommet Open Lead	
<b>Power Supply</b>	10.8 to 30VDC, Ripple Vp-p 10% Max., Reverse Voltage Protection	
<b>Display</b>	3-Digit, 7-Segment LED	
<b>Display Refresh</b>	0.1 to 3.0 sec. (Factory set at 0.1)	
<b>Output Circuit</b>	NPN (Sinking) or PNP (Sourcing) Output, Open Collector Transistor 30VDC, 125mA	
<b>Switch Output</b>	2 Output Signals, NPN or PNP, Normally Open or Closed, LED Indicator	
<b>Output Modes</b>	Hysteresis or Window Comparator	
<b>Response Time</b>	< 2ms, with Programmable Increments 32, 128, 1024ms	
<b>Repeatability</b>	± 0.2% F.S.	
<b>Thermal Error</b>	1% over ±25°C (77°C) Temperature Change: Range 32 to 122°F (0 to 50°C)	
<b>General Protection</b>	IP65 or IP40, CE Marked, EMC-EN55011 Class B, EN 50082-2	
<b>Insulation Resistance</b>	> 100M ohms at 500VDC	
<b>Vibration Resistance</b>	10 to 55Hz, 1.5mm, XYZ, 2 hrs.	
<b>Shock Resistance</b>	10 G, XYZ	
<b>Material</b>	<b>Housing:</b> Polycarbonate, <b>Pressure Port:</b> Zinc Die-cast	
<b>Mass</b>	1.58 oz. (45g)	



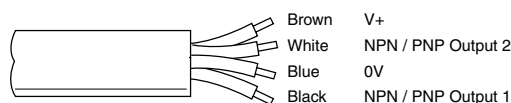
## Sensor Pin Out

### Pin #

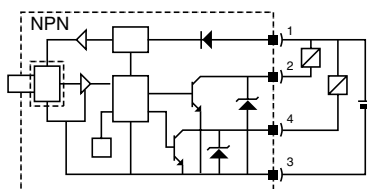
- 1 Brown: 24VDC
- 2 White: NPN / PNP Open Collector Output 2
- 3 Blue: 0VDC
- 4 Black: NPN / PNP Open Collector Output 1



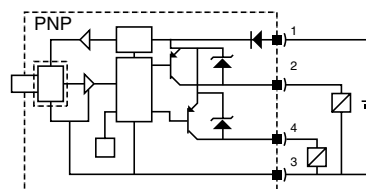
## Lead Wiring



## 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

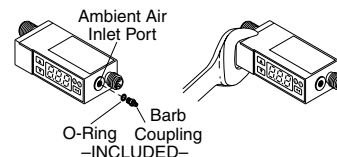
- Parker / Convum Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of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



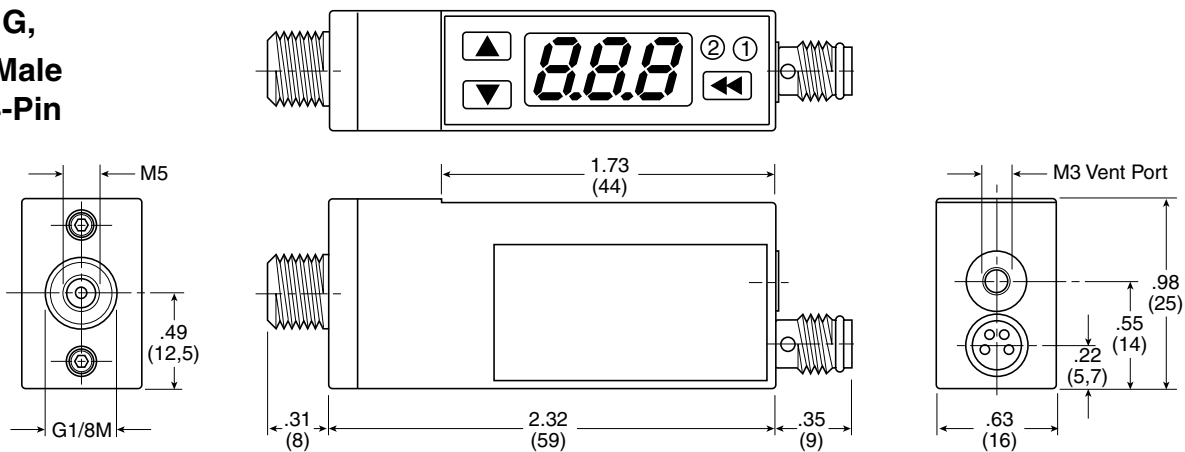
## Error Messages

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

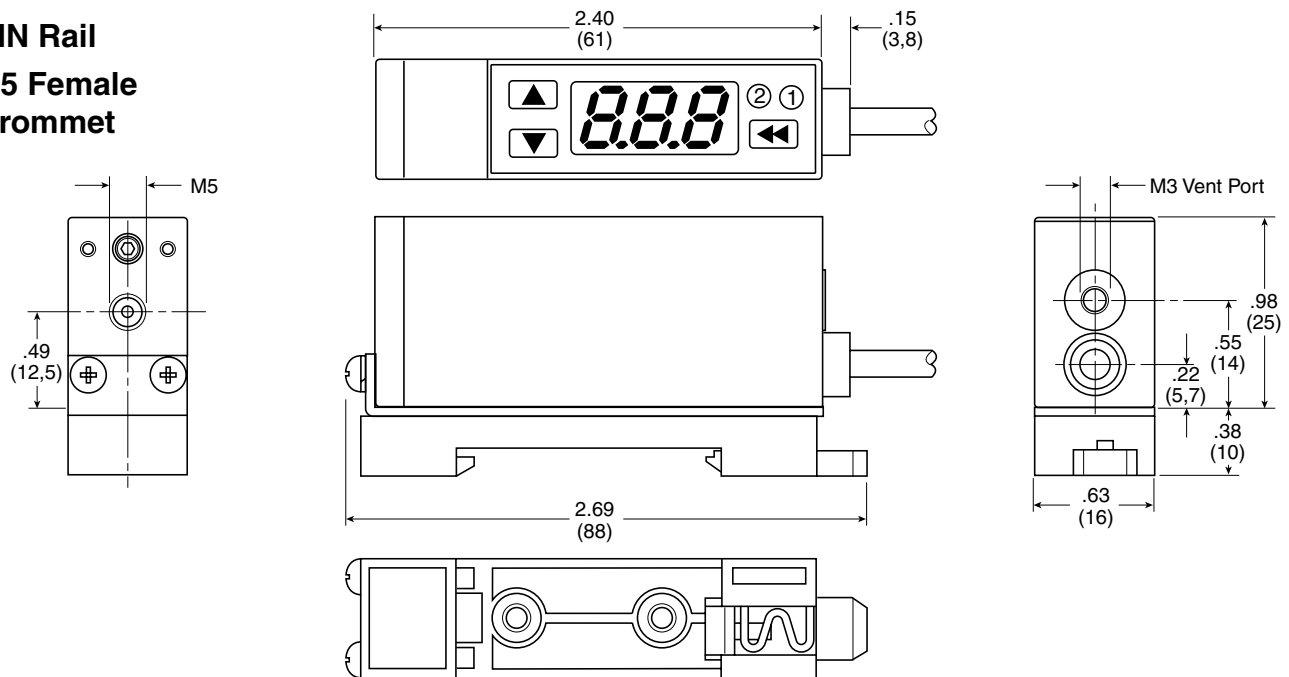


## Dimensions

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



**DIN Rail**  
**M5 Female**  
**Grommet**







See page 82 for Symbol Explanation

**1** Hold Press 1x

Output Set Open or Closed Selecting Units of Measure Easy Mode Activation

ou1  $\leftrightarrow$  no  $\Delta$  nc

ou2  $\leftrightarrow$  no  $\Delta$  nc

-PR  $\Delta$  -bA  $\Delta$  -H9  $\Delta$  -iH

PR  $\Delta$  bA  $\Delta$  F9  $\Delta$  PS

ESY  $\leftrightarrow$  off  $\Delta$  on

---

**4** Press 1x

Output 1 Setting Hysteresis Mode

H-1  $\leftrightarrow$  70  $\Delta$  145

h-1  $\leftrightarrow$  13  $\Delta$  145

Window Comparator Mode

Low

A-1  $\leftrightarrow$  42  $\Delta$  144

High

b-1  $\leftrightarrow$  71  $\Delta$  145

End

**7** Press 6x

Display Refresh Settings / Output Response Time Interval

dSP  $\leftrightarrow$  0.1  $\Delta$  30

0.1

AutE  $\leftrightarrow$  1  $\Delta$  16  $\Delta$  64

End

5 12

**10** Hold Press

Lock

Hold Press

Unlock

Loc

UnC

**2** Press 2x

Output Mode 1 Hysteresis or Window Comparator

ou1  $\leftrightarrow$  HYS  $\Delta$  CnP  $\Delta$  off

End

**5** Press 3x

Output 2 Setting Hysteresis Mode

H-2  $\leftrightarrow$  97  $\Delta$  145

h-2  $\leftrightarrow$  13  $\Delta$  145

Window Comparator Mode

Low

A-2  $\leftrightarrow$  85  $\Delta$  144

High

b-2  $\leftrightarrow$  113  $\Delta$  145

End

**8** Press 7x

Display Peak Value Bottom Value or Their Difference

Pb  $\leftrightarrow$  off  $\Delta$  on

Pbt  $\leftrightarrow$  10  $\Delta$  99

Pbd  $\leftrightarrow$  PE  $\Delta$  bo  $\Delta$  du

End

**11** Press 1x

Peak Value

Press 1x

Bottom Value

PE

bo

**3** Press 4x

Output Mode 2 Hysteresis or Window Comparator

ou2  $\leftrightarrow$  HYS  $\Delta$  CnP  $\Delta$  off

End

**6** Press 5x

Automatic Teach Mode & Auto Surveillance

Aut

Vacuum Cycle 803

Release Cycle 0

RL  $\leftrightarrow$  on  $\Delta$  off

RLn  $\leftrightarrow$  1  $\Delta$  100

End

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.

P-1  $\leftrightarrow$  off  $\Delta$  0

300

**9** Press 8x

Special Display Features

dSF  $\leftrightarrow$  off  $\Delta$  on

Fnc  $\leftrightarrow$  1b  $\Delta$  1d  $\Delta$  2b  $\Delta$  2d

End

off

RL

**12** Press for 3 Seconds

Zero Reset

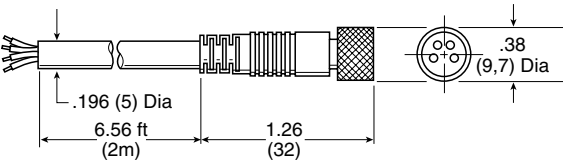
0



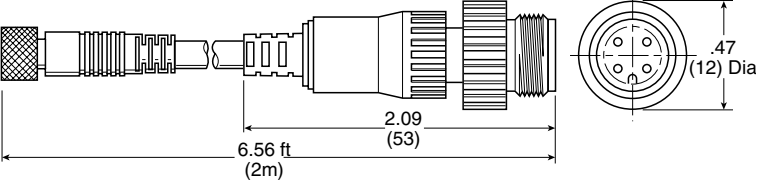
Accessories

Cables

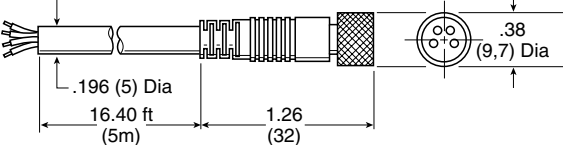
CB-M8-4P-2M, Female to Open Lead



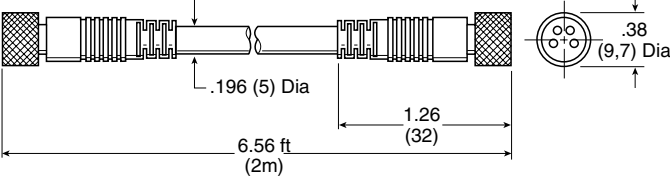
CB-M8-4P-M12-2M, M8 Female to M12 Male



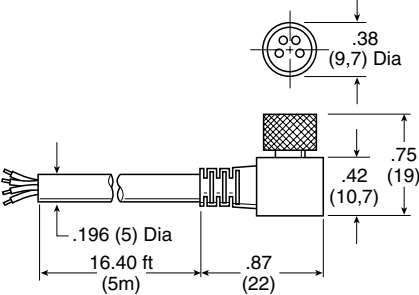
CB-M8-4P-5M, Female to Open Lead



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



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



Pin Out Connection

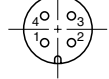
Female Interface  
4-Pin, M8



Male Interface  
4-Pin, M8



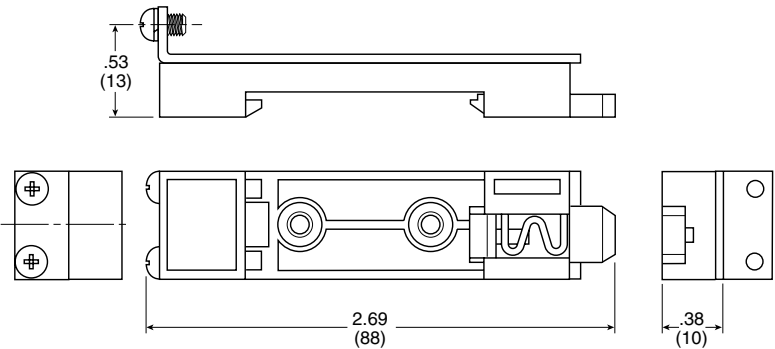
Male Interface  
4-Pin, M12



Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

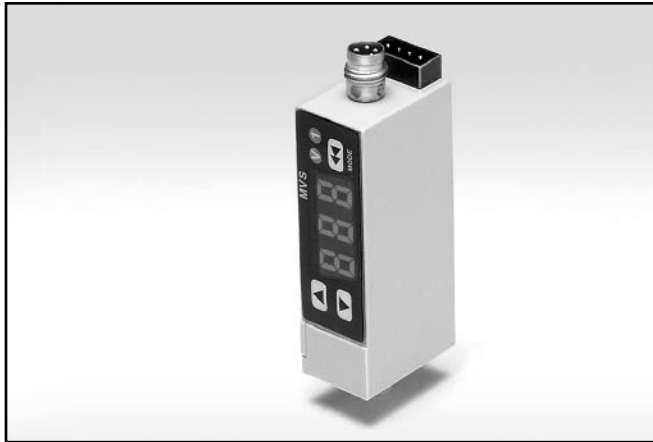
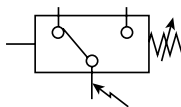
MPS-ACCK4

Din Rail



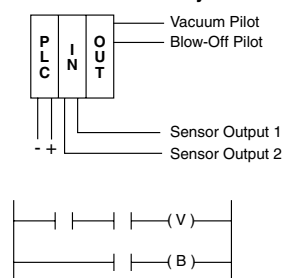


# MVS-201

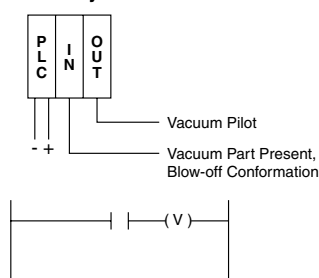


The MVS-201 is a winning combination with the MC2, CVR-2, and CVK vacuum generators. The MVS-201 automatically provides an output signal for the blow-off function without the need of an additional output from the PLC. Begin the vacuum cycle with an output signal from the PLC to the "201" sensor. The "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.

**Basic PLC System**



**PLC System with 201 Sensor**



## 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

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	
Air Conservation / Blow-Off Timer	✓
Vacuum Timer Option	✓
Signal Controlled Vacuum	✓
Blow-off Activation Timer	✓
Blow-off Timer	✓
Vacuum Confirmation Signal	✓
Blow-off Confirmation Signal	✓
Peak Vacuum Error Message	✓
Vacuum Response Error Message	✓
Blow-off Time Error Message	✓



## MVS-201 Ordering Numbers

Pressure Range	Output Circuit	Input Circuit	Electrical Connector *	Part Number
-14.7 to 72.5 PSI	PNP Sourcing	NPN Sinking	4 Pin, M8	MVS-201-PC
		PNP Sourcing		<b>MVS-201-PCP</b>
	NPN Sinking	NPN Sinking		<b>MVS-201-NC</b>
		PNP Sourcing		MVS-201-NCP

\* 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).

## Senor to Valve Electrical Connector

Generator Series	Sensor Connection	Valve Connection	Part Number
MC2	5 Pin Clip Type	2 with Clip Type	<b>MC2-C201G</b>
CVR2			<b>CVR2-C201G</b>
CVK		2 Wire Leads	<b>CVK-D201G</b>

## Specifications

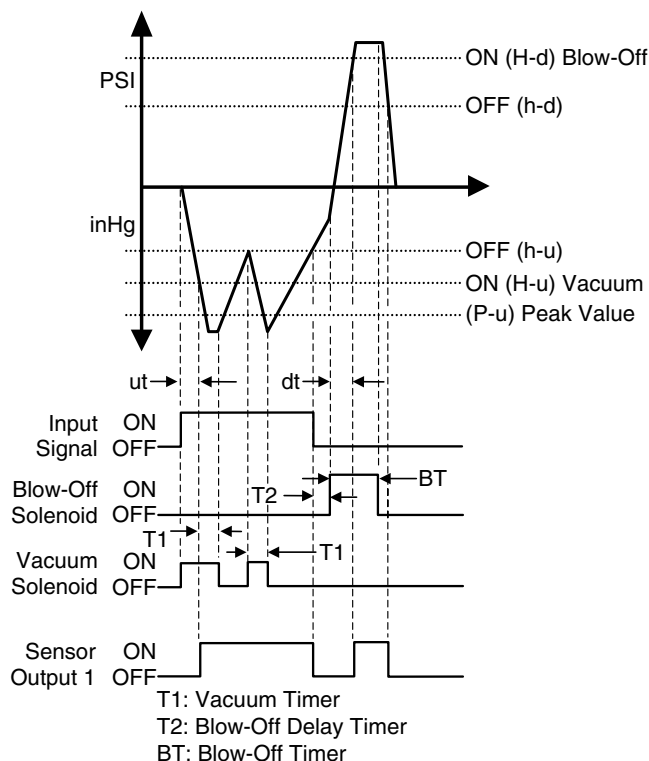
Pressure Range	Compound (R)
Units of Measure Display Resolution	bar: 0.01
	kPa: 1
	kgf/cm <sup>2</sup> : 0.01
	PSI: 0.1
Media	Non-Lubricated Air and Non-Corrosive Gases
Proof Pressure	116.0 PSI
Operating Temperature	32 to 122°F (0 to 50°C)
Storage Temperature	14 to 140°F (-10 to 60°C)
Humidity	35 to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



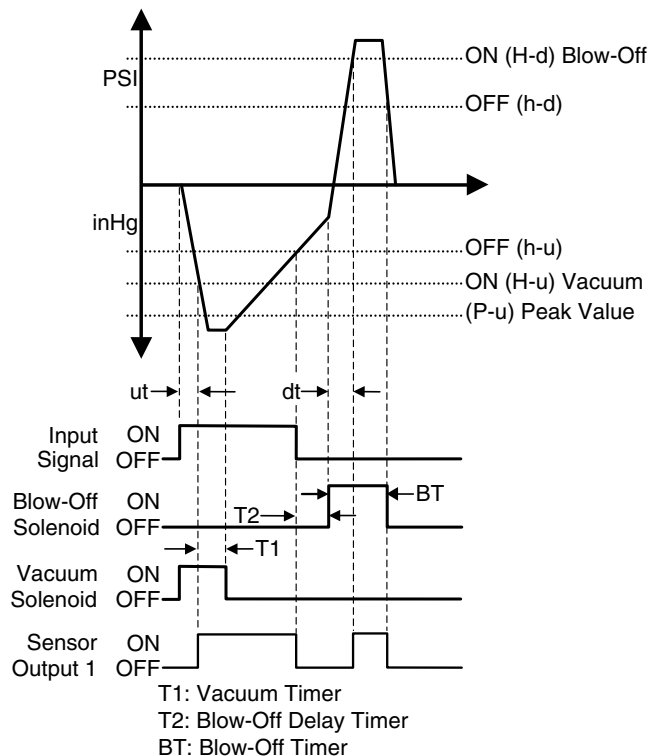
## Operating Modes

Description of operation modes and terms on page 20.

### Mode: OP1 "Air Conservation / Timer"



### Mode: OP2 "Vacuum Timer Option"



## Timer Mode OP1

### "Air Conservation / Vacuum Valve 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.

## Timer Mode OP2

### "Vacuum Valve Timer"

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:

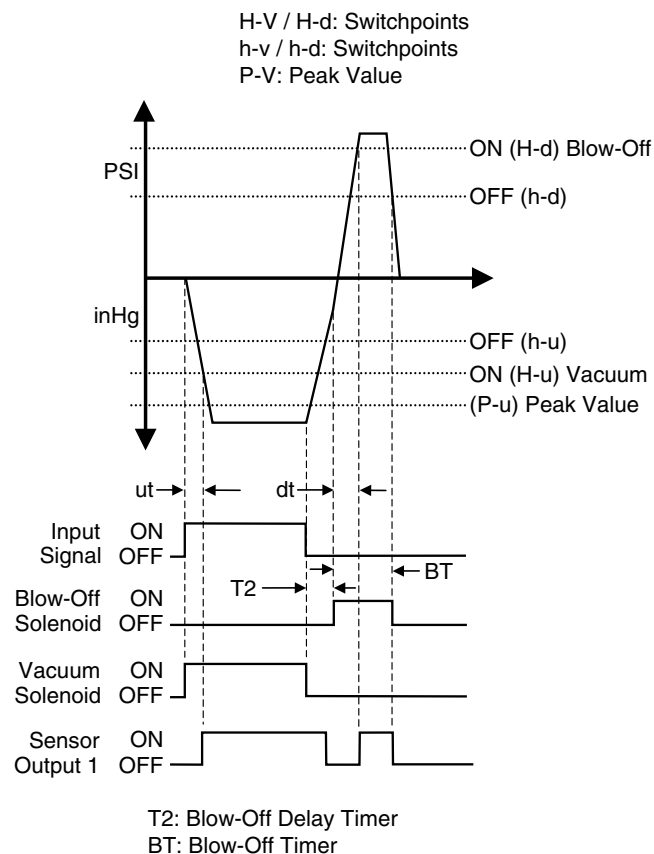
Output Circuit provides vacuum and blow-off confirmation signal (Input Signal to PLC).  
 Input Circuit controls vacuum solenoid valve (Output Signal from PLC).



## Operating Modes

Description of operation modes and terms on page 20.

### Mode: OP3 "Signal Controlled Vacuum"



## 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.

**Note:**

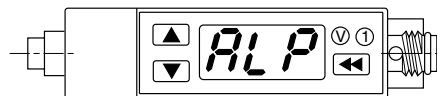
Output Circuit provides vacuum and blow-off confirmation signal (Input Signal to PLC).  
Input Circuit controls vacuum solenoid valve (Output Signal from PLC).

## Additional Sensor Features (Available in All Operating Modes)

### Screen Saver Function

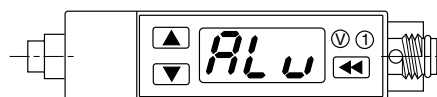
This reduces current consumption by 20mA and will activate after 10 seconds.

### Peak Value Level (P-v)



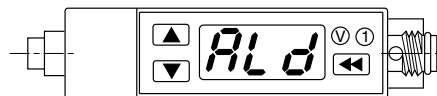
The sensor records this value for preventative maintenance issues. If this value is not reached the sensor will display an error message (**ALP**) indicating leaks or wear in the system.

### 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.



## Wiring Diagram

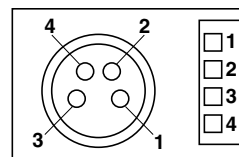
### M8 Pin #

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

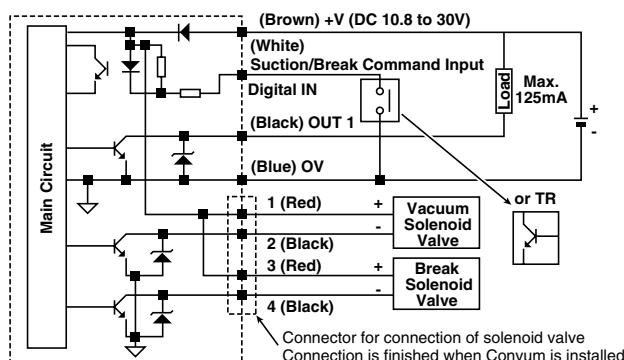
### 201 Pin #

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

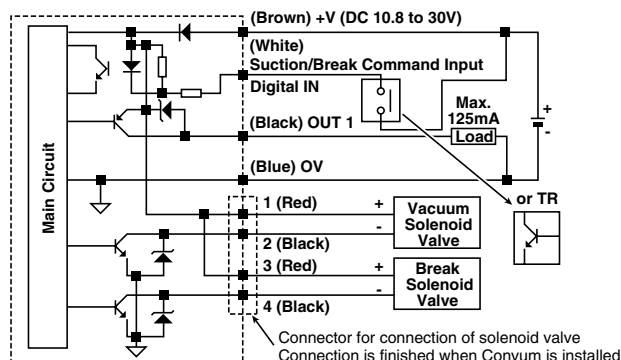
## Sensor Male Pin Out



## Internal Circuit



**Output / Input NPN Sinking**



**Output / Input PNP Sourcing**

## ! 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

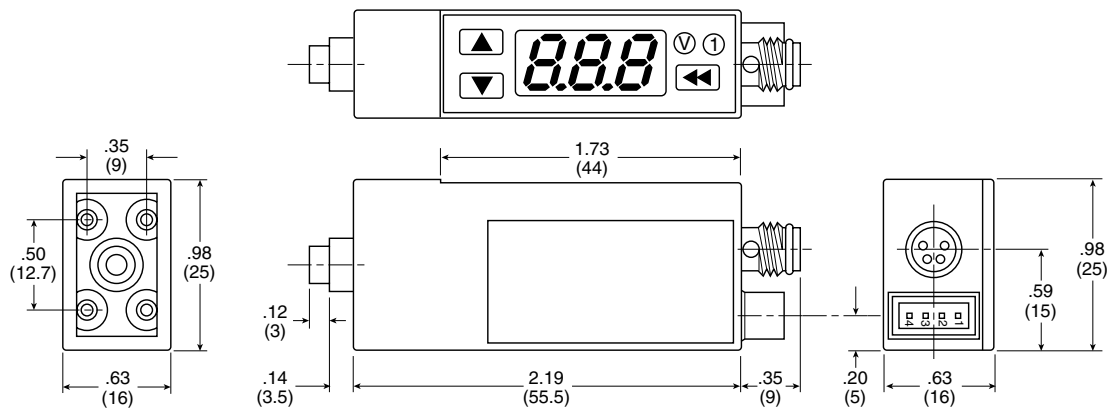
Display	Description	Solutions
<b>Err</b>	Zero Reset Error	Reset Zero Below 3% of F.S.
<b>Er1</b>	System Error (Internal)	Contact Factory
<b>CE1</b>	Over current of Output 1	Load current exceeds maximum 125mA.
<b>FFF</b> <b>-FF</b>	Applied pressure exceeds pressure range	Apply pressures within the rating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



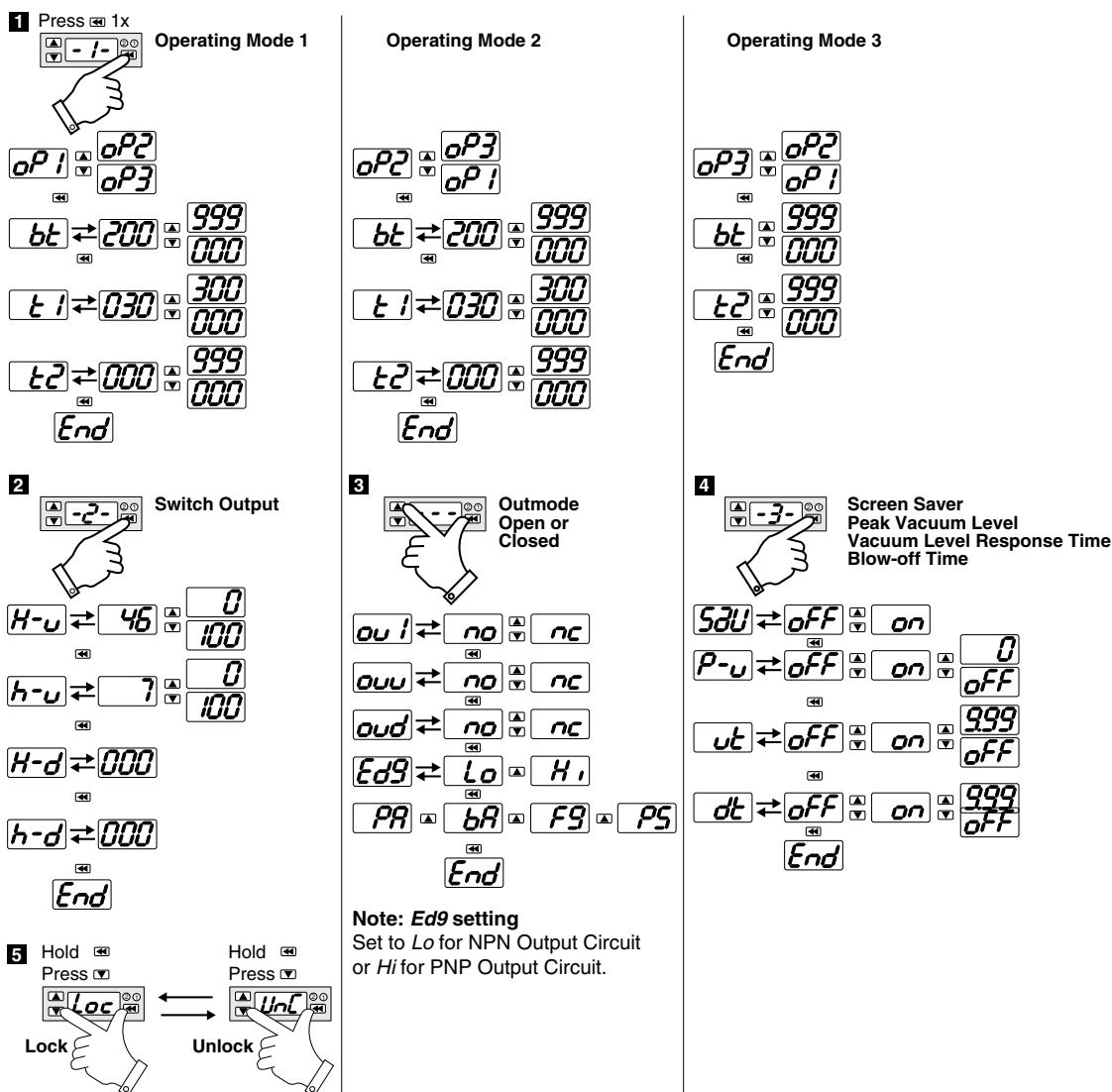


**Dimensions**

**M8, 4-Pin**



Sensors



## Programming Symbols Legend

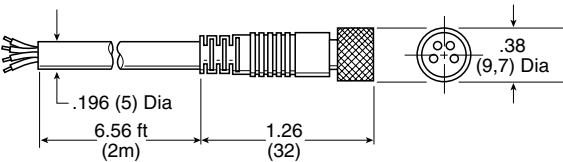
	Operation 1: Air Conservation / Timer		Error Message - Blow-off Time
	Operation 2: Vacuum Timer Option		Output 1
	Operation 3: Signal Controlled Vacuum		Vacuum Valve (Leave NO)
	Blow-Off Timer		Blow-off Release Valve (Leave NO)
	Controlled Vacuum Signal with Timer		Screen Saver Function
	Blow-Off Activation Timer		Peak Vacuum Level Recorder (P-v)
	Switch Output Value (H-v)		Vacuum Response Time Recorder
	Switch Output Hysteresis Value (h-v)		Blow-Off Time Recorder
	Blow-off Output Value (H-d)		Normally Open
	Blow-off Output Hysteresis Value (h-d)		Normally Closed
	Error Message - Peak Vacuum Level		Low or High Signal to Vacuum Valve
	Error Message - Vacuum Response Time		



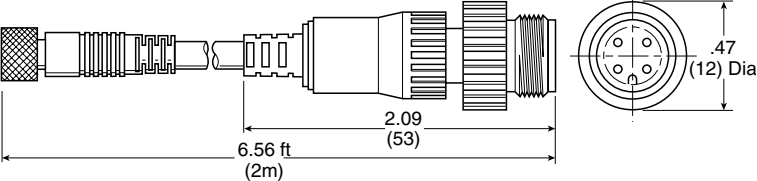
Accessories

M8 Cables for Sensor

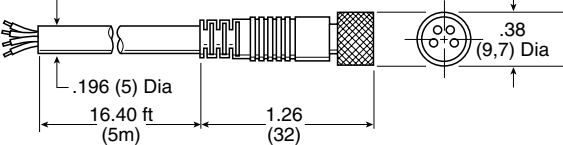
CB-M8-4P-2M, Female to Open Lead



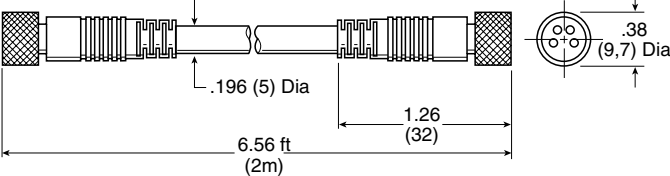
CB-M8-4P-M12-2M, M8 Female to M12 Male



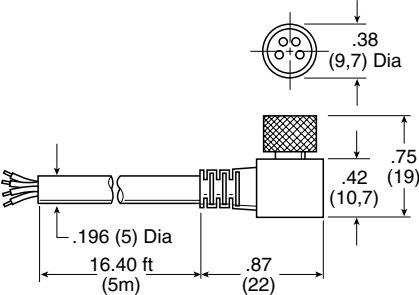
CB-M8-4P-5M, Female to Open Lead



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



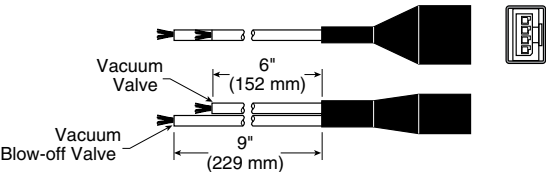
Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

MVS-201 Cables

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

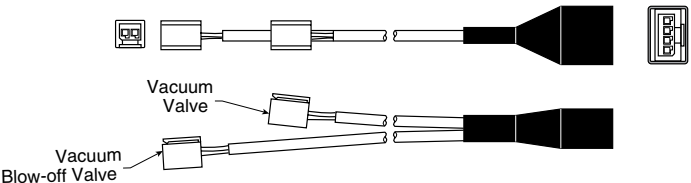
For CVK

CVK-D201G



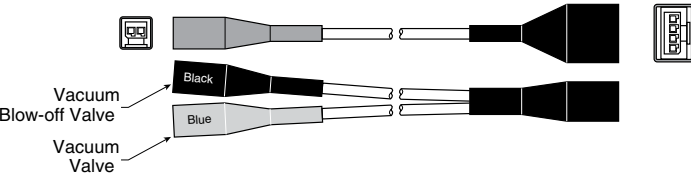
For CVR2

CVR2-C201G



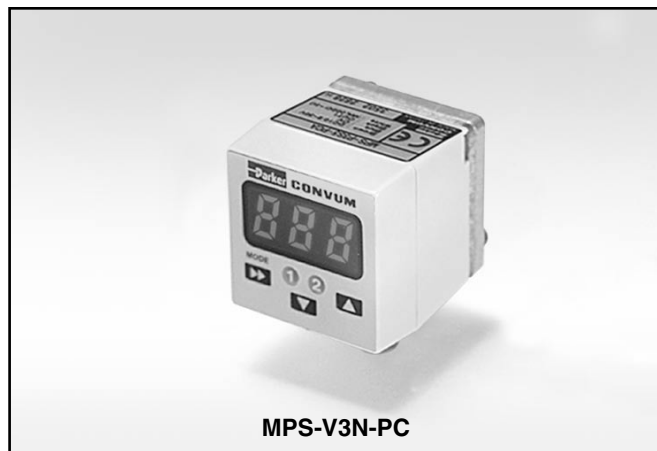
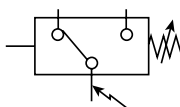
For MC2

MC2-C201G





# MPS-3



Mounting Bracket MPS-ACCK1 Included with Sensors.

## 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/cm<sup>2</sup>, 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**
0 to -30 inHg	1/8 NPSF*	PNP Sourcing	4 Pin, M8	<b>MPS-V3N-PC</b>
			2M Lead Wire	<b>MPS-V3N-PG</b>
	1/8 NPSF*	NPN Sinking	4 Pin, M8	<b>MPS-V3N-NC</b>
			2M Lead Wire	<b>MPS-V3N-NG</b>
-14.7 to 72.5 PSI	1/8 NPSF*	PNP Sourcing	4 Pin, M8	<b>MPS-R3N-PC</b>
			2M Lead Wire	<b>MPS-R3N-PG</b>
	1/8 NPSF*	NPN Sinking	4 Pin, M8	<b>MPS-R3N-NC</b>
			2M Lead Wire	<b>MPS-R3N-NG</b>
0 to 14.7 PSI	1/8 NPSF*	PNP Sourcing	2M Lead Wire	<b>MPS-L3N-PG</b>
		NPN Sinking	2M Lead Wire	<b>MPS-L3N-NG</b>
0 to 145 PSI	1/8 NPSF*	PNP Sourcing	4 Pin, M8	<b>MPS-P3N-PC</b>
			4 Pin, M12	<b>MPS-P3N-PXS2H</b>
			2M Lead Wire	<b>MPS-P3N-PG</b>
	1/8 NPSF*	NPN Sinking	4 Pin, M8	<b>MPS-P3N-NC</b>
			2M Lead Wire	<b>MPS-P3N-NG</b>
	1/8 NPSF*	PNP Sourcing with 1-5 VDC	4 Pin, M8	<b>MPS-P3N-PCA</b>
		NPN Sinking with 1-5 VDC		<b>MPS-P3N-NCA</b>

\* 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

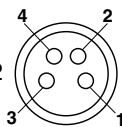
Pressure Range	Vacuum (V)	Positive (P)	Compound (R)	Low (L)
<b>Units of Measure</b>	bar: 0.001	bar: 0.01	bar: 0.01	bar: 0.001
	kPa: 0.1	MPa: 0.001	kPa: 1	kPa: 0.1
	mmHg: 1	kgf/cm <sup>2</sup> : 0.01	kgf/cm <sup>2</sup> : 0.01	kgf/cm <sup>2</sup> : 0.001
	inHg: 0.1	PSI: 1	PSI: 0.1	PSI: 0.1
<b>Media</b>	Air and Non-Corrosive Gases			
<b>Pressure Port</b>	(N) 1/8" NPSF (Consult Factory for BSPP or BSPT Port)			
<b>Proof Pressure</b>	(V) 145 PSI, (P) 290 PSI, (R) 217 PSI, (L) 145 PSI			
<b>Operating Temperature</b>	32 to 122°F (0 to 50°C)			
<b>Storage Temperature</b>	14 to 140°F (-10 to 60°C)			
<b>Humidity</b>	35 to 85% RH			
<b>Electrical Connection</b>	(C) 4-Pin, M8 Connector, (G) Grommet Open Lead, (XS2H) M12, 4-Pin			
<b>Power Supply</b>	10.8 to 30VDC, Ripple Vp-p 10% Max., Reverse Voltage Protection			
<b>Display</b>	3-Digit, 7-Segment LED			
<b>Display Refresh</b>	.1 to 3.0 sec. (Factory set at 0.1)			
<b>Output Circuit</b>	NPN (Sinking), PNP (Sourcing) Open Collector Transistor, 30VDC, 125mA			
<b>Switch Outputs</b>	2 Output Signals, NPN or PNP, Normally Open or Closed, LED Indicator			
<b>Linear Output</b>	Optional Analog Output 1 to 5VDC			
<b>Output Modes</b>	Hysteresis or Window Comparator			
<b>Output Response Time</b>	< 2ms with Programmable Increment 32, 128, 1024ms			
<b>Repeatability</b>	± 0.2% F.S.			
<b>Thermal Error</b>	1% over ±25°C (77°C) Temperature Change: Range 32 to 122°F (0 to 50°C)			
<b>General Protection</b>	IP65 or IP 40, CE Marked, EMC-EN55011 Class B, EN 50082-2			
<b>Current Consumption</b>	< 55mA			
<b>Vibration Resistance</b>	10 to 55Hz, 1.5mm, XYZ, 2 hrs.			
<b>Shock Resistance</b>	10 G, XYZ			
<b>Material</b>	<b>Housing:</b> Polycarbonate, <b>Pressure Port:</b> Zinc Die-cast			
<b>Mass</b>	1.58 oz. (45g)			



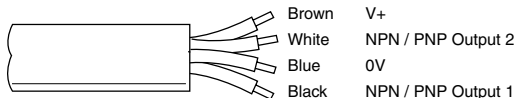
## Sensor Pin Out

### Pin #

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



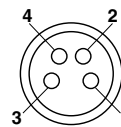
## Lead Wiring



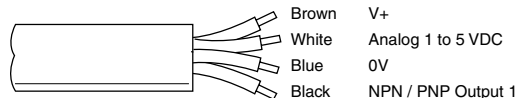
## Sensor Pin Out with Analog Output

### Pin #

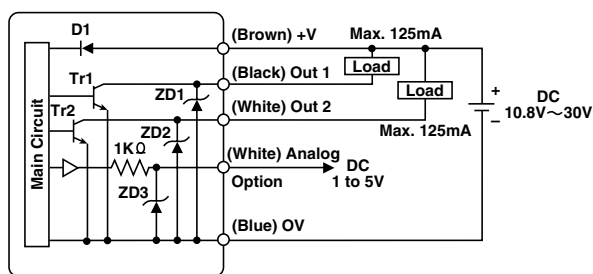
- 1 Brown: 24VDC
- 2 White: Analog 1 to 5VDC
- 3 Blue: 0VDC
- 4 Black: NPN / PNP Open Collector Output 1



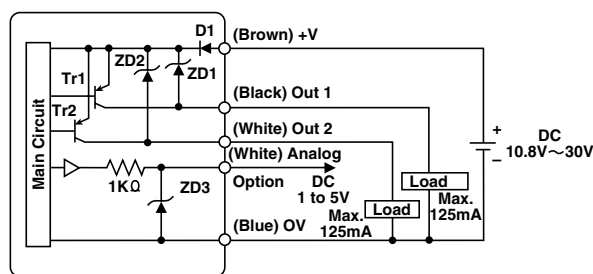
## Lead Wiring



## Internal Circuit for Open Collector and Analog Output Wiring



**NPN**



**PNP**

## ! 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

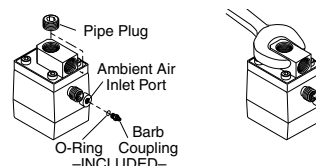
- Parker / Convum Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of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

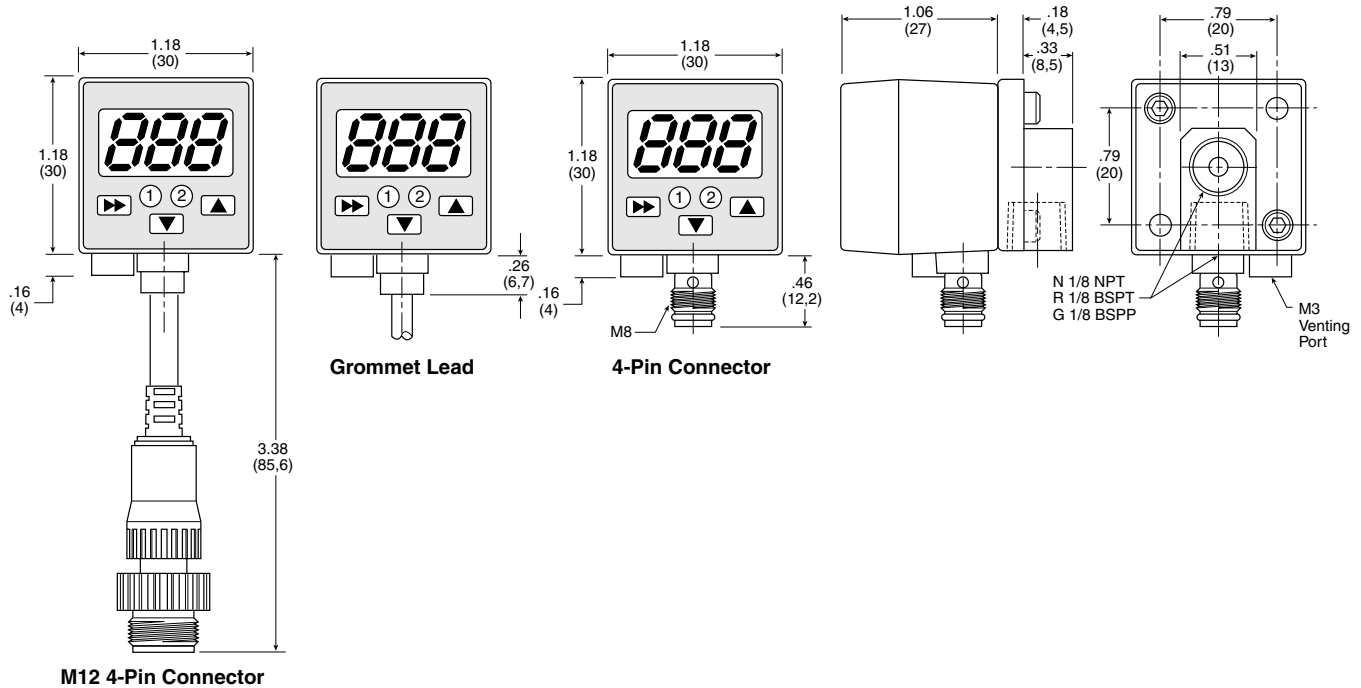
Display	Description	Solutions
<b>Err</b>	Zero Reset Error	Reset Zero Below 3% of F.S.
<b>Er1</b>	System Error (Internal)	Contact Factory
<b>Er2</b>	Auto Teach Mode Error	Restart Function
<b>CE1</b>	Over current of Output 1	Load current exceeds maximum 125mA.
<b>CE2</b>	Over current of Output 2	
<b>FFF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



## Dimensions

**N, R, G**

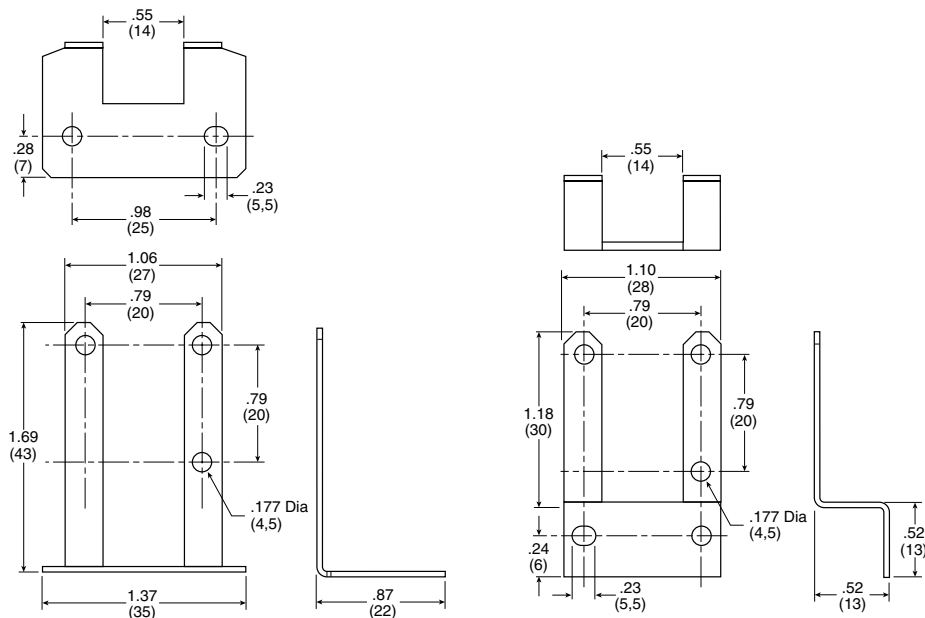
**1/8" Female**



**MPS-ACCK1**

**Mounting  
 Brackets**

**(Included)**







See page 82 for Symbol Explanation

**1** Hold Press 1x

Output Set Open or Closed Selecting Units of Measure  
Easy Mode Activation

ou1  $\leftrightarrow$  no  $\uparrow$  nc  
 ou2  $\leftrightarrow$  no  $\uparrow$  nc  
 -PR  $\uparrow$  -bR  $\uparrow$  -H9  $\uparrow$  -iH  
 PR  $\uparrow$  bR  $\uparrow$  F9  $\uparrow$  PS  
 ESY  $\leftrightarrow$  off  $\uparrow$  on  
 ---

**4** Press 1x

Output 1 Switch Point Setting  
Hysteresis Mode

H-1  $\leftrightarrow$  70  $\uparrow$  145  
 h-1  $\leftrightarrow$  13  $\uparrow$  145  
 Window Comparator Mode  
 Low  
 A-1  $\leftrightarrow$  42  $\uparrow$  144  
 High  
 b-1  $\leftrightarrow$  71  $\uparrow$  145  
 End

**7** Press 6x

Display Refresh Settings / Output Response Time Interval

dSP  $\leftrightarrow$  0.1  $\uparrow$  30  
 RuE  $\leftrightarrow$  1  $\uparrow$  16  $\uparrow$  64  
 End

**10** Hold Press 1x

Lock

Hold Press 1x

Unlock

**2** Press 2x

Output Mode 1 Hysteresis or Window Comparator

ou1  $\leftrightarrow$  HYS  $\uparrow$  CnP  $\uparrow$  off  
 End

**5** Press 3x

Output 2 Switch Point Setting  
Hysteresis Mode

H-2  $\leftrightarrow$  97  $\uparrow$  145  
 h-2  $\leftrightarrow$  13  $\uparrow$  145  
 Window Comparator Mode  
 Low  
 A-2  $\leftrightarrow$  85  $\uparrow$  144  
 High  
 b-2  $\leftrightarrow$  113  $\uparrow$  145  
 End

**8** Press 7x

Display Peak Value Bottom Value or Their Difference

Pb  $\leftrightarrow$  off  $\uparrow$  on  
 Pbt  $\leftrightarrow$  10  $\uparrow$  99  
 Pbd  $\leftrightarrow$  PE  $\uparrow$  60  $\uparrow$  du  
 End

**11** Press 1x

Peak Value

Press 1x

Bottom Value

**3** Press 4x

Output Mode 2 Hysteresis or Window Comparator

ou2  $\leftrightarrow$  HYS  $\uparrow$  CnP  $\uparrow$  off  
 End

**6** Press 5x

Automatic Teach Mode & Auto Surveillance

Aut  $\leftrightarrow$  on  $\uparrow$  off  
 RL  $\leftrightarrow$  1  $\uparrow$  100  
 End

Vacuum Cycle 803  
 Release Cycle 0

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.

P-1  $\leftrightarrow$  off  $\uparrow$  300

**9** Press 8x

Special Display Features

dSF  $\leftrightarrow$  off  $\uparrow$  on  
 Fnc  $\leftrightarrow$  1b  $\uparrow$  1d  $\uparrow$  2b  $\uparrow$  2d  
 End

**12** Press for 3 Seconds

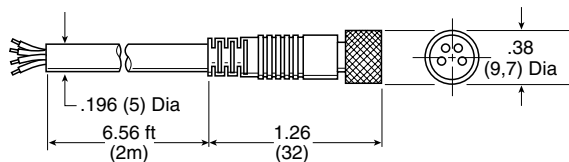
Zero Reset



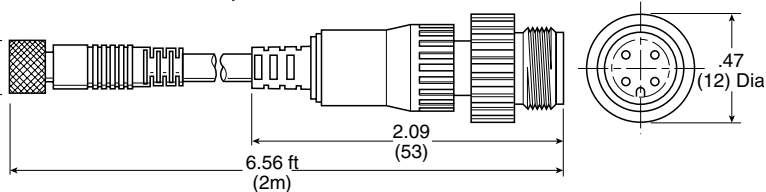
## Accessories

### Cables

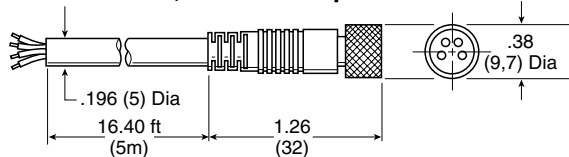
**CB-M8-4P-2M, Female to Open Lead**



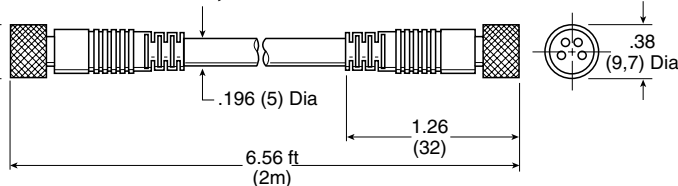
**CB-M8-4P-M12-2M, M8 Female to M12 Male**



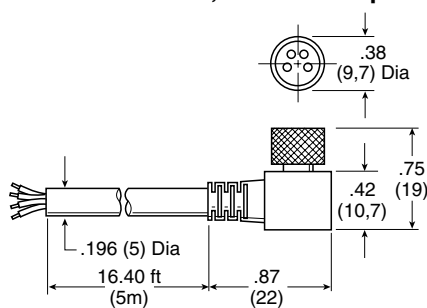
**CB-M8-4P-5M, Female to Open Lead**



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



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



### Pin Out Connection

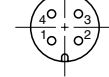
**Female Interface  
4-Pin, M8**



**Male Interface  
4-Pin, M8**



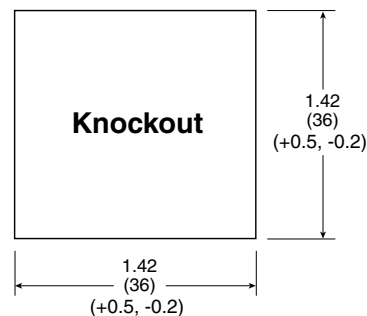
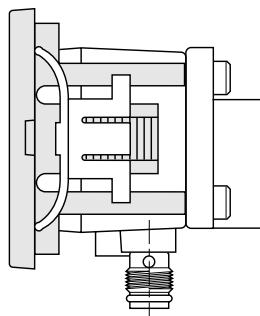
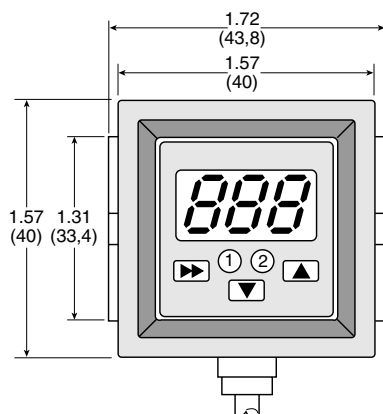
**Male Interface  
4-Pin, M12**



Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

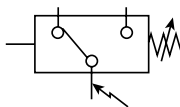
### MPS-ACCH7

### Panel Mounting Bracket





# MPS-3 Stainless Steel



MPS-P3S5-PCA

Mounting Bracket MPS-ACCK1 Included with Sensors.

## Features

- **Fluids Non-Corrosive to Stainless Steel**  
SUS 316L or SUS 630
 

Air	Freons
Ammonia	Lubricating Oils
Brake Fluids	Nitrogen
Helium	Water
Hydraulic Fluids	
- **Pressure Ranges:**
  - Vacuum Pressure ..... 0 to -30 inHg
  - Compound ..... -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/cm<sup>2</sup>, PSI, bar, kPa)
- **Output Response Time Less Than 2.0 Milliseconds**
- **CE Marked**
- **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 Stainless Steel Ordering Numbers

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

## Specifications

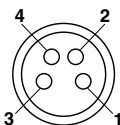
Pressure Range	Vacuum (V3F)	Positive (P3S)	Compound (R3F)
<b>Units of Measure</b> <b>Display Resolution</b>	bar: 0.001	bar: 0.01	bar: 0.01
	kPa: 0.1	MPa: 0.001	kPa: 1
	mmHg: 1	kgf/cm <sup>2</sup> : 0.01	kgf/cm <sup>2</sup> : 0.01
	inHg: 0.1	PSI: 1	PSI: 0.1
<b>Media</b>	Fluids, Non-Corrosive to 316L or 630 SUS		
<b>Pressure Port</b>	(5) M5F		
<b>Proof Pressure</b>	(V3F) 145 PSI, (R3F) 217.5 PSI, (P3S) 290 PSI		
<b>Operating Temperature</b>	32 to 122°F (0 to 50°C)		
<b>Storage Temperature</b>	14 to 140°F (-10 to 60°C)		
<b>Humidity</b>	35 to 85% RH		
<b>Electrical Connection</b>	(C) 4-Pin, M8 Connector		
<b>Power Supply</b>	10.8 to 30VDC, Ripple Vp-p 10% Max., Reverse Voltage Protection		
<b>Display</b>	3-Digit, 7-Segment LED		
<b>Display Refresh</b>	.1 to 3.0 sec. (Factory set at 0.1)		
<b>Output Circuit</b>	NPN (Sinking), PNP (Sourcing) Open Collector Transistor; 30VDC, 125mA		
<b>Switch Outputs</b>	2 Output Signals, NPN or PNP, Normally Open or Closed, LED Indicator		
<b>Linear Output</b>	Optional Analog Output 1 to 5VDC		
<b>Output Modes</b>	Hysteresis or Window Comparator		
<b>Output Response Time</b>	< 2ms with Programmable Increment 32, 128, 1024ms		
<b>Repeatability</b>	± 0.2% F.S.		
<b>Thermal Error</b>	1% over ±25°C (77°C) Temperature Change: Range 32 to 122°F (0 to 50°C)		
<b>General Protection</b>	IP 65 or IP 40, CE Marked, EMC-EN55011 Class B, EN 50082-2		
<b>Current Consumption</b>	< 55mA		
<b>Vibration Resistance</b>	10 to 55Hz, 1.5mm, XYZ, 2 hrs.		
<b>Shock Resistance</b>	10 G, XYZ		
<b>Material</b>	<b>Housing:</b> Polycarbonate, <b>Wetted Parts: P:</b> 316L or <b>V,R:</b> 630 SUS (Diaphragm)		
<b>Mass</b>	4.4 oz. (110g)		



## Sensor Pin Out

### Pin #

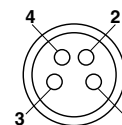
- 1 Brown: 24VDC
- 2 White: NPN / PNP Open Collector Output 2
- 3 Blue: 0VDC
- 4 Black: NPN / PNP Open Collector Output 1



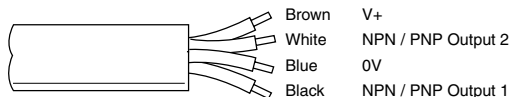
## Sensor Pin-Out with Analog Output

### Pin #

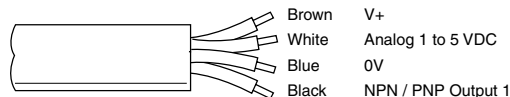
- 1 Brown: 24VDC
- 2 White: Analog 1 to 5VDC Output
- 3 Blue: 0VDC
- 4 Black: NPN / PNP Open Collector Output 1



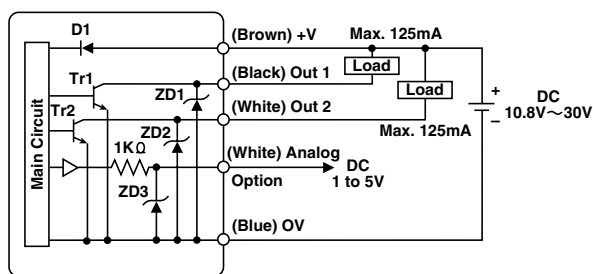
## Lead Wiring



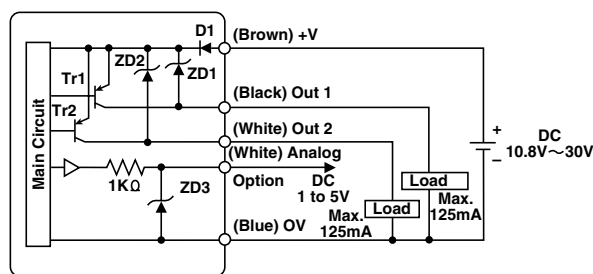
## Lead Wiring



## Internal Circuit for Open Collector and Analog Output Wiring



**NPN**



**PNP**

## ! 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.

- 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.

## 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

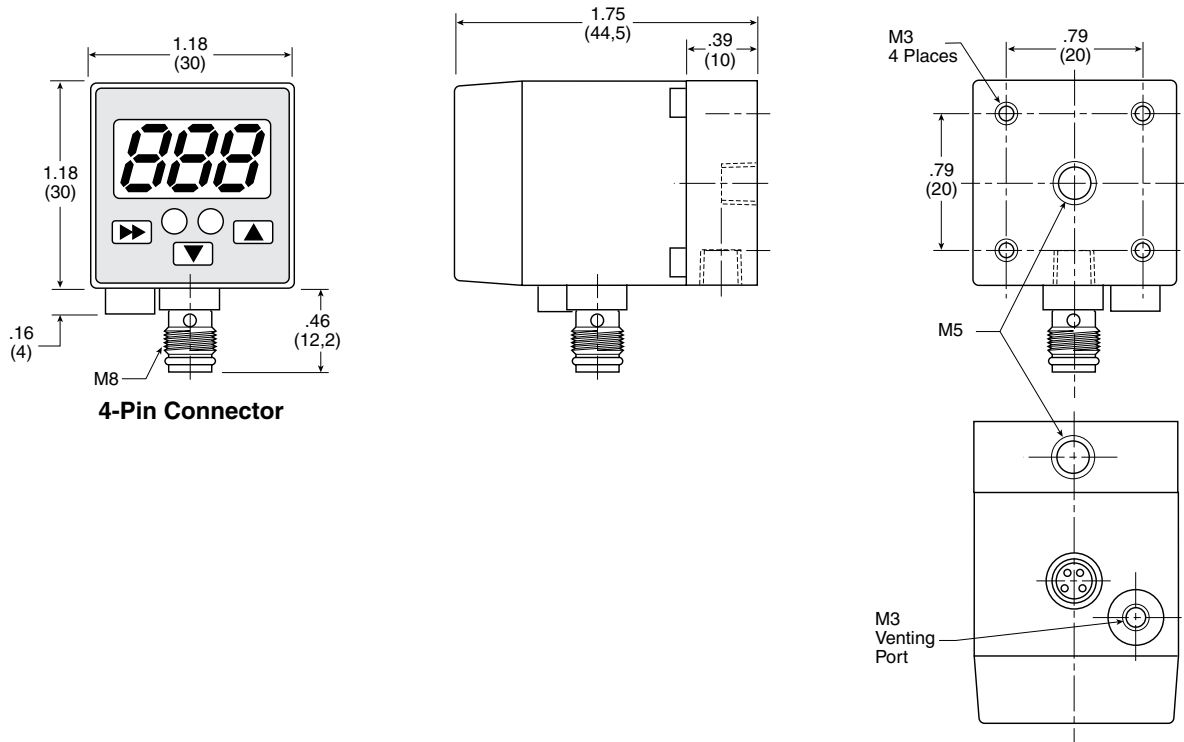
Display	Description	Solutions
<b>Err</b>	Zero Reset Error	Reset Zero Below 3% of F.S.
<b>Er1</b>	System Error (Internal)	Contact Factory
<b>Er2</b>	Auto Teach Mode Error	Restart Function
<b>CE1</b>	Over current of Output 1	Load current exceeds maximum 125mA.
<b>CE2</b>	Over current of Output 2	
<b>FFF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



## Dimensions

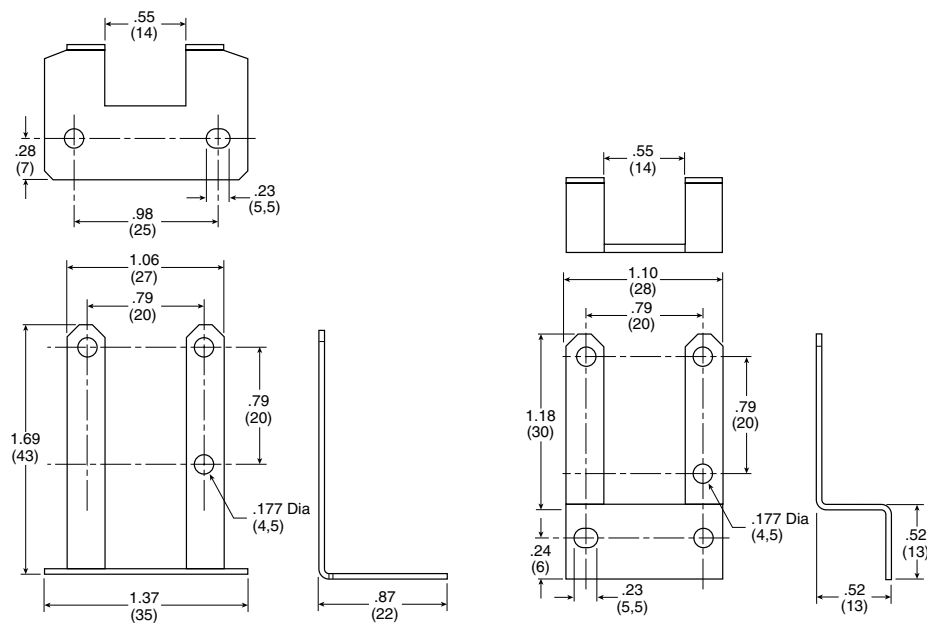
### M8, 4-Pin

### M5 Back & Bottom Ports



### MPS-ACCK1

### Mounting Brackets (Included)





See page 82 for Symbol Explanation

**1** Hold Press 1x

**Output Set Open or Closed Selecting Units of Measure Easy Mode Activation**

ou1 no nc

ou2 no nc

-PA -bA -H9 -iH

PA bA F9 PS

ESY off on

---

**4** Press 1x

**Output 1 Switch Point Setting Hysteresis Mode**

H-1 70 145

h-1 13 145

**Window Comparator Mode**

Low

A-1 42 144

High

b-1 71 145

End

**7** Press 6x

**Display Refresh Settings / Output Response Time Interval**

dSP 0.1 30

RL 1 16 64

End

5 12

**10** Hold Press 1x

**Lock**

Loc

Unlock

UnL

**2** Press 2x

**Output Mode 1 Hysteresis or Window Comparator**

ou1 HYS CnP OFF

End

**5** Press 3x

**Output 2 Switch Point Setting Hysteresis Mode**

H-2 97 145

h-2 13 145

**Window Comparator Mode**

Low

A-2 85 144

High

b-2 113 145

End

**8** Press 7x

**Display Peak Value Bottom Value or Their Difference**

Pb off on

Pbt 10 99

Pbd PE bo du

End

**11** Press 1x

**Peak Value**

PE

Press 1x

**Bottom Value**

bo

**3** Press 4x

**Output Mode 2 Hysteresis or Window Comparator**

ou2 HYS CnP OFF

End

**6** Press 5x

**Automatic Teach Mode & Auto Surveillance**

RL on off

RLn 1 100

End

Vacuum Cycle 803

Release Cycle 0

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.

P-1 off 300

**9** Press 8x

**Special Display Features**

dSF off on

Fnc 1b 1d 2b 2d

End

off

RL

**12** Press for 3 Seconds

**Zero Reset**

---

0

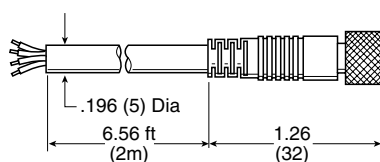




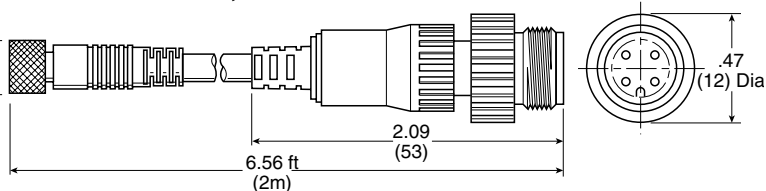
## Accessories

### Cables

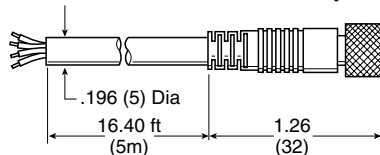
**CB-M8-4P-2M, Female to Open Lead**



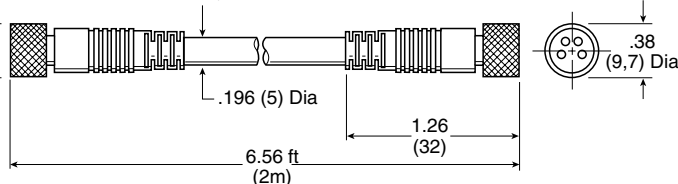
**CB-M8-4P-M12-2M, M8 Female to M12 Male**



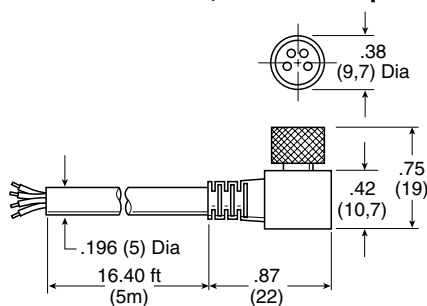
**CB-M8-4P-5M, Female to Open Lead**



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



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

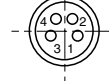


#### Pin Out Connection

**Female Interface  
4-Pin, M8**



**Male Interface  
4-Pin, M8**

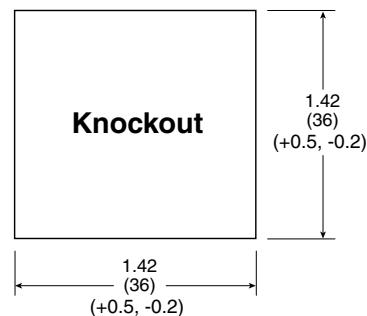
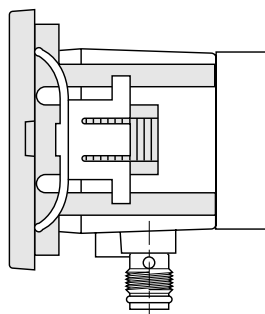
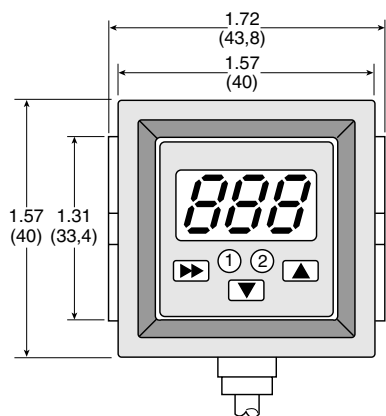


**Male Interface  
4-Pin, M12**



Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

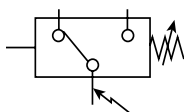
### MPS-ACCH1 Panel Mounting Bracket





# MPS-31

Red ↔ Green Display



Mounting Bracket MPS-ACCK1 Included with Sensors.

## 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/cm<sup>2</sup>, PSI, bar, kPa)
- **Output Response Time Less Than 2.0 Milliseconds**
- **CE Marked**
- **Air and Non-Corrosive Gases**
- **Error Message**

## MPS-31 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-31 Ordering Numbers

Pressure Range	Port Size	Output Circuit	Electrical Connector	Part Number**
0 to -30 inHg	1/8 NPSF*	PNP Sourcing	4 Pin, M8	<b>MPS-V31N-PC</b>
			2M Lead Wire	<b>MPS-V31N-PG</b>
		NPN Sinking	4 Pin, M8	<b>MPS-V31N-NC</b>
			2M Lead Wire	<b>MPS-V31N-NG</b>
-14.7 to 72.5 PSI	1/8 NPSF*	PNP Sinking	4 Pin, M8	<b>MPS-R31N-PC</b>
		NPN Sinking	4 Pin, M8	<b>MPS-R31N-NC</b>
0 to 145 PSI	1/8 NPSF*	PNP Sourcing	4 Pin, M8	<b>MPS-P31N-PC</b>
			2M Lead Wire	<b>MPS-P31N-PG</b>
		NPN Sinking	4 Pin, M8	<b>MPS-P31N-NC</b>
			2M Lead Wire	<b>MPS-P31N-NG</b>
		PNP Sourcing with 4-20ma	4 Pin, M8	<b>MPS-P31N-PCI</b>
			2M Lead Wire	<b>MPS-P31N-PGI</b>
		NPN Sourcing with 4-20ma	4 Pin, M8	<b>MPS-P31N-NCI</b>

\* 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

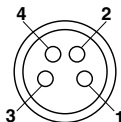
Pressure Range		Vacuum (V)	Positive (P)	Compound (R)
Units of Measure Display Resolution		bar: 0.001	bar: 0.01	bar: 0.01
		kPa: 0.1	MPa: 0.001	kPa: 1
		mmHg: 1	kgf/cm <sup>2</sup> : 0.01	kgf/cm <sup>2</sup> : 0.01
		inHg: 0.1	PSI: 1	PSI: 0.1
Media		Air and Non-Corrosive Gases		
Pressure Port		(N) 1/8" NPSF (Consult Factory for BSPP or BSPT Port)		
Proof Pressure		(V) 145 PSI, (P) 217.5 PSI, (R) 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		
Power Supply		10.8 to 26.4VDC, 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 Output		Output Signal, NPN or PNP, Normally Open or Closed, LED Indicator		
Output Modes		Hysteresis or Window Comparator		
Output Response Time		< 2ms, 32, 256, 512ms Programmable (Factory set 2ms)		
Repeatability		± 0.2% F.S.		
Analog Output	Current Output	Output Current: 4 to 20mA Linearity: ±0.5% F.S. or less Maximum Load Impedance: 300Ω with power supply voltage of 12V; 600Ω with power supply voltage of 12V; Minimum Load Impedance: 50Ω		
Thermal Error		1% over ±25°C (77°C) Temperature Change: Range 32 to 122°F (0 to 50°C)		
General Protection		IP40, CE Marked, EMC-EN55011 Class B, EN 50082-2		
Current Consumption		< 70mA		
Vibration Resistance		10 to 55Hz, 1.5mm, XYZ, 2 hrs.		
Shock Resistance		10 G, XYZ		
Material		Housing: Polycarbonate, Pressure Port: Zinc Die-cast		
Mass		1.7 oz. (45g)		



## Sensor Pin Out

### Pin #

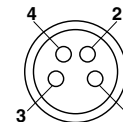
- 1 Brown: 24VDC
- 2 White: Not Used
- 3 Blue: 0VDC
- 4 Black: NPN / PNP Open Collector Output 1



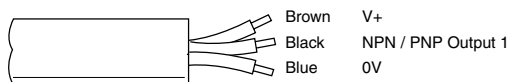
## Sensor Pin Out with Analog Output

### Pin #

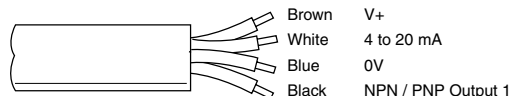
- 1 Brown: 24VDC
- 2 White: 4 to 20mA
- 3 Blue: 0VDC
- 4 Black: NPN / PNP Open Collector Output 1



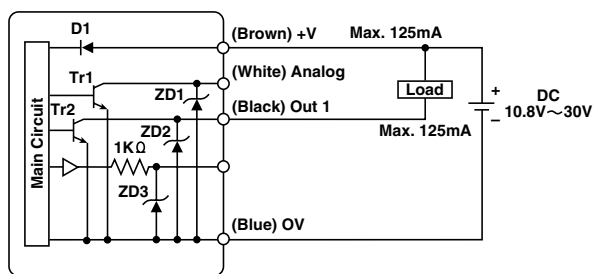
## Lead Wiring



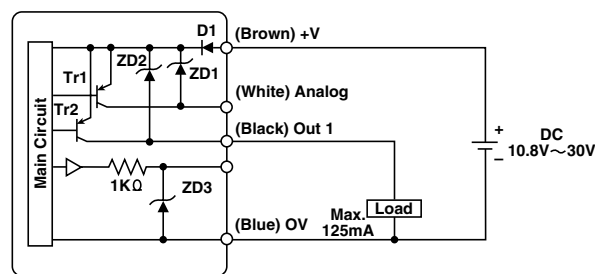
## Lead Wiring



## Internal Circuit for Open Collector and Analog Output Wiring



**NPN**



**PNP**

## ⚠ 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

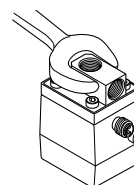
- Parker / Convum Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of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

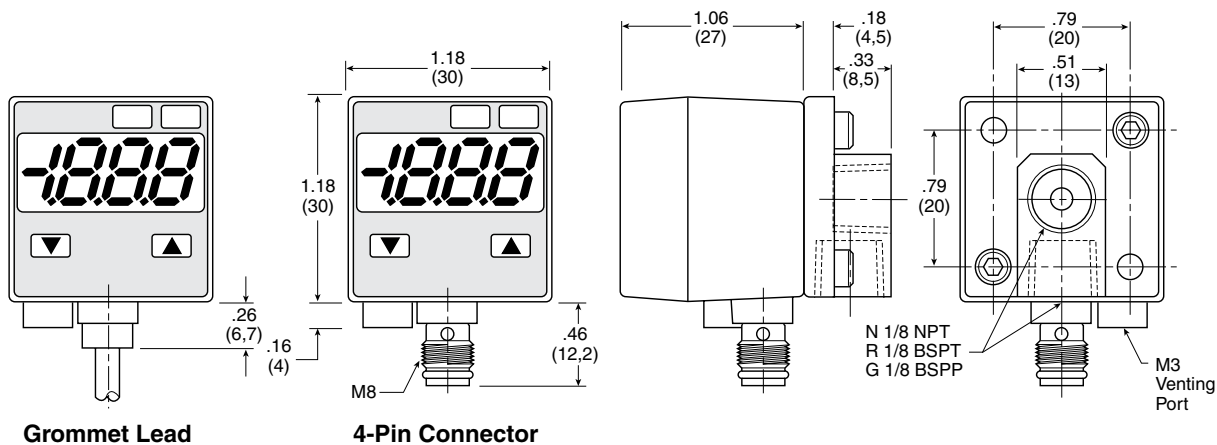
Display	Description	Solutions
<b>Err</b>	Zero Reset Error	Reset Zero Below 3% of F.S.
<b>Er1</b>	System Error (Internal)	Contact Factory
<b>CE1</b>	Over current of Output 1	Load current exceeds maximum 125mA.
<b>FFF</b> <b>-FF</b>	Applied pressure exceeds pressure range	Apply pressures within the rating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



## Dimensions

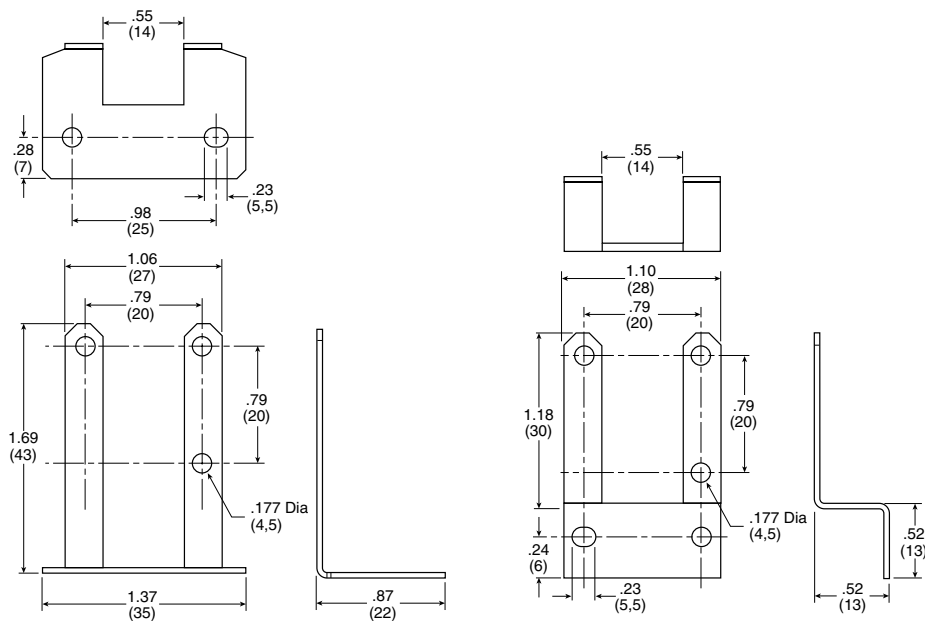
**N, R, G**

**1/8" Female**



## MPS-ACCK1

**Mounting  
 Brackets  
 (Included)**

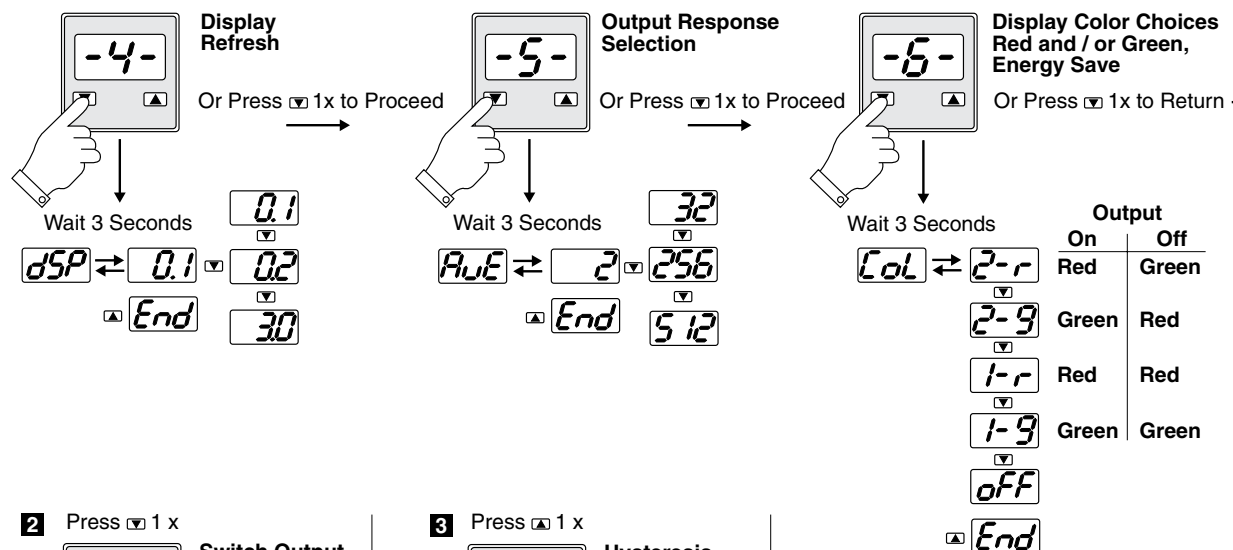
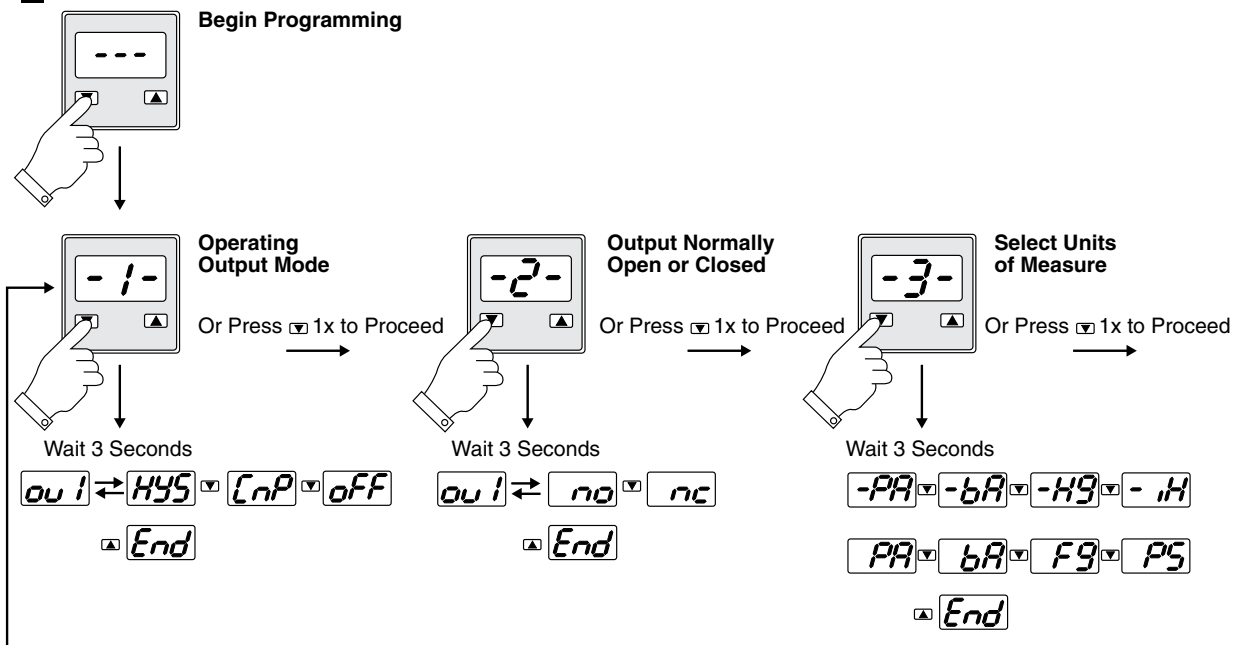




See page 82 for Symbol Explanation

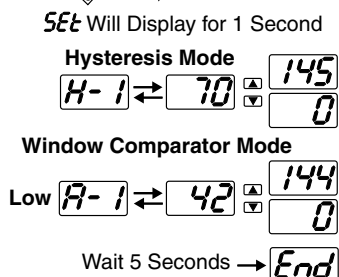
**1** Press for 3 Seconds

**Begin Programming**



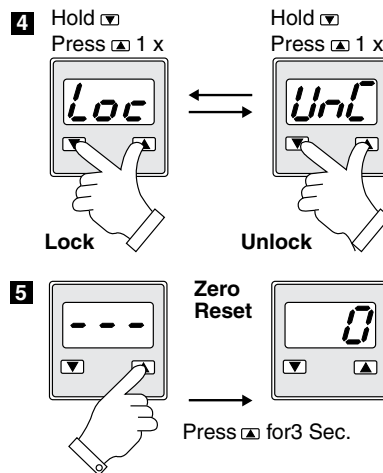
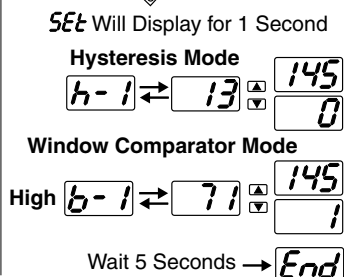
**2** Press 1 x

**Switch Output Setting and Low Setting**



**3** Press 1 x

**Hysteresis Setting and High Setting**

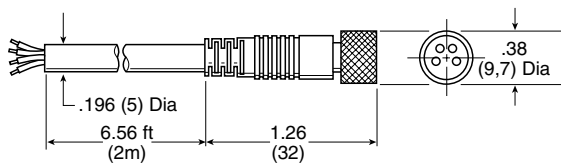




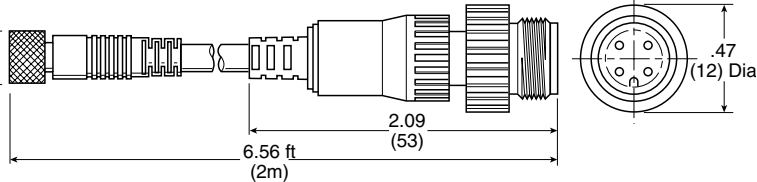
## Accessories

### Cables

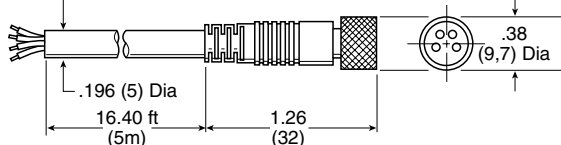
CB-M8-4P-2M, Female to Open Lead



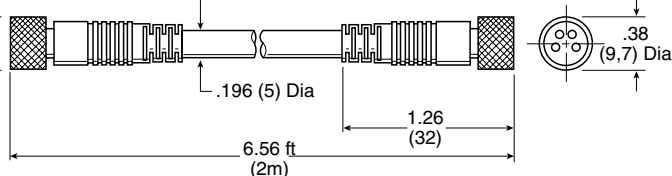
CB-M8-4P-M12-2M, M8 Female to M12 Male



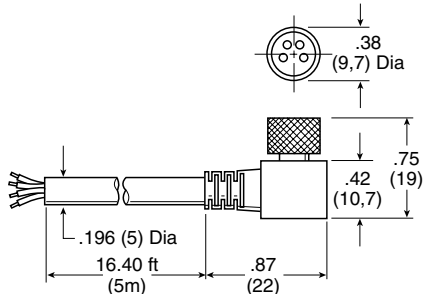
CB-M8-4P-5M, Female to Open Lead



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



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



### Pin Out Connection

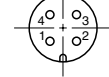
Female Interface  
4-Pin, M8



Male Interface  
4-Pin, M8



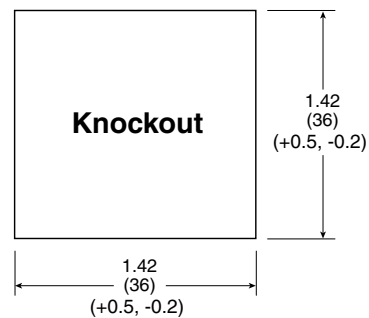
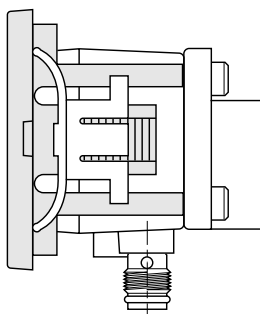
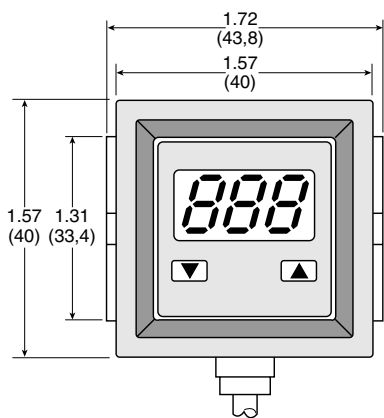
Male Interface  
4-Pin, M12



Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

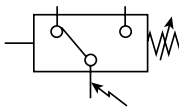
### MPS-ACCH7

### Panel Mounting Bracket





# MPS-4



Mounting Bracket MPS-ACCK1 Included with Sensors.

## Features

- **Pressure Ranges:**  
     Vacuum Pressure ..... 0 to -29.8 inHg  
     Positive Pressure ..... -8 to 8 inH<sub>2</sub>O
- **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

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-4 Ordering Numbers

Pressure Range	Port Size	Output Circuit	Electrical Connector	Part Number**
0 to -30 inHg	M5 Female	PNP Sourcing with 1-5VDC analog	2M Lead Wire	MPS-V4M5-PGA
		NPN Sinking with 1-5VDC analog		MPS-V4M5-NGA
-8 to 8 inH <sub>2</sub> O	M5 Female	PNP Sourcing with 1-5VDC analog	2M Lead Wire	<b>MPS-D4M5-PGA</b>
		NPN Sinking with 1-5VDC analog		<b>MPS-D4M5-NGA</b>

\*\* Mounting Bracket Included

## Specifications

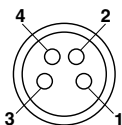
<b>Media</b>	Air and Non-Corrosive Gases
<b>Pressure Port</b>	M5 Female (2 qty.)
<b>Proof Pressure</b>	(V) 29 PSI, (D) 3.9
<b>Operating Temperature</b>	32 to 122°F (0 to 50°C)
<b>Storage Temperature</b>	14 to 140°F (-10 to 60°C)
<b>Humidity</b>	35 to 85% RH
<b>Electrical Connection</b>	(G) Grommet Lead,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



## Sensor Pin Out

### Pin #

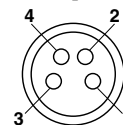
- 1 Brown: 24VDC
- 2 White: NPN / PNP Open Collector Output 2
- 3 Blue: 0VDC
- 4 Black: NPN / PNP Open Collector Output 1



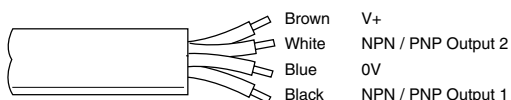
## Sensor Pin-Out with Analog Output

### Pin #

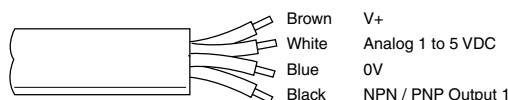
- 1 Brown: 24VDC
- 2 White: Analog 1 to 5VDC Output
- 3 Blue: 0VDC
- 4 Black: NPN / PNP Open Collector Output 1



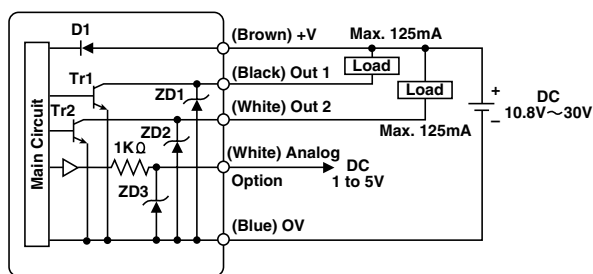
## Lead Wiring



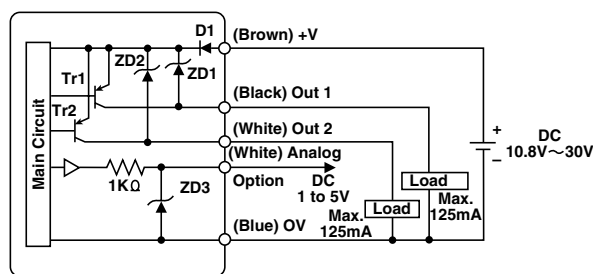
## Lead Wiring



## Internal Circuit for Open Collector and Analog Output Wiring



**NPN**



**PNP**

## ⚠ 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.

## 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.

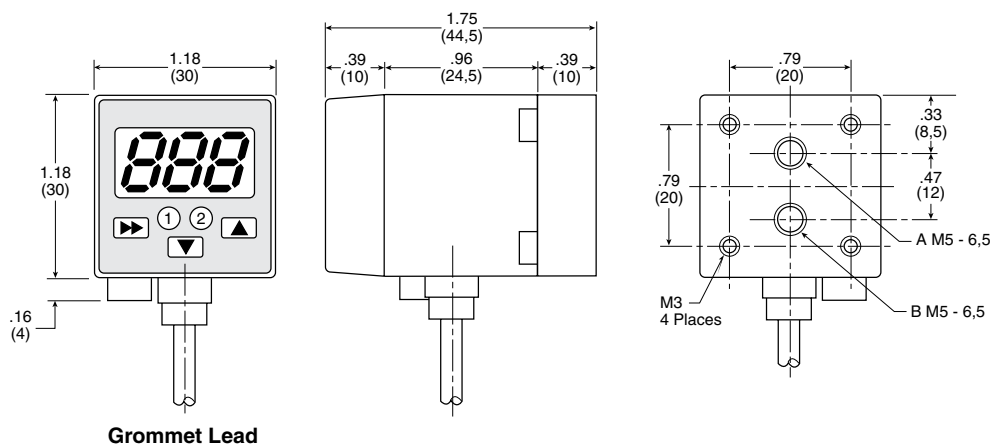
## Error Messages

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



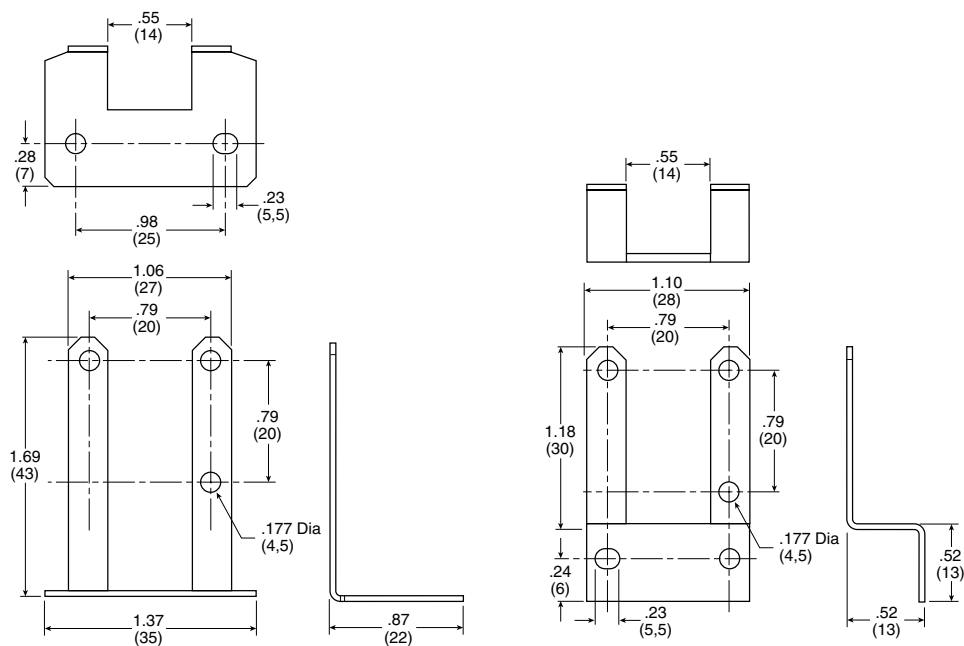
## Dimensions

### M5 Female



### MPS-ACCK1

#### Mounting Brackets (Included)





See page 82 for Symbol Explanation

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

ou1  $\leftrightarrow$  no  $\Delta$  nc  
 ou2  $\leftrightarrow$  no  $\Delta$  nc  
 PA  $\Delta$  H2O  $\Delta$  inH  
 End

- 4** Press 1x  
Output 1 Switch Point Setting  
Hysteresis Mode

H-1  $\leftrightarrow$  5.0  $\Delta$  8.0  
 h-1  $\leftrightarrow$  10  $\Delta$  8.0

Window Comparator Mode

Low  
 A-1  $\leftrightarrow$  30  $\Delta$  8.0  
 High  
 b-1  $\leftrightarrow$  5.0  $\Delta$  8.0  
 End

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

dSP  $\leftrightarrow$  0.1  $\Delta$  30  
 RuE  $\leftrightarrow$  1  $\Delta$  16  $\Delta$  64  
 End

- 2** Press 2x  
Output Mode 1  
Hysteresis or Window Comparator

ou1  $\leftrightarrow$  HYS  $\Delta$  CnP  $\Delta$  OFF  
 End

- 5** Press 3x  
Output 2 Switch Point Setting  
Hysteresis Mode

H-2  $\leftrightarrow$  8.0  $\Delta$  8.0  
 h-2  $\leftrightarrow$  10  $\Delta$  8.0

Window Comparator Mode

Low  
 A-2  $\leftrightarrow$  6.0  $\Delta$  8.0  
 High  
 b-2  $\leftrightarrow$  8.0  $\Delta$  8.0  
 End

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

Pb  $\leftrightarrow$  OFF  $\Delta$   
 Pbt  $\leftrightarrow$  10  $\Delta$  99  
 Pbd  $\leftrightarrow$  PE  $\Delta$  bo  $\Delta$  du  
 End

- 3** Press 4x  
Output Mode 2  
Hysteresis or Window Comparator

ou2  $\leftrightarrow$  HYS  $\Delta$  CnP  $\Delta$  OFF  
 End

- 6** Press 5x  
Port Reference Selection

Pot  $\leftrightarrow$  A  $\Delta$  b  $\Delta$  Ab  
 End

- 9** Hold Press 1x  
Lock  $\leftrightarrow$  Unlock

- 10** Press 1x  
Peak Value  $\leftrightarrow$  Bottom Value

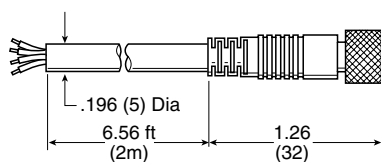
- 11** Hold for 3 Seconds  
Zero Reset



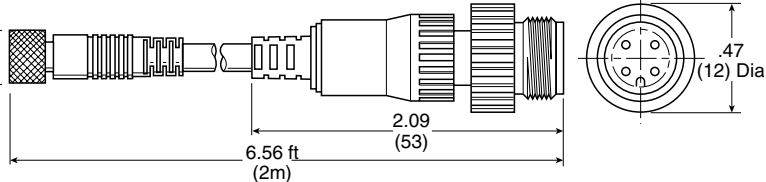
## Accessories

### Cables

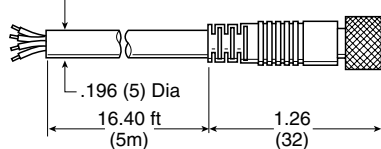
CB-M8-4P-2M, Female to Open Lead



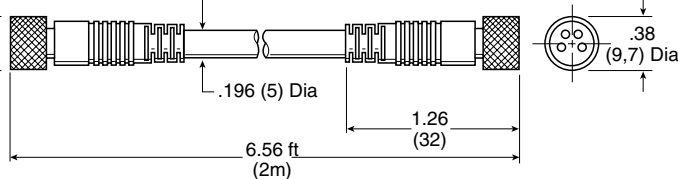
CB-M8-4P-M12-2M, M8 Female to M12 Male



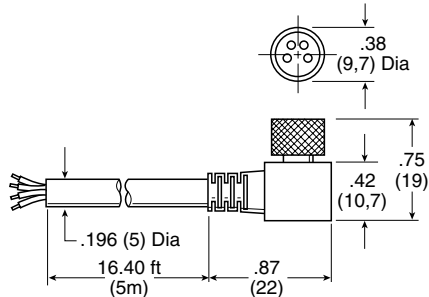
CB-M8-4P-5M, Female to Open Lead



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



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

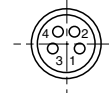


#### Pin Out Connection

Female Interface  
4-Pin, M8



Male Interface  
4-Pin, M8



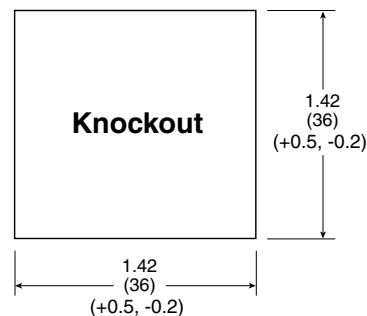
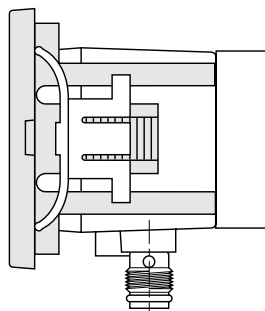
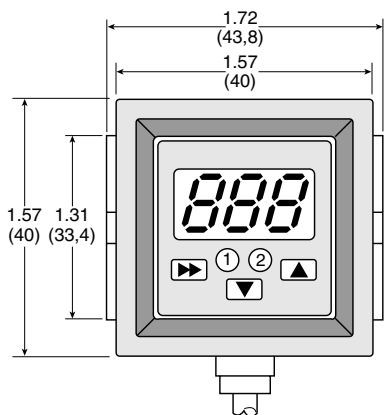
Male Interface  
4-Pin, M12



Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

### MPS-ACCH1

#### Panel Mounting Bracket



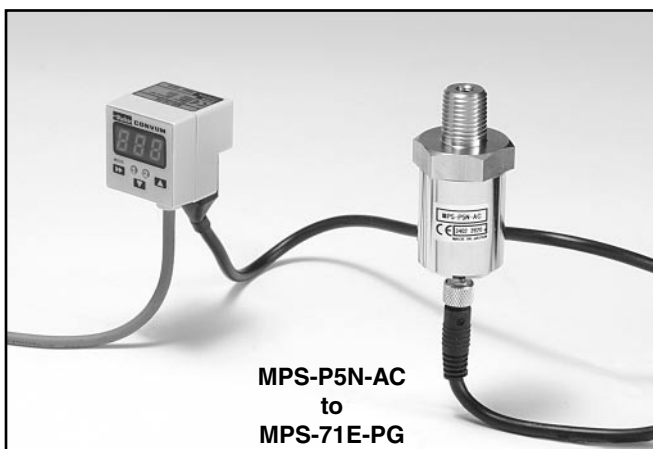


# MPS-5 Stainless



MPS-5VFN-AC

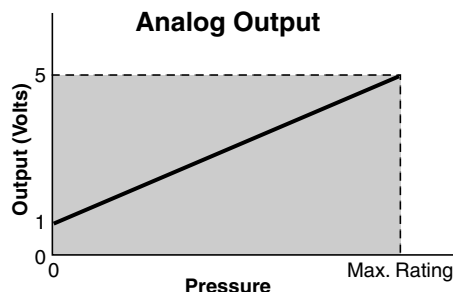
Mounting Bracket MPS-ACCK1 Included with Sensors.



MPS-P5N-AC  
to  
MPS-71E-PG

## 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

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-5 Ordering Numbers

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

\* 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

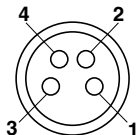
<b>Media</b>	Liquids and Gases Non-Corrosive to 316SS
<b>Pressure Port</b>	<b>(N)</b> 1/4" Male NPT with M5 Female (Consult Factory for BSPT Port)
<b>Proof Pressure</b>	<b>(V)</b> 145 PSI, <b>(P)</b> 290 PSI
<b>Operating Temperature</b>	32 to 122°F (0 to 50°C)
<b>Storage Temperature</b>	14 to 140°F (-10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



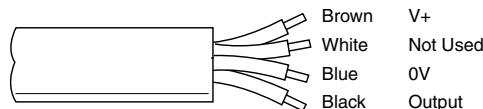
## Sensor Pin Out

Pin #

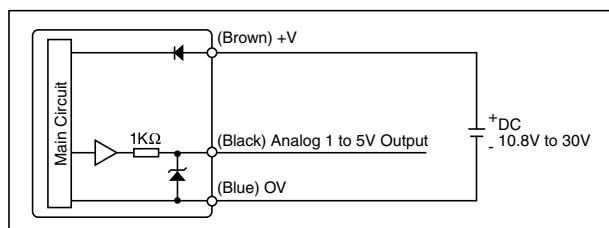
- 1 Brown: 24VDC
- 2 Black: Analog 1-5VDC
- 3 Blue: 0VDC
- 4 Not Used



## Lead Wiring



## Internal Circuit



**Analog**

## ⚠ 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.

- 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.

## Operating Environment

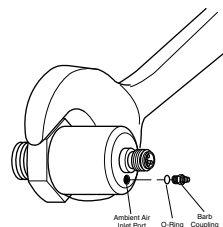
- Parker / Convm Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of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

- 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.





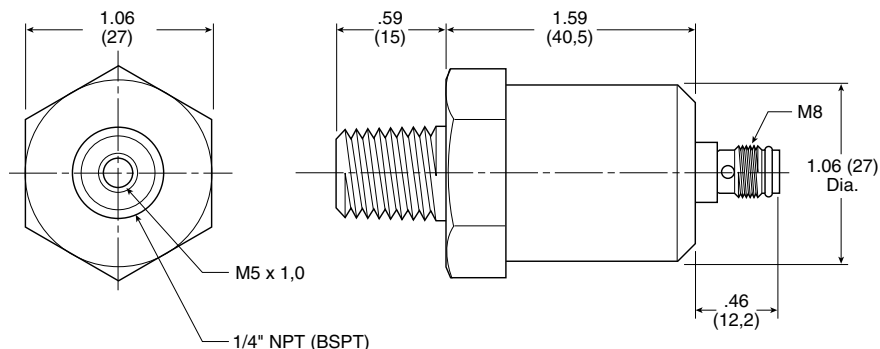


## Dimensions

**N, R**

**1/4" Male**

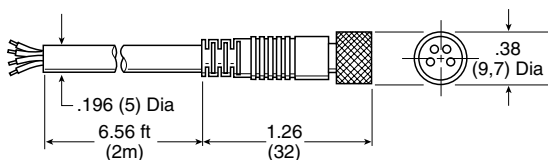
**4-Pin, M8 Connector**



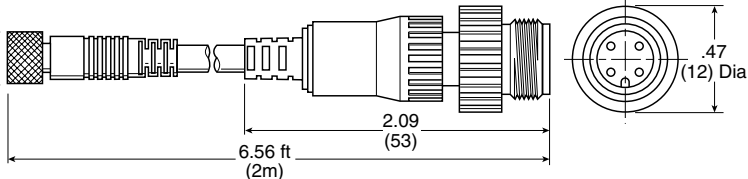
## Accessories

### Cables

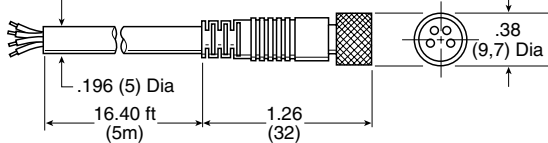
**CB-M8-4P-2M, Female to Open Lead**



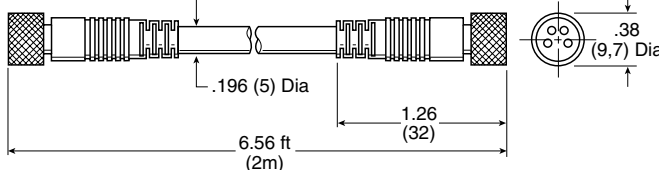
**CB-M8-4P-M12-2M, M8 Female to M12 Male**



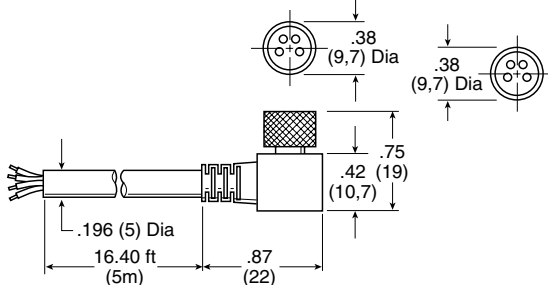
**CB-M8-4P-5M, Female to Open Lead**



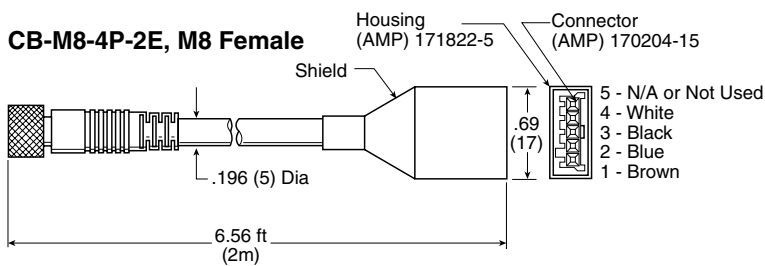
**CB-M8-4P-M8-2M, M8 Female to M8 Male**



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



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

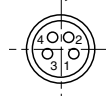


**Female Interface**  
**4-Pin, M8**

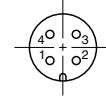


Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

**Male Interface**  
**4-Pin, M8**

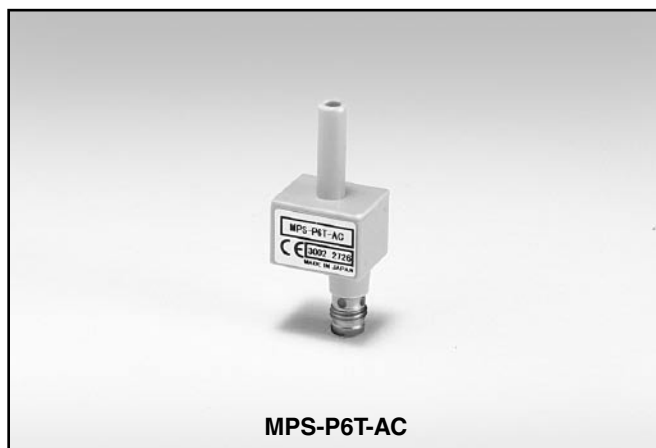
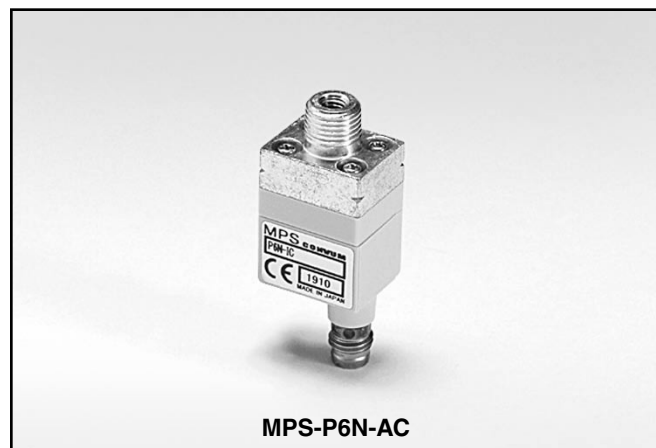
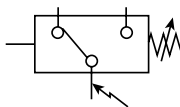


**Male Interface**  
**4-Pin, M12**





# 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

Fixed Outputs	✓
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-6 Ordering Numbers

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

\* 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

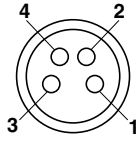
<b>Media</b>	Air and Non-Corrosives Gases
<b>Pressure Port</b>	( <b>N</b> ) 1/8" NPT Male, ( <b>T</b> ) 6mm Tube Stud (Consult Factory for BSPP or BSPT Port)
<b>Proof Pressure</b>	( <b>V</b> ) 72.5 PSI, ( <b>P</b> ) 217.5 PSI
<b>Operating Temperature</b>	32 to 122°F (0 to 50°C)
<b>Storage Temperature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



## Sensor Pin Out

### Pin #

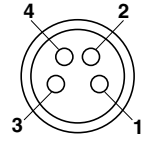
- 1 Brown: 24VDC
- 2 White: NPN / PNP Open Collector Output
- 3 Blue: 0VDC
- 4 Black: NPN / PNP Open Collector Output



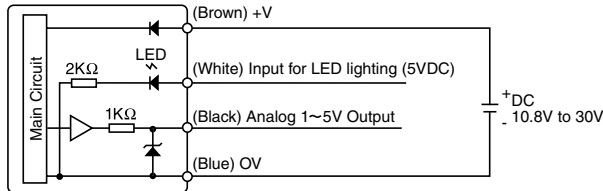
## Sensor Pin Out with Analog Output

### Pin #

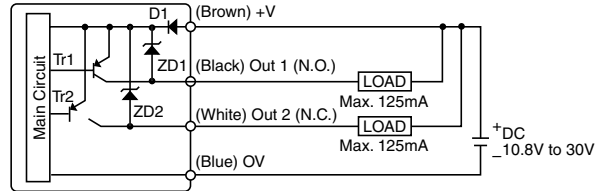
- 1 Brown: 24VDC
- 2 White: LED In 5VDC
- 3 Blue: 0VDC
- 4 Black: Analog 1 to 5VDC



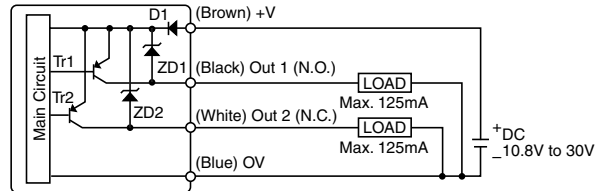
## Internal Circuit



**Analog**



**NPN Open Collector**



**PNP Open Collector**

## ⚠ 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

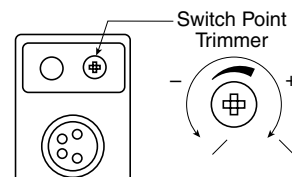
- Dedicate a power supply of 10.8 to 30VDC to the sensor and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
- A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.
- Verify the operating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

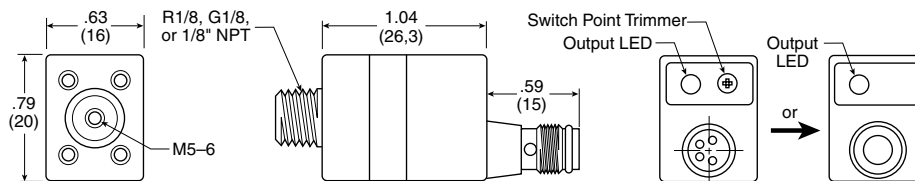




## Dimensions

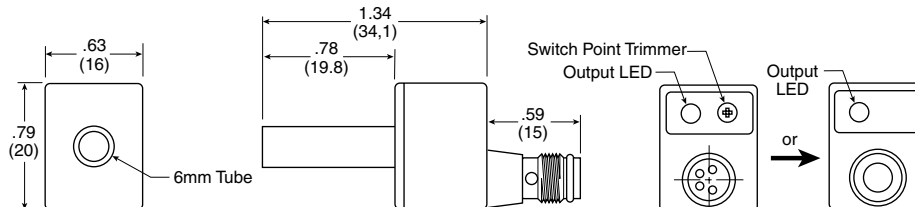
**N, R, G**

**1/8" Male,  
M5 Female,  
M8, 4-Pin**



**T6**

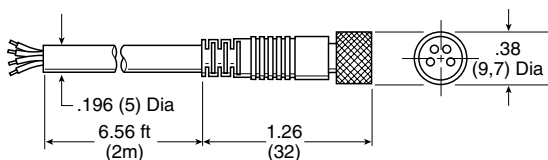
**Tube Stud,  
M8, 4-Pin**



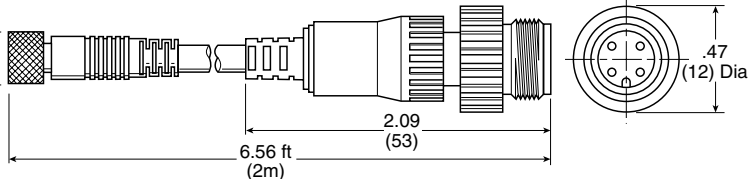
## Accessories

### Cables

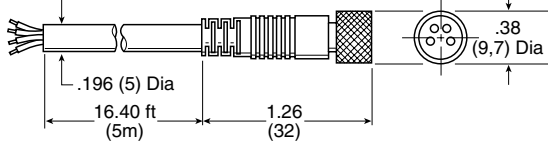
**CB-M8-4P-2M, Female to Open Lead**



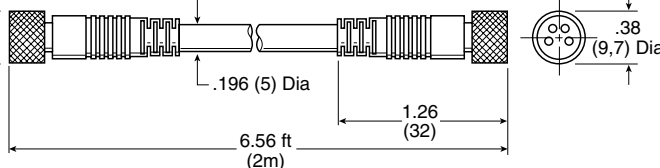
**CB-M8-4P-M12-2M, M8 Female to M12 Male**



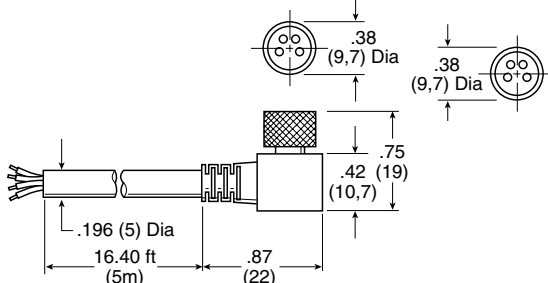
**CB-M8-4P-5M, Female to Open Lead**



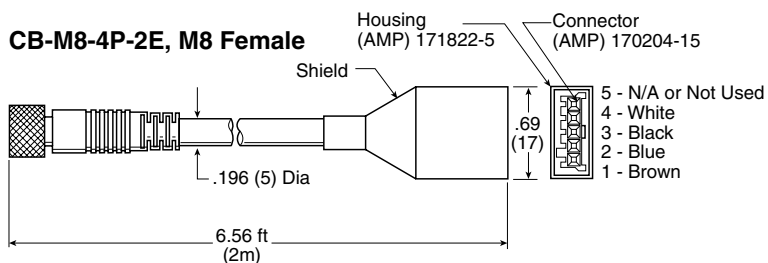
**CB-M8-4P-M8-2M, M8 Female to M8 Male**



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



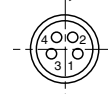
**CB-M8-4P-2E, M8 Female**



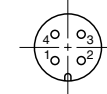
**Female Interface  
4-Pin, M8**



**Male Interface  
4-Pin, M8**



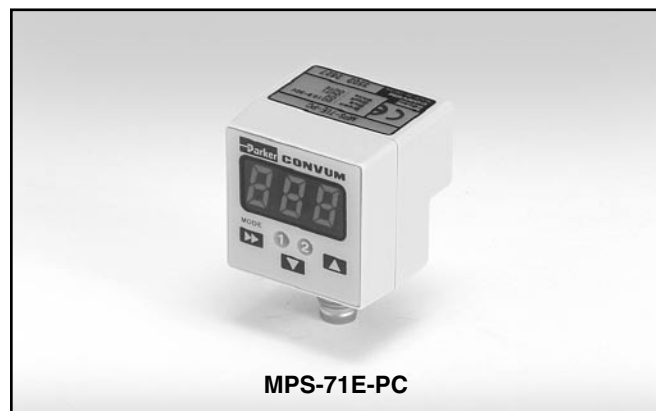
**Male Interface  
4-Pin, M12**



Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black



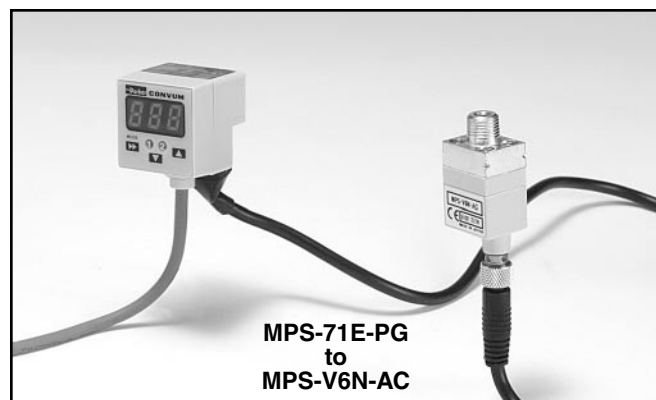
# MPS-7



MPS-71E-PC



MPS-74E-NG



MPS-71E-PG  
to  
MPS-V6N-AC

Mounting Bracket Included with Sensors.

## 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

	MPS-71	MPS-74
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-7 Ordering Numbers

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

\*\* 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.



**CB-M8-4P-2E**

Sensors

## Specifications

Remote Pressure Range	Vacuum (V)	Positive (P)	Compound (R)	Low (L)
<b>Units of Measure</b>	bar: 0.001	bar: 0.01	bar: 0.01	bar: 0.001
<b>Display Resolution</b>	kPa: 0.1	MPa: 0.001	kPa: 1	kPa: 0.1
	mmHg: 1	kgf/cm <sup>2</sup> : 0.01	kgf/cm <sup>2</sup> : 0.01	kgf/cm <sup>2</sup> : 0.001
	inHg: 0.1	PSI: 1	PSI: 0.1	PSI: 0.1
<b>Proof Pressure</b>	See Remote Sensor Specifications			
<b>Operating Temperature</b>	32 to 122°F (0 to 50°C)			
<b>Storage Temperature</b>	14 to 140°F (-10 to 60°C)			
<b>Humidity</b>	35 to 85% RH			
<b>Electrical Connection</b>	(G) Grommet Open Lead, (C) M8			
<b>Power Supply</b>	10.8 to 30VDC, Ripple (P-P) 10% Max., Reverse Voltage Protection			
<b>Display</b>	<b>MPS-71:</b> 3-Digit, 7-Segment LED, <b>MPS-74:</b> 4-Digit, 7-Segment LED			
<b>Display Refresh</b>	<b>MPS-71:</b> 0.1 to 3.0 sec. (Factory set at 0.1), <b>MPS-74:</b> 0.2 Fixed			
<b>Circuit</b>	NPN (Sinking), PNP (Sourcing) Open Collector Transistor, 30VDC, 125mA			
<b>74 - 1 Switch Output 71 - 2 Switch Outputs</b>	Output Signals, NPN or PNP, LED Indicator			
<b>Response Time</b>	MPS-71 <2ms, MPS-74 <5ms			
<b>Repeatability</b>	± 0.2% F.S.			
<b>Thermal Error</b>	1% over ±25°C (77°C) Temperature Change: Range 32 to 122°F (0 to 50°C)			
<b>General Protection</b>	IP40, CE Marked			
<b>Current Consumption</b>	MPS-71 <45mA, MPS-74 <75mA			
<b>Vibration Resistance</b>	10 to 55Hz, 1.5mm, XYZ, 2 hrs.			
<b>Shock Resistance</b>	10 G, XYZ			
<b>Material</b>	<b>Body:</b> Polycarbonate			
<b>Mass</b>	<b>MPS-71:</b> .90 oz. (25g), <b>MPS-74:</b> 1.0 oz. (30g)			

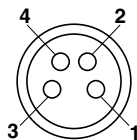


## MPS-71 Open Collector Wiring

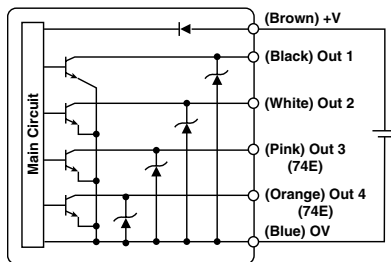
### Pin # Grommet Lead Only

- 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

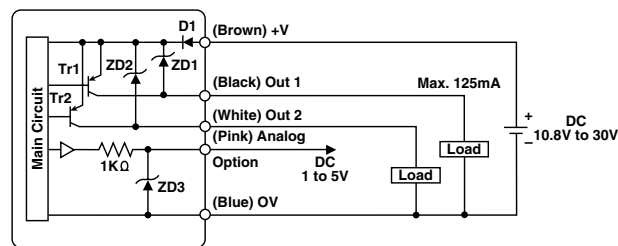
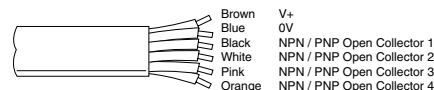


**MPS-71 & MPS-74 NPN / PNP Open Collector**

## 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



**PNP Open Collector Analog Out**

## ⚠ 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.

## 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.

## Error Messages

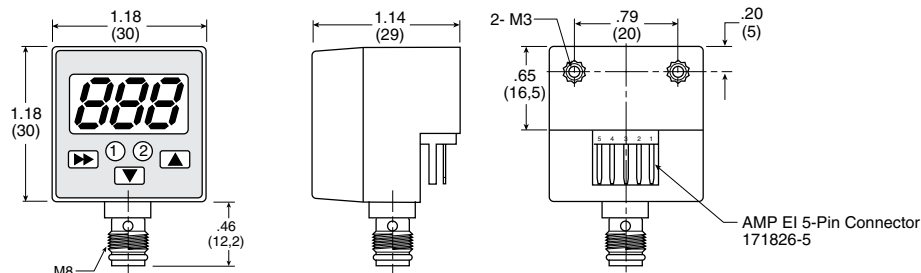
Display	Description	Solutions
<b>Err</b>	Zero Reset Error	Reset Zero Below 3% of F.S.
<b>PErr</b>	Peak Value Error	Check Vacuum Source
<b>Er1</b>	System Error (Internal)	Contact Factory
<b>CE1</b>	Over current of Output 1	Load current exceeds maximum 125mA.
<b>CE2</b>	Over current of Output 2	
<b>CE3</b>	Over current of Output 3 (MPS-74)	
<b>CE4</b>	Over current of Output 4 (MPS-74)	
<b>FFF</b> <b>-FF</b>	Applied pressure exceeds pressure range	Apply pressures within the rating of the sensor





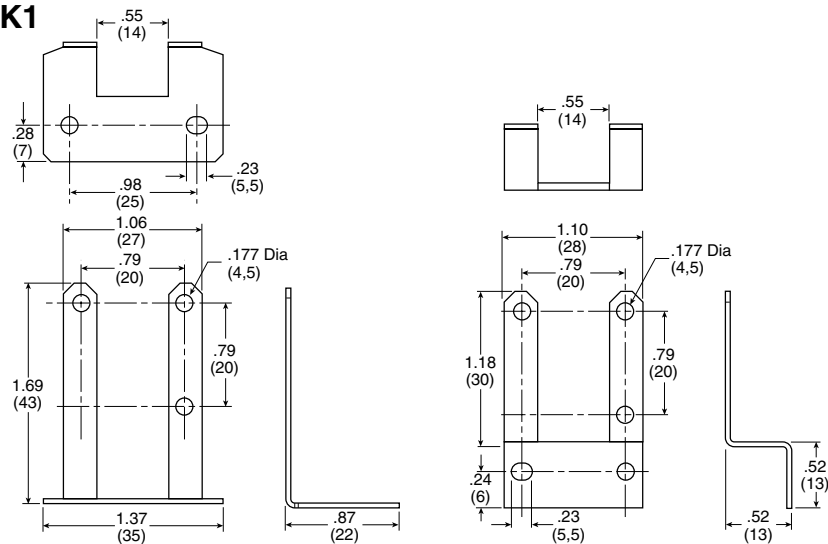
## Dimensions

### MPS-71

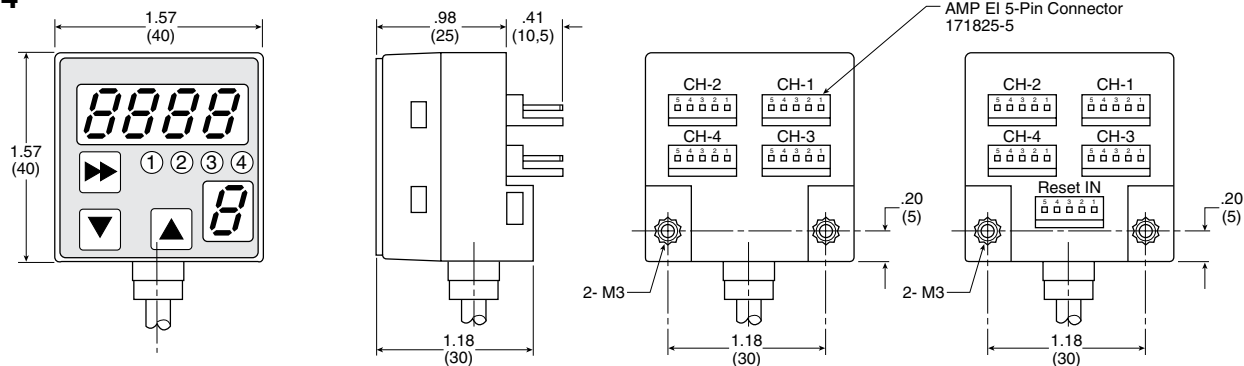


### MPS-ACCK1

#### Mounting Bracket (Included)

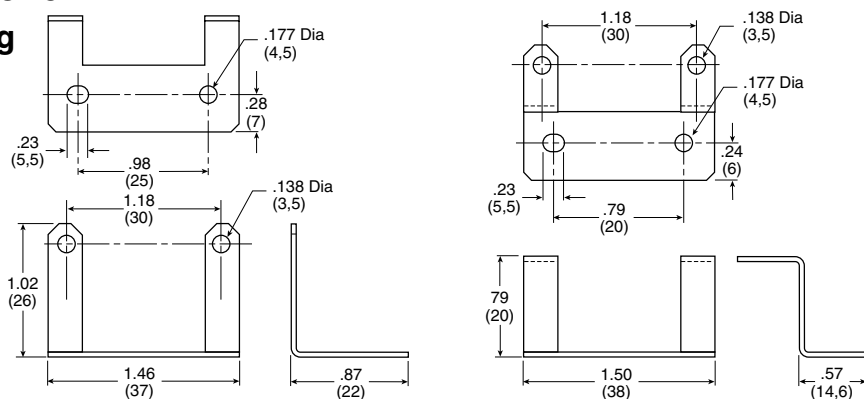


### MPS-74





### MPS-ACCK3

#### Mounting Bracket (Included)
















See page 82 for Symbol Explanation




**1** Hold  Press  1x


**Output Set Open or Closed Easy Mode Activation**




  



**4** Press **[H]** 1x

**Output 1 Switch Point Setting**

**Hysteresis Mode**



**H-1**  $\rightleftharpoons$  **70** **[A]** **[V]** **145**  
**[H]** **0**

**h-1**  $\rightleftharpoons$  **13** **[A]** **[V]** **145**  
**[H]** **0**

**Window Comparator Mode**

**Low**

**A-1**  $\rightleftharpoons$  **42** **[A]** **[V]** **144**  
**[H]** **0**

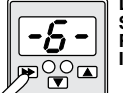
**High**

**b-1**  $\rightleftharpoons$  **71** **[A]** **[V]** **145**  
**[H]** **1**

**End**

**7** Press **6x**

Display Refresh  
Settings / Output  
Response Time  
Interval



**dSP**  $\Rightarrow$  **0.1**  $\Rightarrow$  **15**  $\Rightarrow$  **64**  $\Rightarrow$  **End**

**5 1/2**

**10** Press **9x**

Select  
Units of  
Measure

Select  
Pressure


**P1** **2** **3** **4**

Vacuum Low Positive Compound  
Pressure Pressure Pressure

**End**

**2** Press **2x**

Output Mode 1  
Hysteresis or  
Window  
Comparator



The device display shows **-2-** and three navigation buttons (left arrow, center, right arrow).


**ou1**  $\Rightarrow$  **HYS** **A** **[CNP]** **A** **OFF**

**END**

**5** Press **3x**

**Output 2 Switch Point Setting**

**Hysteresis Mode**



**H-2**  $\rightleftarrows$  **97** **145**  
**0**

**h-2**  $\rightleftarrows$  **13** **145**  
**0**

**Window Comparator Mode**

**Low**


**A-2**  $\rightleftarrows$  **85** **144**  
**0**

**High**

**b-2**  $\rightleftarrows$  **113** **145**  
**1**

**End**

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





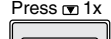
**Pb**  $\leftrightarrow$  **OFF** **on**

**Pbt**  $\leftrightarrow$  **10** **99**  
**2**

**Pbd**  $\leftrightarrow$  **PE** **bo** **du**


**End**


**11** Hold   
Press  1x




**Lock**


**Unlock**

**12** Press  1x




**Peak Value**

Press  1x



**Bottom Value**


**13** Press **0** 3 Sec



**Zero Reset**

**3** Press **MODE** 4x

Output Mode 2  
Hysteresis or  
Window  
Comparator



**OUT**  $\leftrightarrow$  **HYS** **A** **COMP** **A** **OFF**

**END**

6 Press 5x

Automatic Teach Mode & Auto Surveillance

AL

Vacuum Cycle

803

Release Cycle

0

AL

on

off

ALn

1

100

1

End

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.

**9** Press **8x**

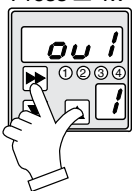
**Special Display Features**

**d5f** ↔ **off** (up/down) ↔ **on**

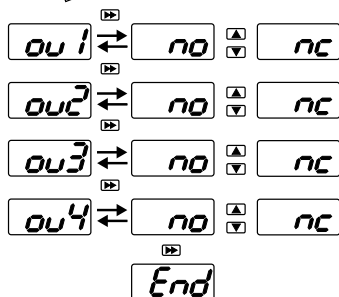
**Fnc** ↔ **1b** (left) ↔ **1d** (right) ↔ **2b** (right) ↔ **2d** (right) ↔ **off** (left) ↔ **All** (left)



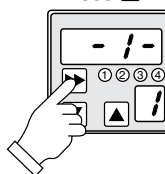
1 Hold 1x  
Press 1x



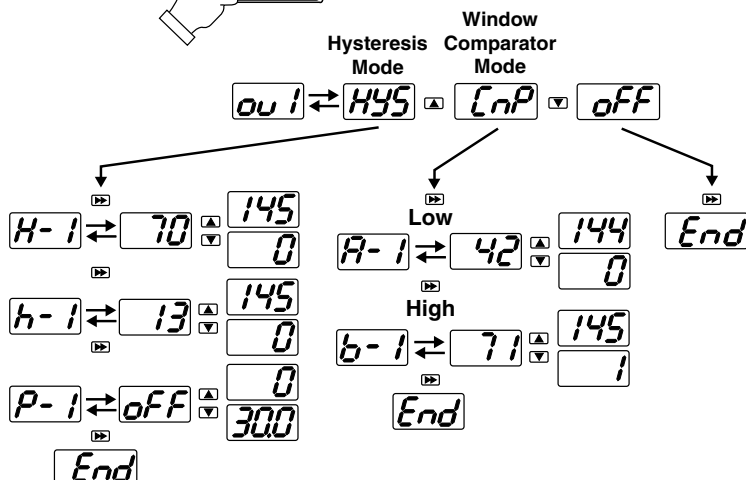
Output Selection  
Normally Open / Normally Closed



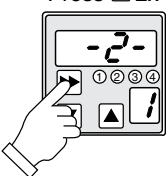
2 Press 1x



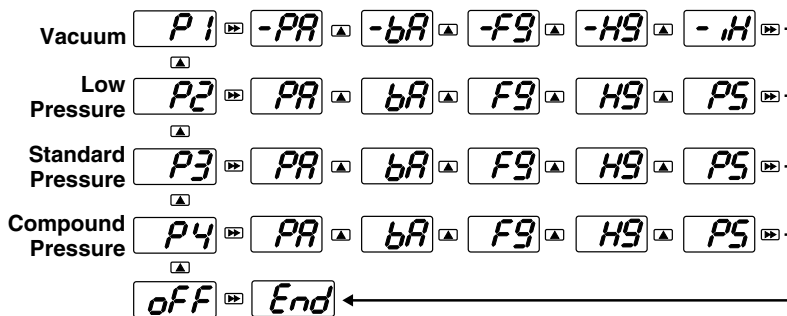
Select Output Mode  
Hysteresis or Window Comparator  
Output Setting  
Peak Surveillance  
(Repeat Procedure for Each Channel)



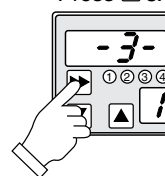
3 Press 2x



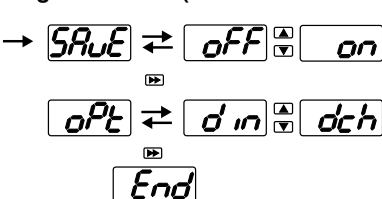
Select Remote Pressure  
Select Unit of Measure



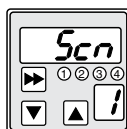
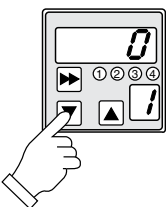
4 Press 3x



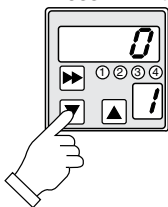
Energy Saving Mode  
Digital IN Mode (Remote Zero Reset)



5 Press and Hold 3 Seconds  
Scan Mode



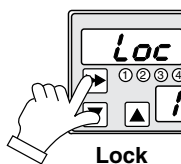
Press 1x to Deactivate



3 Second  
Intervals

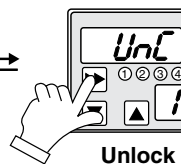


6 Hold 1x  
Press 1x



Lock

Hold 1x  
Press 1x



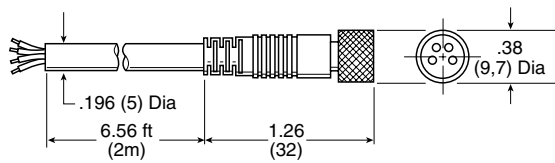
Unlock



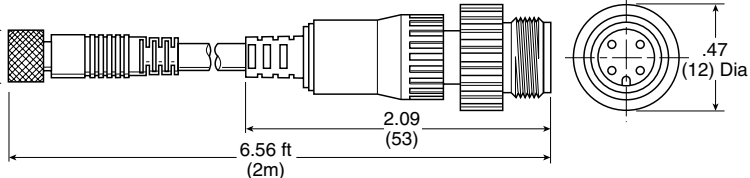
## Accessories

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

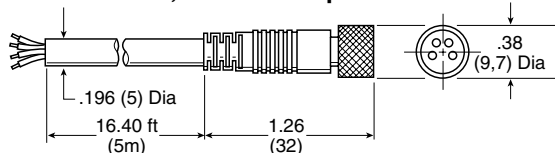
**CB-M8-4P-2M, Female to Open Lead**



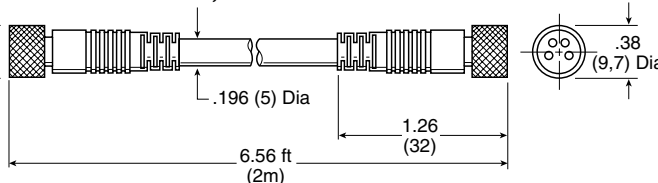
**CB-M8-4P-M12-2M, M8 Female to M12 Male**



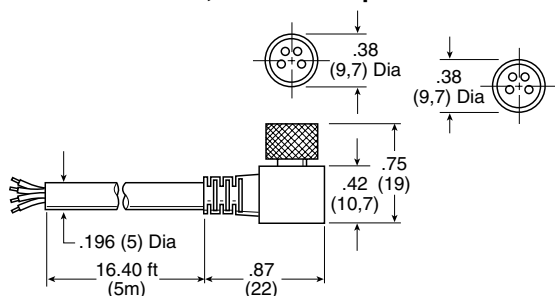
**CB-M8-4P-5M, Female to Open Lead**



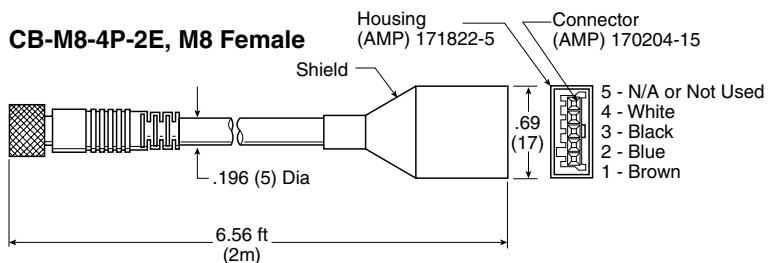
**CB-M8-4P-M8-2M, M8 Female to M8 Male**



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



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

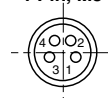


**Female Interface  
4-Pin, M8**

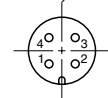


Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

**Male Interface  
4-Pin, M8**



**Male Interface  
4-Pin, M12**



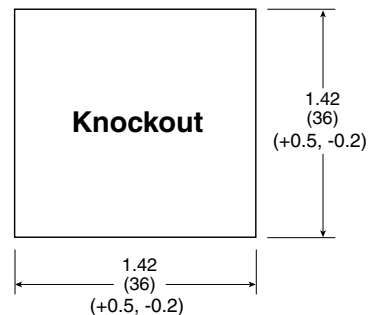
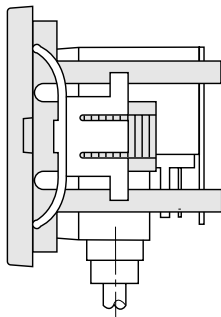
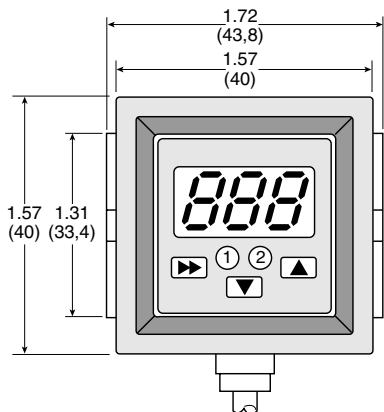
- 5 - N/A or Not Used
- 4 - White
- 3 - Black
- 2 - Blue
- 1 - Brown



## Accessories

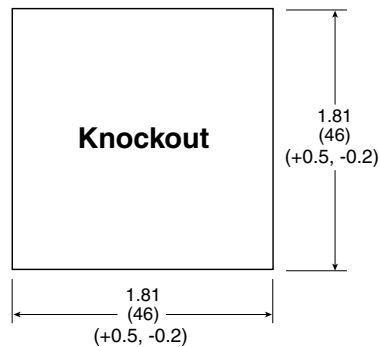
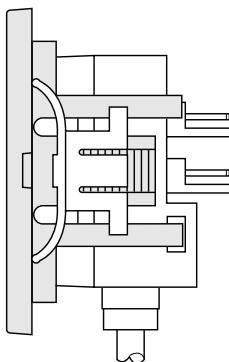
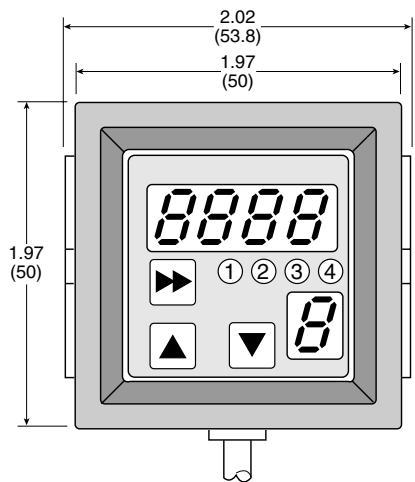
### MPS-ACCH4

#### Panel Mounting Bracket for MPS-71



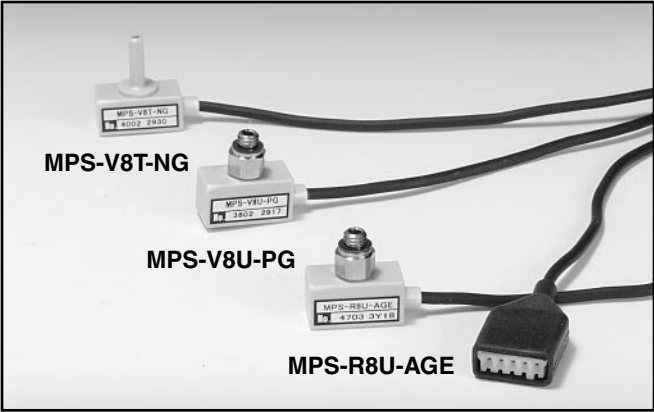
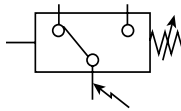
### MPS-ACCH5

#### 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

Fixed Outputs	✓
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-8 Ordering Numbers

Pressure Range	Port Size	Output Circuit	Electrical Connector	Part Number
0 to -30 inHg	M5 Bottom Swivel Male	PNP Sourcing	4 Pin, M8	<b>MPS-V8U-PG</b>
		NPN Sinking		<b>MPS-V8U-NG</b>
		1-5VDC Analog	2m grommet, MPS-7 Connector*	<b>MPS-V8U-AGE</b>
	4mm Tube Stud	PNP Sourcing	4 Pin, M8	<b>MPS-V8T-PG</b>
		NPN Sinking		<b>MPS-V8T-NG</b>
		1-5vVDC Analog	2m grommet, MPS-7 Connector*	<b>MPS-V8T-AGE</b>
-14.7 to 72.5 PSI	M5 Bottom Swivel Male	1-5VDC Analog	2m grommet, MPS-7 Connector*	<b>MPS-R8U-AGE</b>
	4mm Tube Stud	1-5VDC Analog	2m grommet, MPS-7 Connector*	<b>MPS-R8T-AGE</b>

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

## Specifications

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



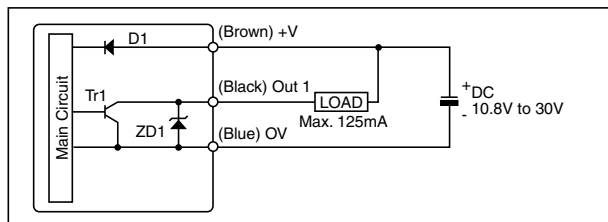
## Open Collector Wiring

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

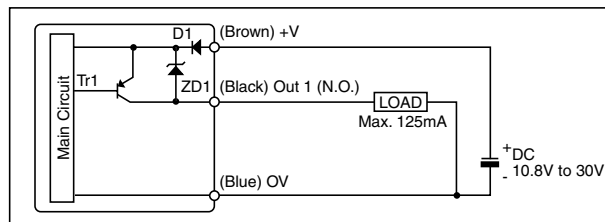
## Analog Wiring

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

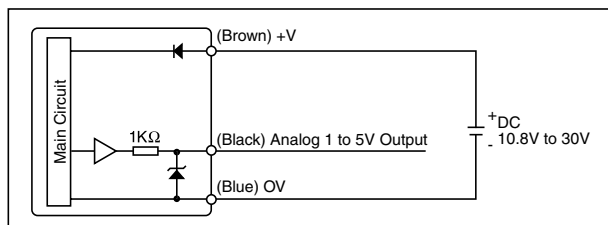
## Internal Circuit



**NPN Open Collector**



**PNP Open Collector**



**Analog**

## ⚠ 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.

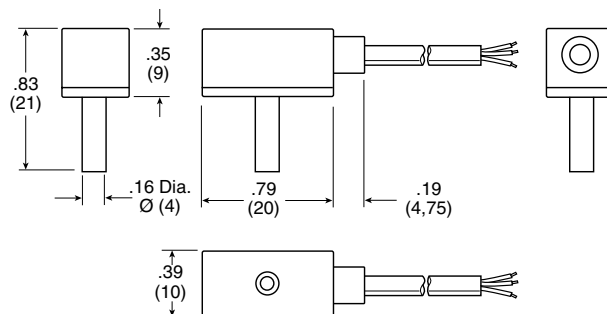




## Dimensions

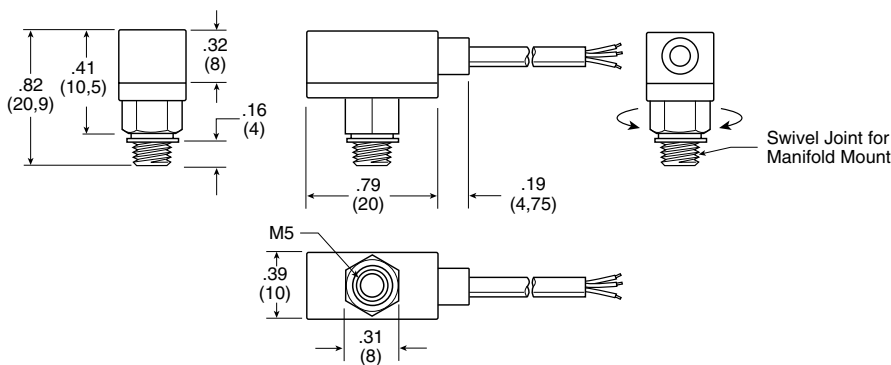
### MPS-8T

#### 4mm Tube Stud



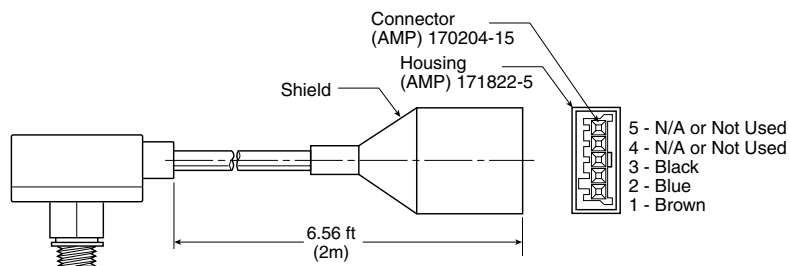
### MPS-8U

#### M5 Male Swivel, Grommet



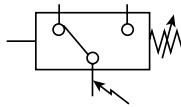
### 2m Grommet

#### 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

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-9 Ordering Numbers

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

## Specifications

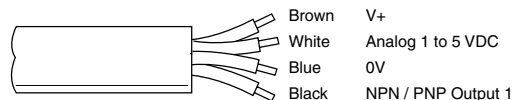
Pressure Range	Vacuum (V)	Compound (R)
<b>Units of Measure</b> <b>Display Resolution</b>	bar: 0.001 kPa: 0.1 mmHg: 1 inHg: 0.1	bar: 0.01 kPa: 1 kgf/cm <sup>2</sup> : 0.01 PSI: 0.1
<b>Media</b>	Air and Non-Corrosive Gases	
<b>Pressure Port</b>	M5 Female	
<b>Proof Pressure</b>	<b>(V)</b> 72.5 PSI, <b>(R)</b> 116 PSI	
<b>Operating Temperature</b>	32 to 122°F (0 to 50°C)	
<b>Storage Temperature</b>	14 to 140°F (-10 to 60°C)	
<b>Humidity</b>	35 to 85% RH	
<b>Electrical Connection</b>	2m Grommet Open Lead	
<b>Power Supply</b>	10.8 to 30VDC, Ripple Vp-p 10% Max., Reverse Voltage Protection	
<b>Display</b>	3-Digit, 7-Segment LED	
<b>Display Refresh</b>	0.2 sec. Fixed	
<b>Output Circuit</b>	NPN (Sinking) or PNP (Sourcing) Open Collector Transistor, 30VDC, 125mA	
<b>Linear Outputs</b>	Analog Output 1 to 5VDC	
<b>Switch Outputs</b>	1 Switch Output, Normally Open, NPN or PNP, LED Indicator	
<b>Output Mode</b>	Hysteresis: 0 to 100% of Switch Point Comparative: 2 limits selectable over full range	
<b>Output Response Time</b>	< 1.5ms	
<b>Repeatability</b>	± 0.2% F.S.	
<b>Thermal Error</b>	1% over ±25°C (77°C) Temperature Change: Range 32 to 122°F (0 to 50°C)	
<b>General Protection</b>	IP65, CE Marked, EMC Rating: EN55011 Class B, EN50082-2	
<b>Current Consumption</b>	< 60mA	
<b>Vibration Resistance</b>	10 to 55Hz, 1.5mm, XYZ, 2 hrs.	
<b>Shock Resistance</b>	10 G, XYZ	
<b>Material</b>	<b>Body:</b> Polycarbonate; <b>Pressure Port:</b> Anodized Aluminum	
<b>Mass</b>	0.53 oz. (15g)	



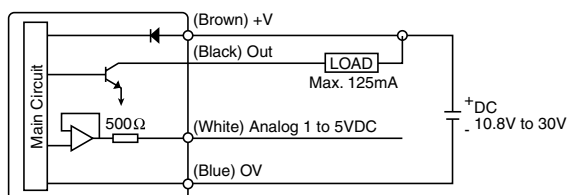
## Open Collector and Analog Wiring

### Grommet Lead Only

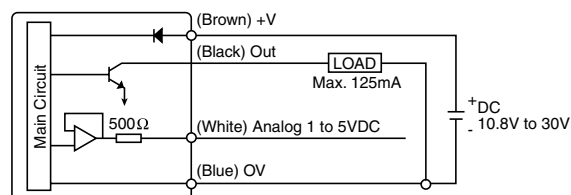
Brown: 24VDC  
 Blue: 0VDC  
 Black: NPN / PNP Open Collector Output 1  
 White: Analog 1 to 5VDC



## Internal Circuit



**NPN Open Collector with Analog Option**



**PNP Open Collector with Analog Option**

## ⚠ 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

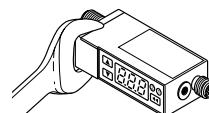
- Parker / Convum Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of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

## 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.



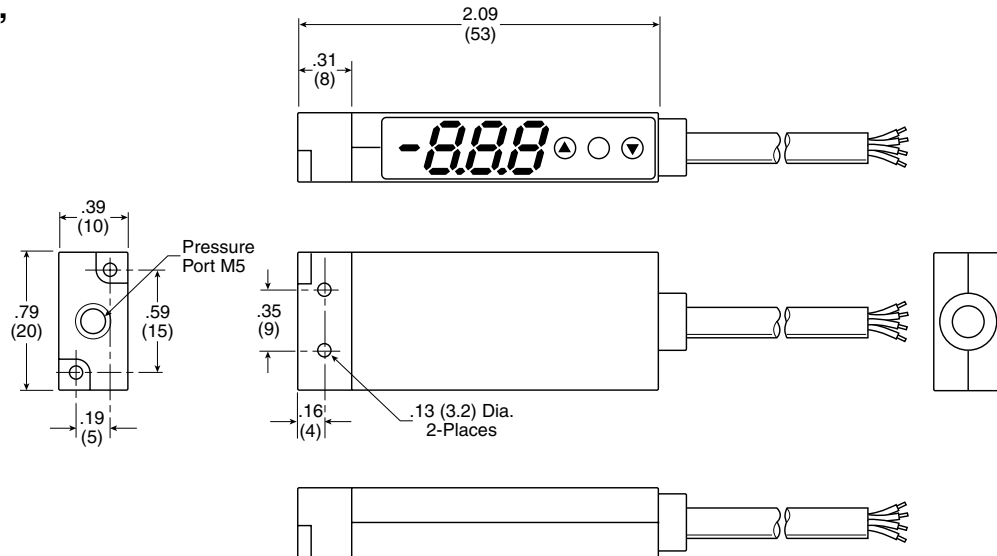
## Error Messages

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



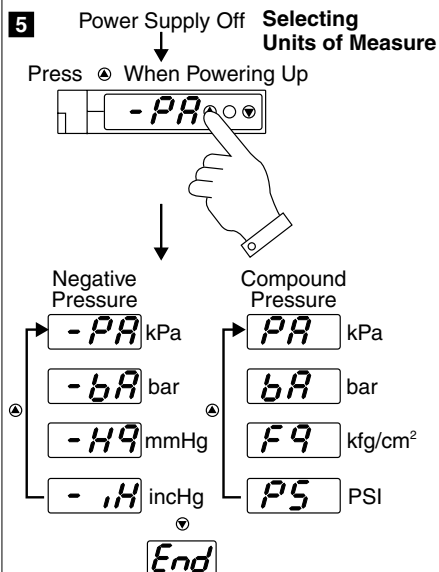
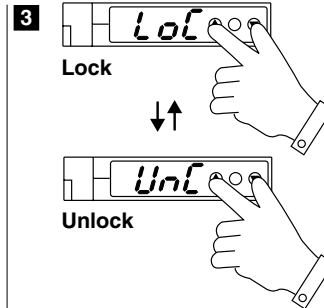
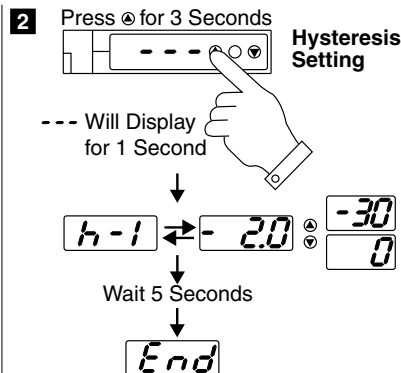
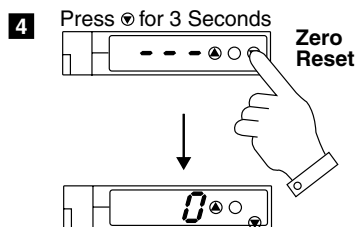
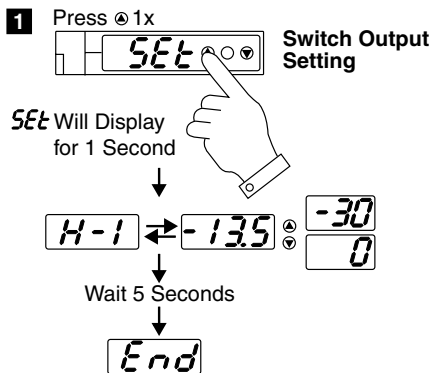
## Dimensions

### M5 Female, Grommet



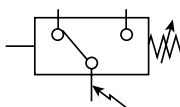
## Programming Features

See page 82 for Symbol Explanation





# SCPSD



## 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

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	✓



## SCPSD Ordering Numbers

Pressure Range	Port Size	Output Circuit	Electrical Connector	Part Number
-14.7 to 100 PSI	7/6-20 UNF-2b (SAE-4)	( 2 ) PNP	M12, 4 Pin	SCPSD-0100P-0727
-14.7 to 100 PSI	7/6-20 UNF-2b (SAE-4)	( 1 ) PNP with 4-20MA	M12, 4 Pin	SCPSD-0100P-1727
-14.7 to 250 PSI	7/6-20 UNF-2b (SAE-4)	( 2 ) PNP	M12, 4 Pin	SCPSD-0250P-0727
-14.7 to 250 PSI	7/6-20 UNF-2b (SAE-4)	( 1 ) PNP with 4-20MA	M12, 4 Pin	SCPSD-0250P-1727
0 to 1000 PSI	7/6-20 UNF-2b (SAE-4)	( 2 ) PNP with 4-20MA	M12, 5 Pin	SCPSD-1000P-1725
0 to 1000 PSI	7/6-20 UNF-2b (SAE-4)	( 1 ) PNP with 4-20MA	M12, 4 Pin	SCPSD-1000P-1727
0 to 3000 PSI	7/6-20 UNF-2b (SAE-4)	( 2 ) PNP	M12, 4 Pin	SCPSD-3000P-0727
0 to 3000 PSI	7/6-20 UNF-2b (SAE-4)	( 1 ) PNP with 4-20MA	M12, 4 Pin	SCPSD-3000P-1727
0 to 3000 PSI	7/6-20 UNF-2b (SAE-4)	( 2 ) PNP with 4-20MA	M12, 5 Pin	SCPSD-3000P-1725
0 to 5000 PSI	7/6-20 UNF-2b (SAE-4)	( 2 ) PNP	M12, 4 Pin	SCPSD-5000P-0727
0 to 5000 PSI	7/6-20 UNF-2b (SAE-4)	( 1 ) PNP with 4-20MA	M12, 4 Pin	SCPSD-5000P-1727
0 to 5000 PSI	7/6-20 UNF-2b (SAE-4)	( 2 ) PNP with 4-20MA	M12, 5 Pin	SCPSD-5000P-1725
0 to 9000 PSI	7/6-20 UNF-2b (SAE-4)	( 2 ) PNP	M12, 4 Pin	SCPSD-9000P-0727
0 to 9000 PSI	7/6-20 UNF-2b (SAE-4)	( 1 ) PNP with 4-20MA	M12, 4 Pin	SCPSD-9000P-1727
-1 to 16 Bar	1/4 BSPP Male	( 2 ) PNP	M12, 4 Pin	SCPSD-016-04-17
-1 to 16 Bar	1/4 BSPP Male	( 2 ) PNP with 4-20ma	M12, 5 Pin	SCPSD-016-14-15
0 to 250 Bar	1/4 BSPP Male	( 2 ) PNP	M12, 4 Pin	SCPSD-250-04-17
0 to 250 Bar	1/4 BSPP Male	( 2 ) PNP with 4-20ma	M12, 5 Pin	SCPSD-250-14-15
0 to 600 Bar	1/4 BSPP Male	( 2 ) PNP	M12, 4 Pin	SCPSD-600-04-17
0 to 600 Bar	1/4 BSPP Male	( 2 ) PNP with 4-20ma	M12, 5 Pin	SCPSD-600-14-15

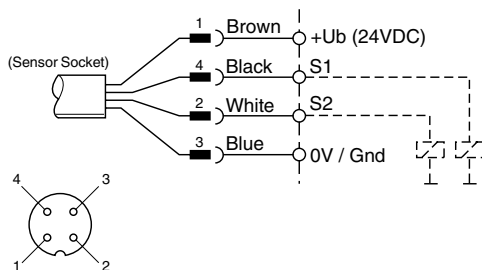
## Specifications

Pressure Code	0100	0250	016	1000	3000	5000	9000	250	600
Units of Measure	PSI ,bar, MPA								
Measure Range ( PSI, <i>bar</i> )	-14.7 to 100	-14.7 to 250	-1 to 16	0 to 1000	0 to 3000	0 to 5000	0 to 9000	0 to 250	0 to 600
Overload Pressure ( PSI, <i>bar</i> )	360	725	40	2900	7250	11600	21750	500	1200
Burst Pressure ( PSI, <i>bar</i> )	360	725	50	11600	17400	24650	31900	1200	2200
Sensing Element	Ceramic			Stainless Steel					
Parts in Contact with Media	Stainless Steel 1.4404			Stainless Steel 1.4404, 1.4542, NBR*					
	Ceramic AL203, NBR*								
	*FPDM, EPDM Special Request								
Switch Cycles	>100 Million								
Output Response Time	< 10ms								
Power Supply	15 to 30VDC, Class 2 Power Supply								
Short Circuit Protection	Yes, 2.4 Amp / Open Collector Output								
Reverse Polarity Protection	Yes								
Overload Protection	Yes								
Current Consumption	< 100mA								
Output Circuit	2 PNP (Sourcing) Open Collector Transistor								
Analog Output	0/4...20mA, Programmable, freely scaleable								
Output Functions	Hysteresis, Window Comparator								
Switching Voltage	-1.5VDC								
Maximum Current Output	1A with 2 Open Collector Outputs, .5A per Output								
Accuracy	± 0.5% F.S. Typ., ± 1% Max.								
Repeatability	± 0.25% F.S.								
Display Accuracy	± 0.5% F.S. Typ., ± 1 Digit								
Thermal Error Max.	±0.03% F.S. at -4 to 185°F (-20 to 85°C)								
Material	Pressure Die-cast Zinc Z 410: Surface-finishing								
Display Material	Polyester								
General Protection	IP 67, EN60529, UL, CE Marked, EMC-EN50082-2 Class B, EN 50081-2								
Temperature Range of Media	-4 to 185°F (-20 to 85°C)								
Ambiant Temperature Range	-4 to 185°F (-20 to 85°C)								
Storage Temperature	-40 to 212°F (-40 to 100°C)								
Display	4-Digit, 7-Segment LED, Red, 9mm Height								
Tightening Torque	35Nm								
Vibration Resistance	20G, 10 to 500Hz, IEC60068-2-6								
Shock Resistance	50 G, XYZ, 11ms, IEC60068-2-29								
Mass	10.6 oz. (300g)								

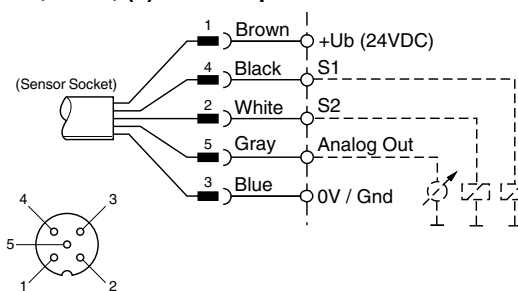


## Internal Circuit

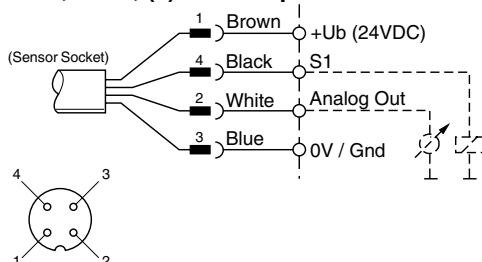
**M12, 4-Pin, (2) PNP Outputs**



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



**M12, 4-Pin, (1) PNP Output 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 290°.

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

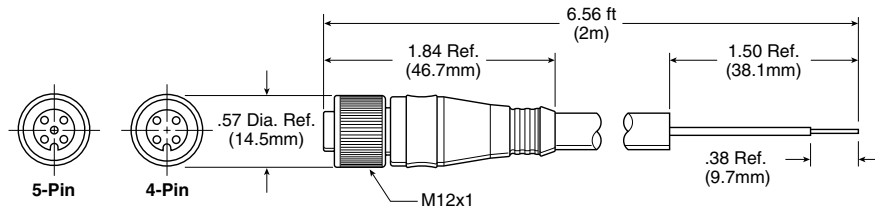
## Error Messages

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



### Cables (IP 67 Rated)

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



**Female Interface**  
**5-Pin, M12**



Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black
5	Gray

**Female Interface**  
**4-Pin, M12**



Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

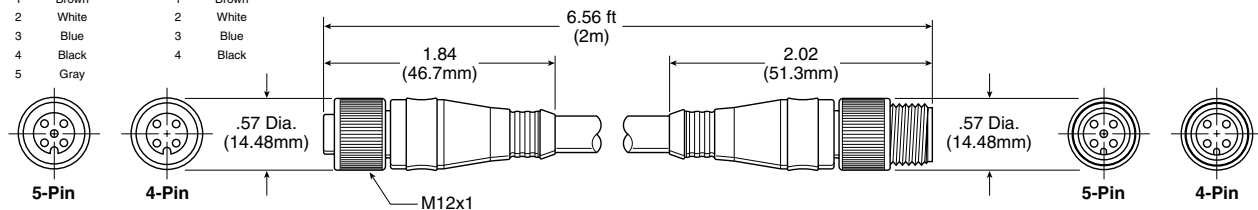
**Male Interface**  
**5-Pin, M12**



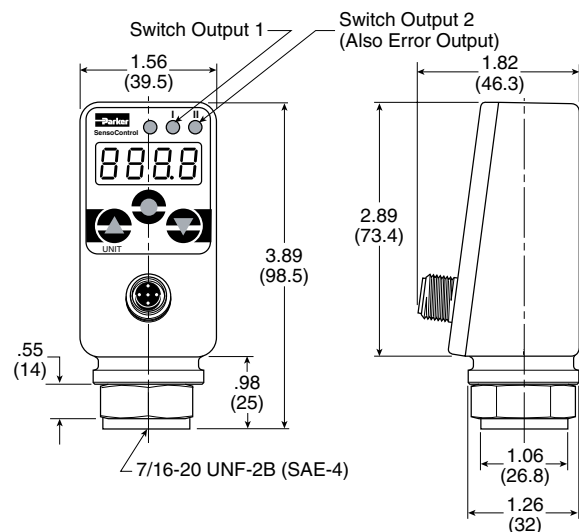
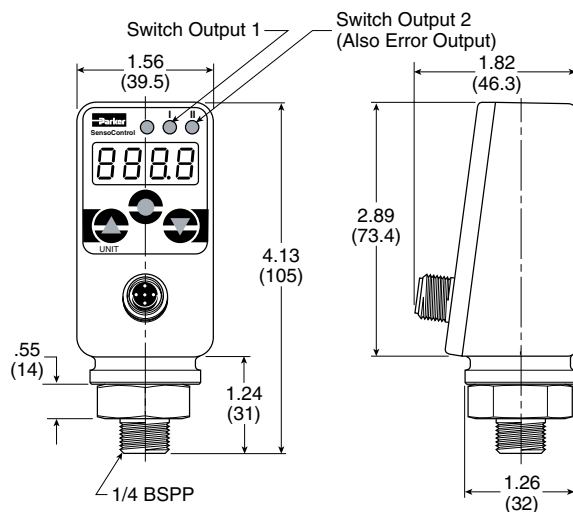
**Male Interface**  
**4-Pin, M12**

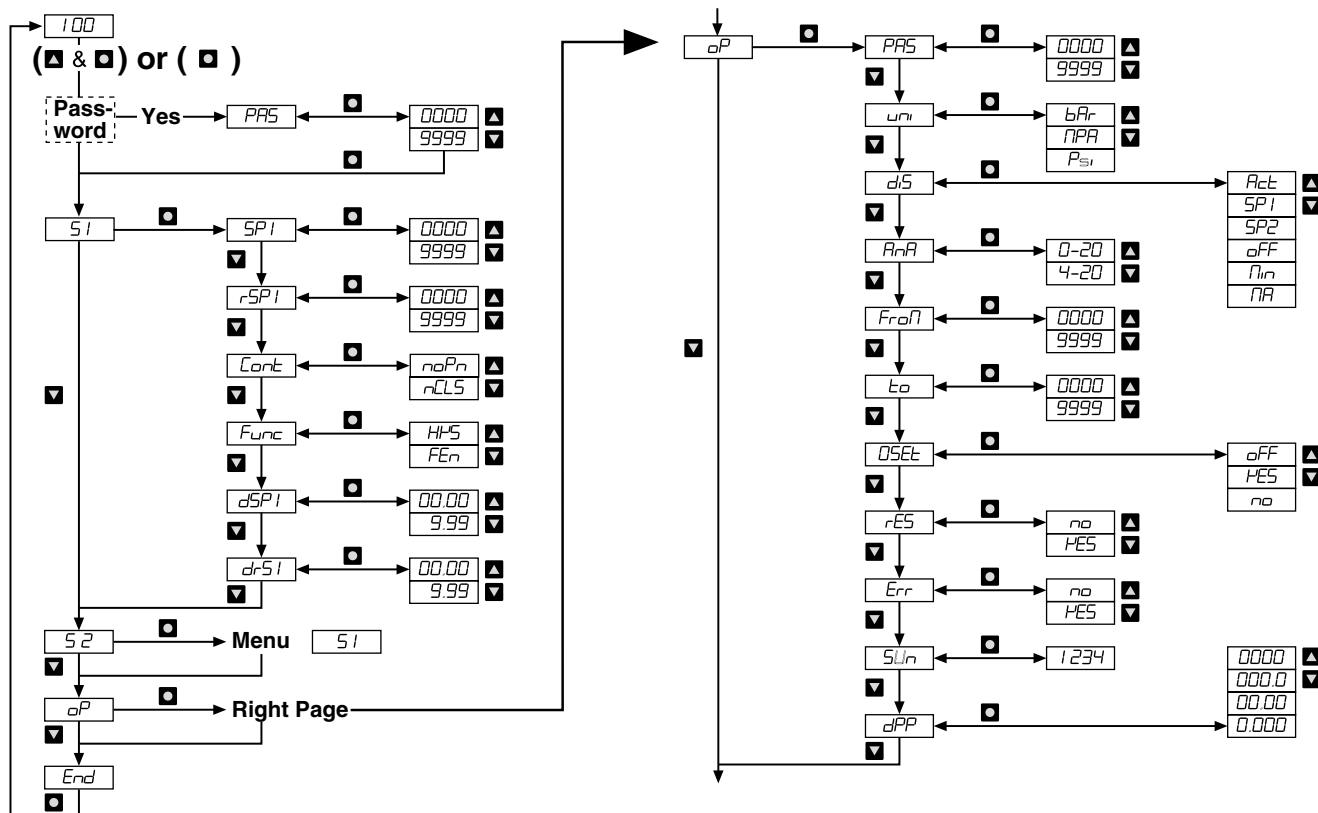


**CB-M12-4P-M12-2M, Female to Male**  
**CB-M12-5P-M12-2M, Female to Male**



## Dimensions





To Program Outputs and Options of SCPSD, press and hold the (Up Arrow Icon) then press the (Circle Icon) until Pro6 is displayed. Release all buttons and follow menu to program outputs and options.

To Review Programed Outputs and Options of SCPSD, press and hold the (Circle Icon) until Pro6 is displayed. Release the (Circle Icon) and follow menu to program option and status.

## 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.

<b>PRS</b>	This is dedicated to a password. Entry into the programming mode can be secured only when the correct figures have been entered
<b>S1</b>	Menu for programming the switch outputs: <b>S1</b> = Switch output 1
<b>S2</b>	<b>S2</b> = Switch output 2 (Menu is not active if S2 is being used as an error output)
<b>SP1</b>	Switching point (SP): upper limiting value / pressure, at which the switch output changes its status. <b>SP1</b> = Switch output 1; input as pressure value (e.g. 400 bar)
<b>SP2</b>	<b>SP2</b> = Switch output 2; input as pressure value (e.g. 430 bar)
<b>rSP1</b>	Reverse switching point (rSP): lower limiting value/pressure at which switch output changes its status. <b>rSP1</b> = Reverse switching point (rSP1) of switch output 1; input as pressure value (e.g. 390 bar)
<b>rSP2</b>	<b>rSP2</b> = 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 <b>Att</b> (attention) will appear, which can be cleared with Enter.

**cont** Switch output as  
**noPn** = closer  
**nCLS** = opener

**Func** Selection of switching functions:  
**Hys** = Hysteresis function  
**FEn** = Window function

Delay times; input from 0 to 9.99 s.

**dSPI** **dSPI** = delay time switching point output 1  
**drSL** **drSI** = delay time reverse switching point output 1  
**dSP2** **dSP2** = delay time switching point output 2  
**drS2** **drS2** = delay time reverse switching point output 2



## Options Program (See Next Page)



## Settings for Options Program

**oP** Options program

**PA5** Password input

0000 = no password

Example password 1234 = 1234

**uni** Setting of units:

**bAr** = bar    **NPA** = MPa    **PSI** = PSI

**diS** Display: Value which will be shown on the digital display in run mode.

**Act** = Actual system pressure

**Nin** = Minimum system pressure; (pressure troughs)

**NA** = Maximum system pressure; (pressure peaks)

**SPI** = Switch point 1

**SP2** = Switch point 2

**OFF** = off indication

**AnA** Setting of analog output (see point 4)

0-20 = 0-20 mA

4-20 = 4-20 mA

**FroN** Calibration of starting value (0 or 4 mA) for the analog output. Settable from 0 to nominal instrument pressure.

Example for **AnA** = 4-20:

0000 = at 0 bar the analog output yields 4 mA.

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.

**to** Calibration of end value (20mA) for the analog output.

Settable from 0 up to nominal instrument pressure.

0010 = at 10 bar the analogue output yields 20 mA.

**oSet** Zero adjustment: The actual pressure will be stored as a new zero point. For safety reasons this is limited to the range  $\pm 5\%$  of the nominal instrument pressure. Application example: a system with a continuous residual pressure, but which should be displayed as 0 bar.

**OFF** = factory calibration

**yES** = undertake zeroing adjustment now

**no** = go back to the menu and do not make any new zeroing adjustments. After a zeroing adjustment, a pressure of up to 20 bar can be displayed as 0 on a 400 bar SCPSD. Before working on a system, it must be ensured that there is no pressure in it.



**rES** Clearing the minimum and maximum value memory

**yES** = yes, clear memory now

**no** = no, do not clear memory

**Err** Programming switch output 2 as an error output

**yES** = yes

**no** = no

Switch Output 2 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.

**SUn** Indication of Software Version

**dPP** Setting of the decimal point. (The maximum number of decimal points depends on the nominal pressure of the SCPSD instrument)

0000 = no decimal point

000.0 = 1 decimal point

00.00 = 2 decimal points

0.000 = 3 decimal points

**End** End of programming mode



## Electrical Test Unit (M12, 5-Pin)

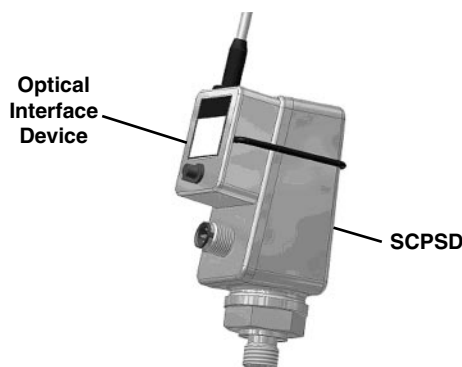
SCSN-450-PSD



## 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.



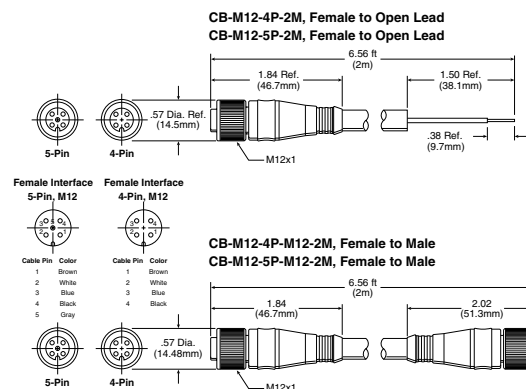
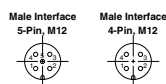
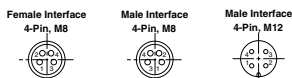
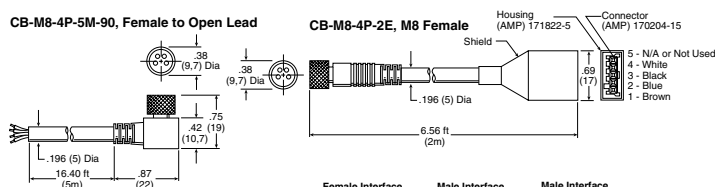
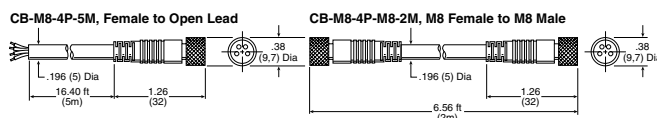
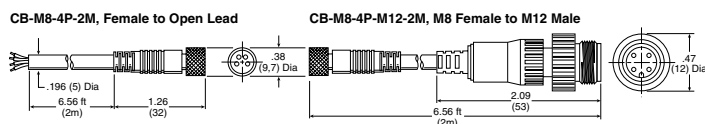


## Features

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

## Common Part Numbers

Item	Connector	Contacts	Length	Cover
CB-M8-4P-2M	M8 Female	4	2m	PVC
CB-M8-4P-5M	M8 Female	4	5m	PUR
CB-M8-4P-5M-90	M8 Angled Female	4	5m	PUR
CB-M8-4P-M12-2M	M8 Female to M12 Male	4	2m	PVC
CB-M8-4P-M8-2M	M8 Female to M8 Male	4	2m	PVC
CB-M8-4P-2E	M8 Female to MPS-7 Connector	4	2m	PVC
CB-M12-4P-2M	M12 Female	4	2m	PVC
CB-M12-5P-2M	M12 Female	5	2m	PVC
CB-M12-4P-M12-2M	M12 Female to M12 Male	4	2m	PVC
CB-M12-5P-M12-2M	M12 Female to M12 Male	5	2m	PVC



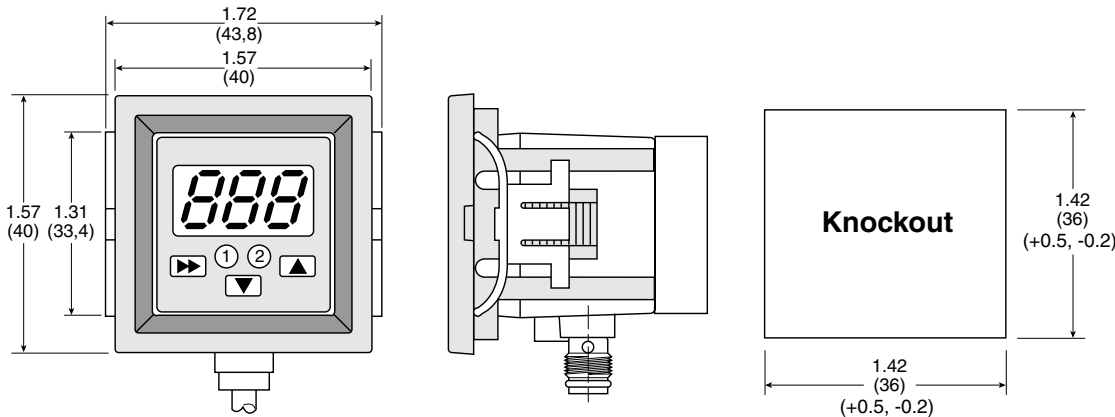


**Panel Mounting Kits**

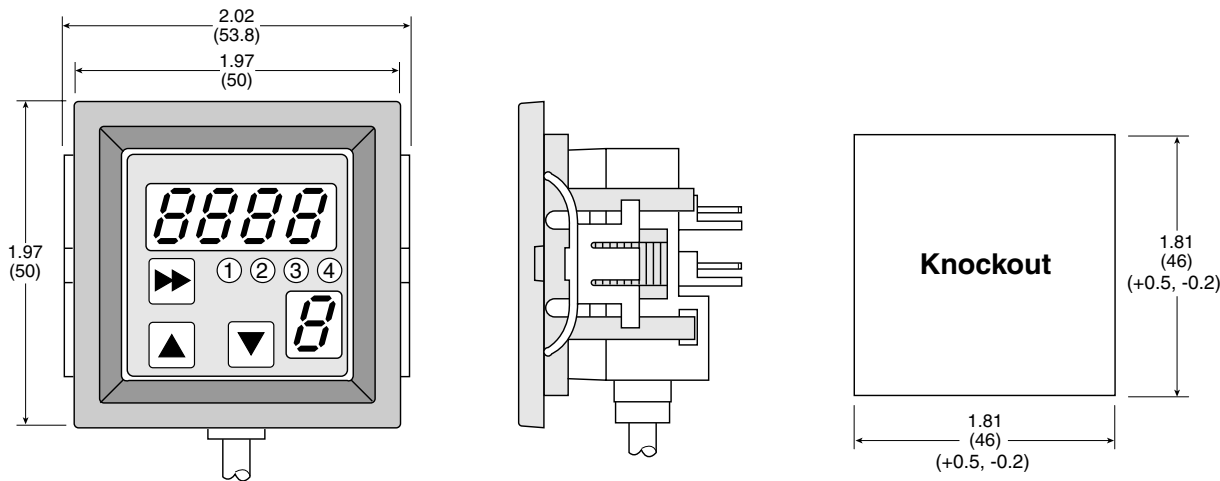
Description	For Use With
MPS-ACCH1	MPS-3 Stainless Steel MPS-4
MPS-ACCH7	MPS-3 MPS-31
MPS-ACCH4	MPS-71
MPS-ACCH5	MPS-74

**Panel Knockout Dimensions**

MPS-ACCH1, MPS-ACCH7, MPS-ACCH4



MPS-ACCH5



## Programming Symbols Legend

<b>ou 1</b>	Output 1
<b>ou 2</b>	Output 2
<b>ou 3</b>	Output 3
<b>ou 4</b>	Output 4
<b>nc</b>	Output Normally Closed (Passing)
<b>no</b>	Output Normally Open (Non-Passing)
<b>-PA PA</b>	Pressure Units (Pascal). Negative Units for Vacuum Sensors
<b>-bA bA</b>	Pressure Units (Bar). Negative Units for Vacuum Sensors
<b>-H9 H9</b>	Pressure Units (mm.Hg). Negative Units for Vacuum Sensors
<b>-iH</b>	Pressure Units (in.Hg). Negative Units for Vacuum Sensors
<b>-F9 F9</b>	Pressure Units (kgf/cm²). Negative Units for Vacuum Sensors
<b>PS</b>	Pressure Units (PSI)
<b>ESY</b>	Easy Mode. Sensor will only allow changes to set points
<b>off</b>	Off, or Energy Saving Display; reduces current consumption of Sensor
<b>on</b>	On
<b>HYS</b>	Hysteresis Mode. Select Hysteresis Set Point and Hysteresis Range
<b>CnP</b>	Windows Comparative Mode Select High and Low Set Point
<b>H-1</b>	Hysteresis Mode Set Point. Output 1
<b>H-2</b>	Hysteresis Mode Set Point. Output 2
<b>h-1</b>	Hysteresis Mode. Hysteresis Range Output 1
<b>h-2</b>	Hysteresis Mode. Hysteresis Range Output 2
<b>A-1</b>	Windows Comparative Mode Low Set Point Output 1
<b>b-1</b>	Windows Comparative Mode High Set Point Output 1
<b>A-2</b>	Windows Comparative Mode Low Set Point Output 2
<b>b-2</b>	Windows Comparative Mode High Set Point Output 2
<b>AUT</b>	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
<b>AL</b>	Auto Surveillance Mode On/Off. Set after Automatic Teach
<b>ALn</b>	Auto Surveillance based on cycles times. Provides output if Peak Value is not obtained in a specified number of cycles. (1-100)
<b>dSP</b>	Display Refresh Setting. Display updates from .1 to 1 sec. .3 sec factory set. Does not affect Sensor Response Time
<b>AE</b>	Output Response Time. Multiplies the sensor response time. Increases sensor response time. (Anti-chatter Mode)

## Pressure Sensors Technical Data

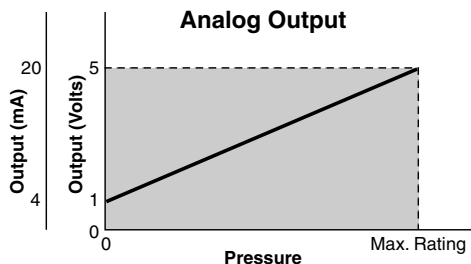
<b>Pb</b>	Pressure Value Display Mode. Displays Pressure for a specific time period and then updates for next time period
<b>Pbt</b>	Time Range for Pressure Value Display Mode
<b>Pbd</b>	Value Setting for Pressure Value Display Mode
<b>PE</b>	Display Peak Value over selected time range
<b>bo</b>	Display Bottom Value over selected time range
<b>du</b>	Display Difference over selected time range
<b>dSF</b>	Display Function Mode. On/Off
<b>Fnc</b>	Display Function. Selects display types.
<b>lb</b>	Display blinks pressure when Output 1 is Passing Normal when Output 1 is Non-Passing
<b>2b</b>	Display blinks pressure when Output 2 is Passing Normal when Output 2 is Non-Passing
<b>ld</b>	Display shows pressure when Output 1 is Passing Display shows special screen when Non-Passing
<b>2d</b>	Display shows pressure when Output 2 is Passing Display shows special screen when Non-Passing
<b>SEt</b>	Select Switch Output setting for MPS-31
<b>Col</b>	Color Setting for MPS-31
<b>Pot</b>	MPS-4, Port Reference Selection
<b>A</b>	MPS-4, Display change of B port to A port static
<b>b</b>	MPS-4, Display change of A port to B port static
<b>Ab</b>	MPS-4, Display change of A port to change of B port
<b>P1</b>	MPS-7, Pressure Range Selection Vacuum
<b>P2</b>	MPS-7, Pressure Range Selection Low Pressure
<b>P3</b>	MPS-7, Pressure Range Selection Positive Pressure
<b>P4</b>	MPS-7, Pressure Range Selection Compound Pressure
<b>SAUE</b>	MPS-7, Energy Savings Mode, reduces current consumption
<b>P-1</b>	MPS-7, Peak Surveillance
<b>oPt</b>	Digital Input Sensors Only. Digital Input Mode for remote Zero reset of sensors
<b>d in</b>	Digital Input
<b>dch</b>	Digital Channel
<b>Scn</b>	MPS-7 Scan Mode. Sensor scans and displays each channel for 3 sec.
<b>Loc</b>	Locked. Sensor programs cannot be changed
<b>UnC</b>	Unlocked. Sensor programs can be changed
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.

**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

$H-1 = (\text{Peak Vacuum Level minus Bottom Vacuum Level}) \times 0.6 + \text{Bottom Vacuum Level}$

$h-1 = (H-1) \times 0.05$

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.

**Class 2 Power Supply**

Power source not exceeding 30VDC and 8 amps.

**Connection Port Size**

Pressure port connections on the back or bottom of the sensor.

**Current Consumption**

Maximum current consumed during operation. Does not include the load current.

**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.

Compound	Low Pressure	Vacuum	Pressure
bar: 0.01	bar: 0.001	bar: 0.001	bar: 0.01
kPa: 1	kPa: 0.1	kPa: 0.1	mPa: 0.001
kgf/cm <sup>2</sup> : 0.01	kgf/cm <sup>2</sup> : 0.001	mmHg: 1	kgf/cm <sup>2</sup> : 0.01
PSI: 0.1	PSI: 0.1	inHg: 0.1	PSI: 1

**Dielectric Strength**

Sensors ability to withstand excess voltages.

**Digital Display Unit**

Minimum unit displayed on the sensor.

**DIN Rail**

A rail mounting bracket equivalent to DIN Standard, adaptable to the MPS-2 sensors.

**E****Error Message**

Error message is displayed if the pressures, inputs, or outputs exceed the parameters of the sensor.

**F****Full Scale**

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

**G****Grommet Type**

Electrical lead from the sensor.

**H****Hysteresis**

The difference in pressure below the switch point pressure which controls the ON-OFF status of the output signal. (See Output Modes)

**I****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.

**L****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.

**M****Maximum Operating Pressure**

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

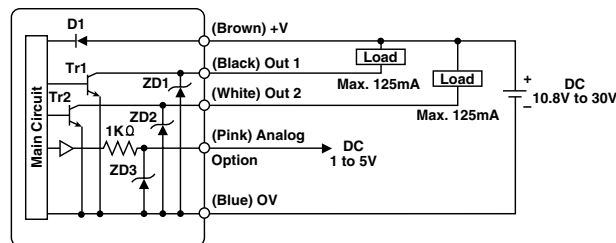
**N****Noise Resistance**

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)****O****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**

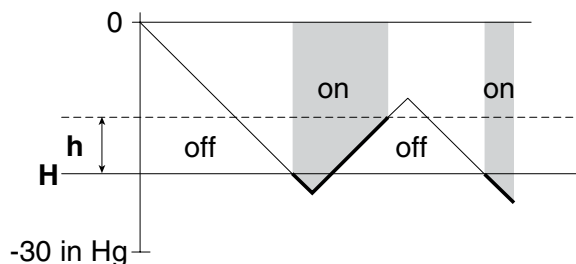
Acceptable temperature range for the specifications listed in the catalog.

**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.

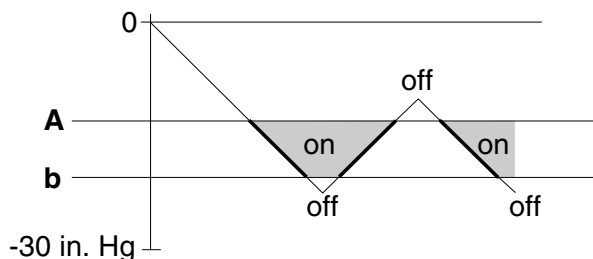




The hysteresis setting (**h**) is the difference in pressure below the switch point pressure which controls the on / off status of the output.

## 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

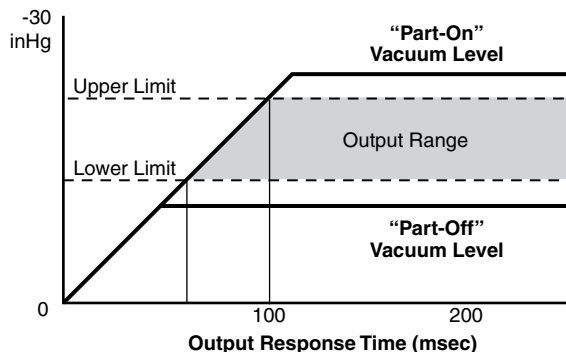
Response time of the output signal after the pressure switch point is achieved. Measured in milliseconds.

## 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.

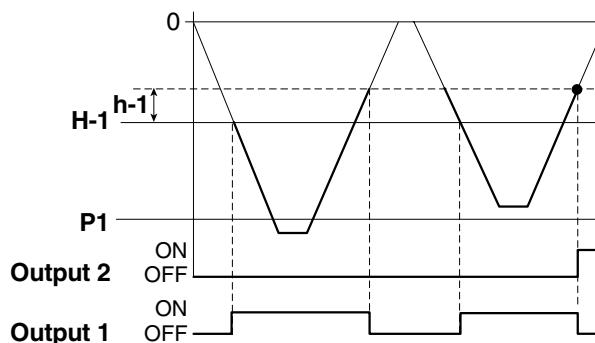


## Panel Mounting Brackets

Brackets used to panel mount the sensor.

## Peak Surveillance

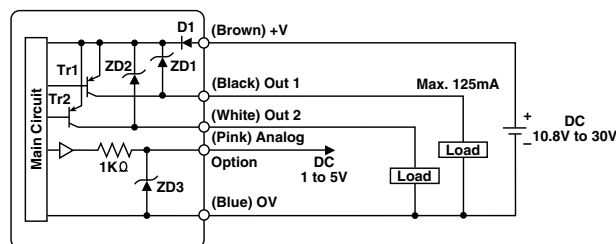
Maintenance function that can monitor peak values of the system. During the pressure cycle, if peak pressure (P-1) is not attained after set point (H-1) is attained, an error code *PErr* is displayed on the sensor.



## 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.

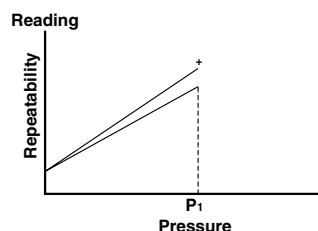
## PNP Output (With Analog Output)



**R**

## Repeatability

The repeatability refers to the sensor's ability to provide the same output with consecutive applications of the same pressure input.



Repeatability is represented as a percentage of the full scale value of the sensor. All Parker / Convum sensors are rated  $\pm 0.2\%$  F.S. P1 would be represented as  $145 \text{ PSI} \times 0.002 = \pm 0.29 \text{ PSI}$ .

## Reverse Voltage Protection

Diode circuitry to prevent "cross-wire" damage during installation of the sensor.

## Glossary

### S

#### Setpoints

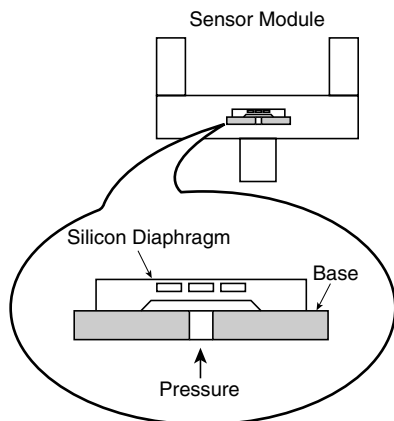
The number of the ON-OFF output signals in one product. Product with 2 setting points means 2 output type.

#### Shock Resistance

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

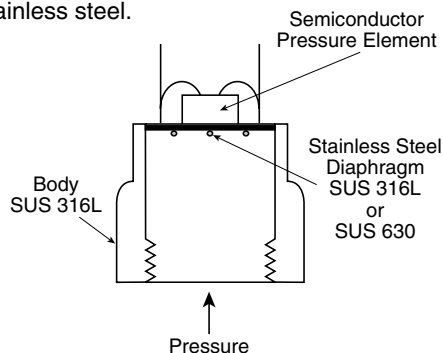
#### Silicon Diaphragm

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.

### T

#### 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.

### W

#### Wetted Parts

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

### Z

#### 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.