






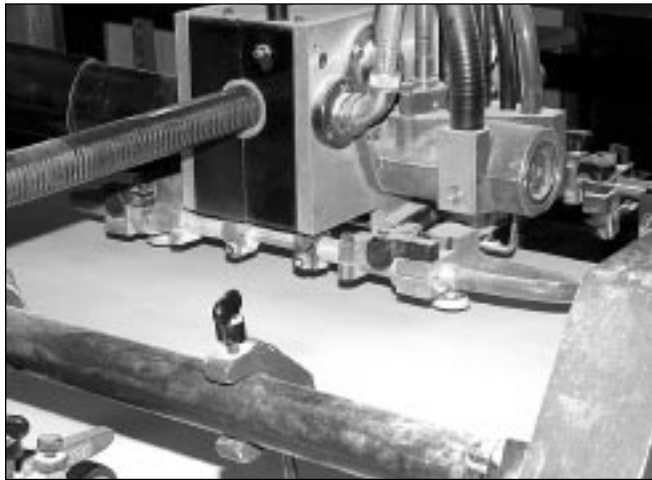


<p>Vacuum Cups</p> <p>www.parker.com/pneu/vaccup</p>		<p>A</p> <p>Vacuum Cups</p>
<p>Generators</p> <p>www.parker.com/pneu/vacgen</p>		<p>B</p> <p>Generators</p>
<p>Sensors</p> <p>www.parker.com/pneu/sensors</p>		<p>C</p> <p>Sensors</p>
<p>Control Valves</p>		<p>D</p> <p>Control Valves</p>
<p>Vacuum Accessories</p>		<p>E</p> <p>Vacuum Accessories</p>
<p>Mini Cylinders</p>		<p>F</p> <p>Mini Cylinders</p>
<p>Fittings & Tubing</p>		<p>G</p> <p>Fittings & Tubing</p>
<p>Safety Guide, Offer of Sale</p>		<p>H</p> <p>Safety Guide, Offer of Sale</p>

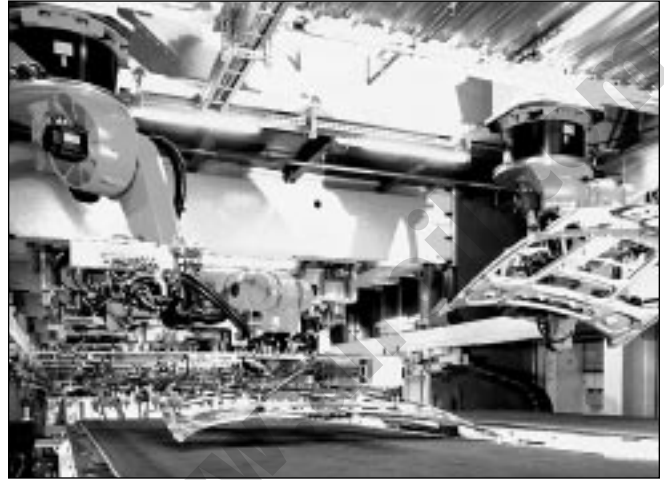
Notes

- Think systems – create technical solutions!

For paper handling...

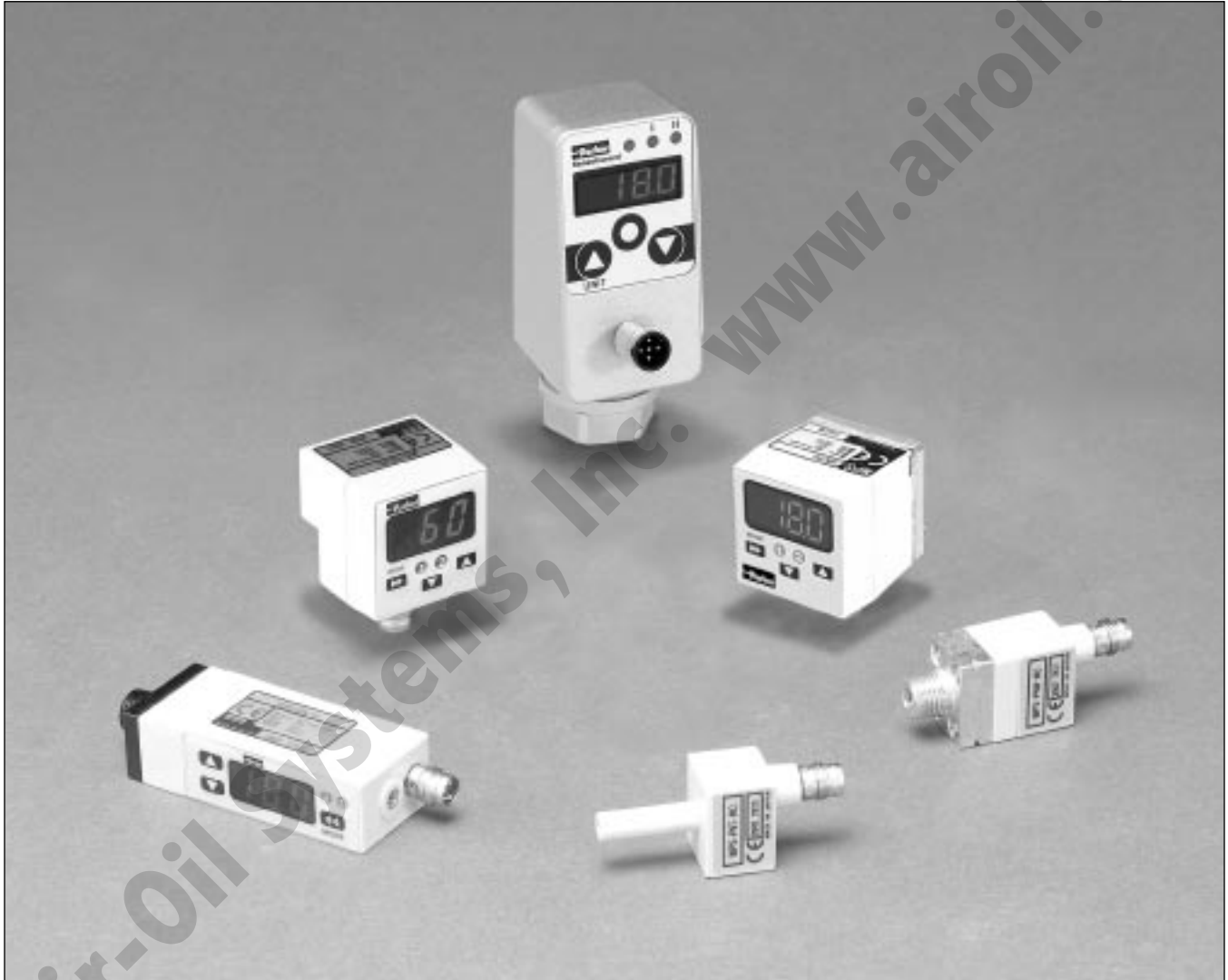


For robotic handling...



Section C

www.parker.com/pneu/sensors



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Pressure Unit Table

Units	Units								
	Pa	bar	PSI	kgf/cm ²	atm	mm H ₂ O	in H ₂ O	mm Hg	in Hg
Pa	1	10 ⁻⁵	0.145x10 ⁻³	1.0197x10 ⁻⁵	0.987x10 ⁻⁵	0.10197	0.402x10 ⁻²	0.750x10 ⁻²	0.295x10 ⁻³
bar	10 ⁵	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 ²	98066.5	0.9807	14.2233	1	0.96784	10000	393.70	735.56	28.96
atm	1.013x10 ⁻⁵	1.01325	14.696	1.03323	1	10332	406.77	760	29.92
mm H ₂ O	9.807	0.098x10 ⁻³	0.00142	0.0001	0.097x10 ⁻³	1	0.0394	0.07355	0.29x10 ⁻²
in H ₂ O	249.09	0.249x10 ⁻²	0.0361	0.00254	0.246x10 ⁻²	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

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	Pressure Range	Output Type	Media	Maximum IP Rating	Hysteresis Output Mode Adjustment	Output Setting	Display	Page Number
Technical Data								C4 - C7
MPS-2 	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)	C8 - C13
MVS-201 	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)	C14 - C21
MPS-32 	0 to -30 inHg 0 to 145 PSI	(2) PNP or (1) NPN with Analog	Air, Non-Corrosive Gas	50	Variable, 100% F.S.	Push Button	LED Display (Red / Green)	C22 - C27
MPS-6 	0 to -30 inHg 0 to 14.7 PSI 0 to 145 PSI	(1) NPN / PNP or (1) Analog	Air, Non-Corrosive Gas	40	—	Trim Pot	—	C28 - C31
MPS-7 	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)	C32 - C39
MPS-8 	0 to -30 inHg -14.7 to 72.5 PSI	(1) NPN / PNP or (1) Analog	Air, Non-Corrosive Gas	40	Fixed, < 2% F.S.	Trim Pot	—	C40 - C43
SCPSD 	-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)	C44 - C49
Accessories								C50-C51
Programming Symbols Legend								C52
Glossary								C53-C56





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.

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Programming Options

	MPS 2	MVS 201	MPS 32	MPS 6	MPS 71	MPS 74	MPS 8	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

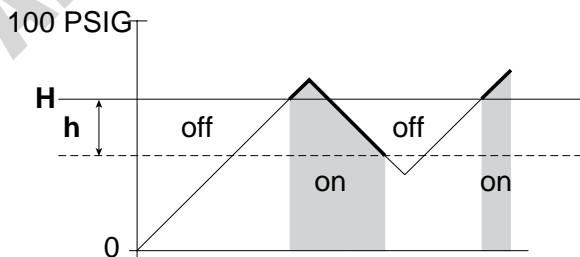
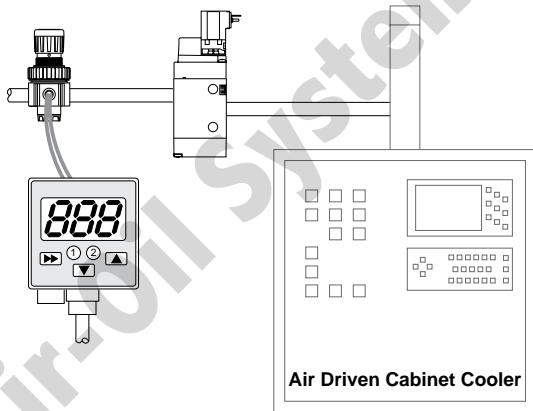
Allows the user to adjust the set points of the pressure sensor while all other programming options are locked out.

Hysteresis Mode

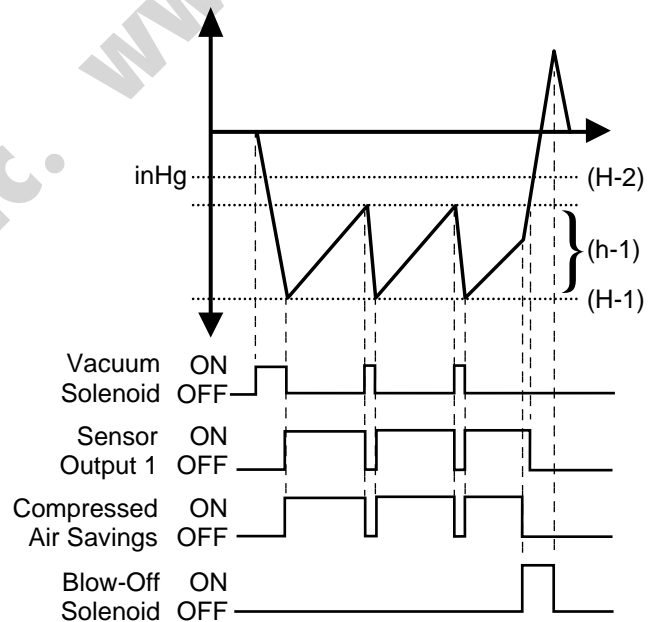
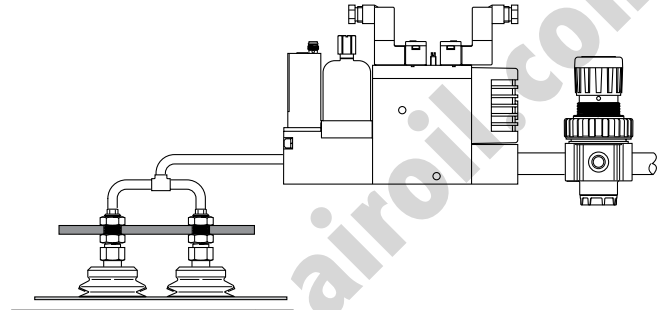
This output mode provides one switch point (H) and a hysteresis pressure adjustment (h). When the switch point pressure is achieved, the output (NPN / PNP) is activated if normally open or deactivated if normally closed. Typically, this mode is used for pressure confirmation. For positive pressure applications,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



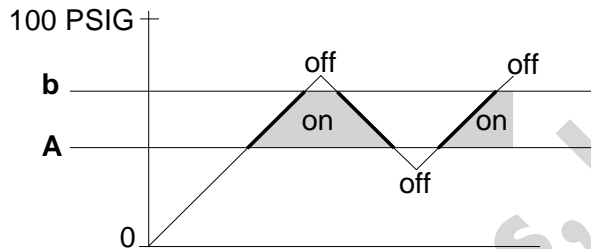
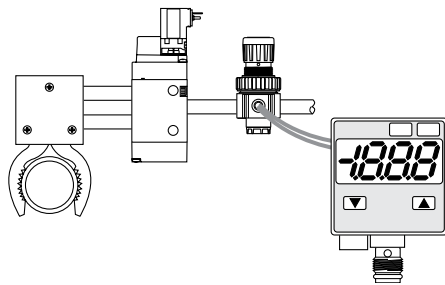
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Window Comparator Mode

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.

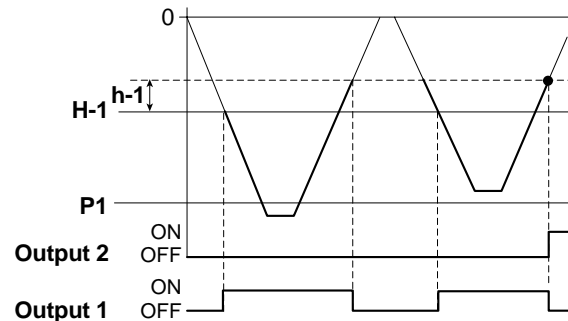
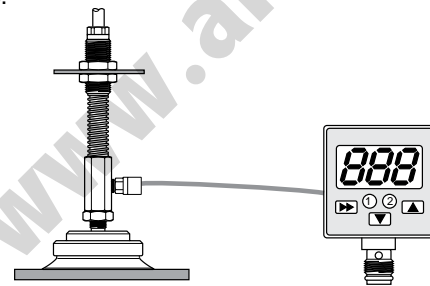
Auto Surveillance Mode

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.

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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

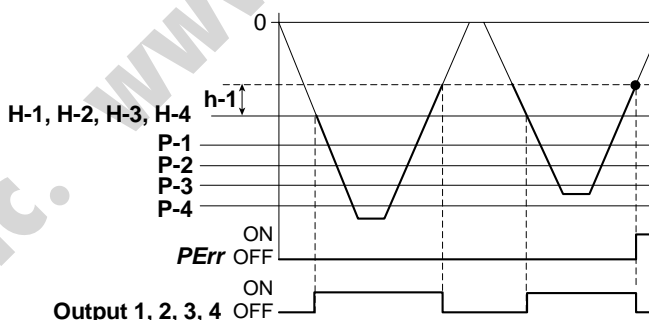
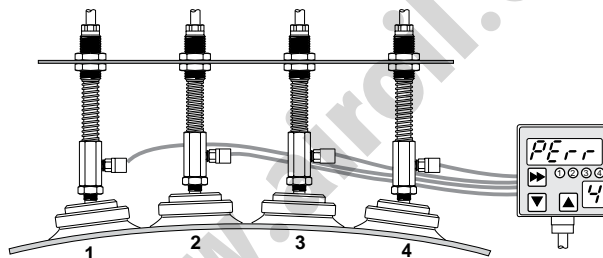
Just like a pressure gauge, a pressure sensor measures the system pressure in relation to the atmospheric pressure. Pressure Sensors can be calibrated to the current atmospheric pressure by using the Zero Reset Function.

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

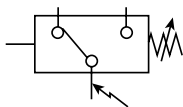
Switch Output can be used optionally as an error output to display pressure switch function errors. As an error output it is normally closed, and in case of errors (*Err 1*, *Err 2*, *Err 3*) it is open. At the same time LED II lights up. The display and the output remain active until the error is cleared.

Setting of Decimal Point

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



MPS-2



Features

- **Pressure Ranges:**
 Vacuum Pressure 0 to -30 inHg
 Compound Pressure -14.7 to 72.5 PSI
- **Sensor Outputs:**
 2 NPN or PNP Open Collector Transistor Output , 30VDC, 125mA
- **Hysteresis or Window Comparator Mode**
- **4 Selectable Units of Measure**
 (mmHg, -bar, -kPa, inHg)
 (kgf/cm², PSI, bar, kPa)
- **Output Response Time Less Than 2.0 Milliseconds**
- **CE Marked**
- **Air and Non-Corrosive Gases**
- **Error Message**



MPS-V2N-PC



MPS-R2M5-NGR

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	

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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	MPS-V2N-PC	
		NPN Sinking		MPS-V2N-NC	
-14.7 to 72.5 PSI		1/8 NPT*, Male, M5 Female	PNP Sourcing	4 Pin, M8	MPS-R2N-PC
			NPN Sinking		MPS-R2N-NC
	M5 DIN Rail Mounting	PNP Sourcing	2M Lead Wire	MPS-R2M5-PGR	
		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

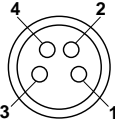
Pressure Range	Vacuum (V)	Compound (R)
Units of Measure Display Resolution	bar: 0.001	bar: 0.01
	kPa: 0.1	kPa: 1
	mmHg: 1	kg/cm ² : 0.01
	inHg: 0.1	PSI: 0.1
Media	Air and Non-Corrosive Gases	
Pressure Port	(N) 1/8" NPT, (M5) M5 Female (Consult Factory for BSPP or BSPT Port)	
Proof Pressure	(V) 72.5 PSI,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



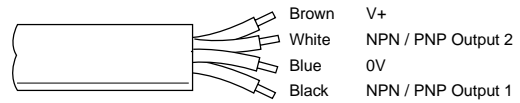
Sensor Pin Out

Pin

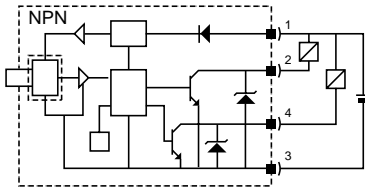
- 1 Brown: 24VDC
- 2 White: NPN / PNP Open Collector Output 2
- 3 Blue: 0VDC
- 4 Black: NPN / PNP Open Collector Output 1



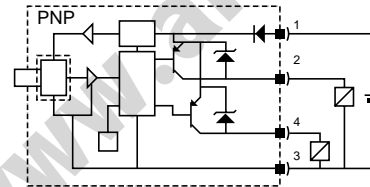
Lead Wiring



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

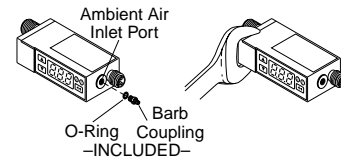
- Parker Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

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.



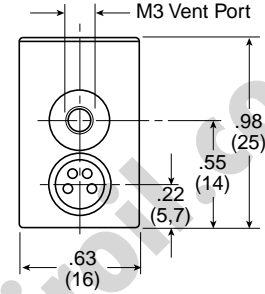
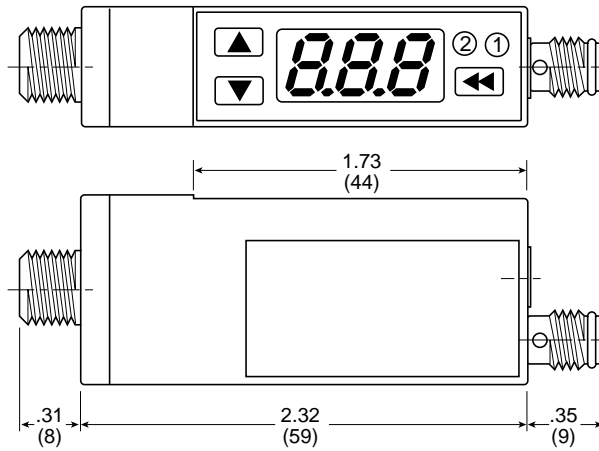
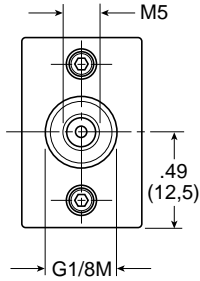
Error Messages

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

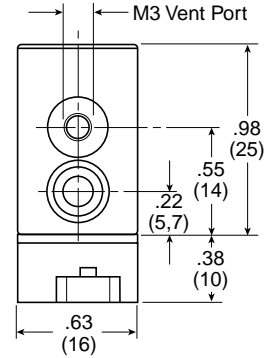
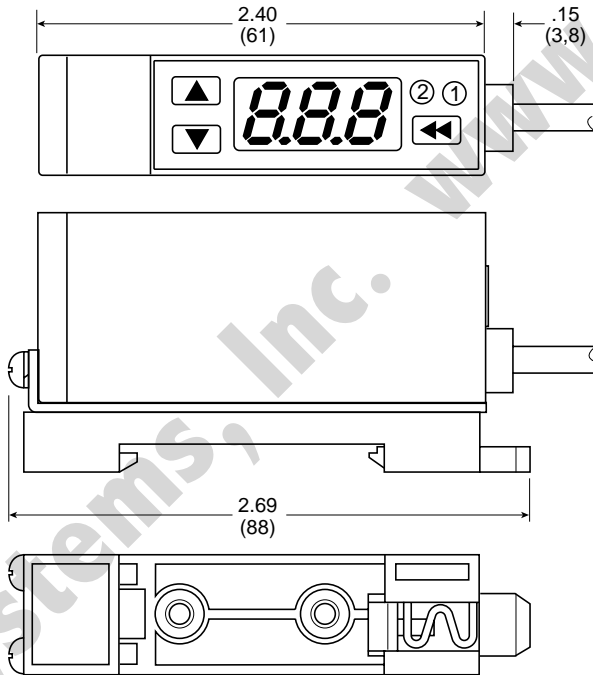
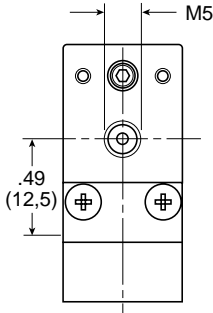


Dimensions

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



DIN Rail
M5 Female
Grommet



Air-Oil Systems, Inc.



See page C52 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

2 Press 2x
Output Mode 1 Hysteresis or Window Comparator

ou1 ↔ HYS CnP off
 End

3 Press 4x
Output Mode 2 Hysteresis or Window Comparator

ou2 ↔ HYS CnP off
 End

4 Press 1x
Output 1 Setting Hysteresis Mode

H-1 ↔ 70 145
 0
 h-1 ↔ 13 145
 0

5 Press 3x
Output 2 Setting Hysteresis Mode

H-2 ↔ 97 145
 0
 h-2 ↔ 13 145
 0

6 Press 5x
Automatic Teach Mode & Auto Surveillance

RL ↔ on off
 RLn ↔ 1 100
 1
 End

Vacuum Cycle: 803
 Release Cycle: 0

Window Comparator Mode

Low
 A-1 ↔ 42 144
 0

High
 b-1 ↔ 71 145
 1
 End

Window Comparator Mode

Low
 A-2 ↔ 85 144
 0

High
 b-2 ↔ 113 145
 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.

P-1 ↔ off 0
 300

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

dSP ↔ 0.1 30
 0.1
 AuE ↔ 1 16 64
 512
 End

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

Pb ↔ off on
 Pbt ↔ 10 99
 2
 Pbd ↔ PE bo du
 End

9 Press 8x
Special Display Features

dSF ↔ off on
 Fnc ↔ 1b 1d 2b 2d
 End
 off
 RL

10 Hold Press **Lock**
 Hold Press **Unlock**

11 Press 1x **Peak Value**
 Press 1x **Bottom Value**

12 Press for 3 Seconds **Zero Reset**
 0

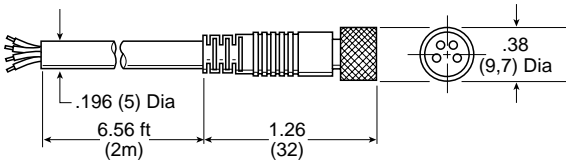
C



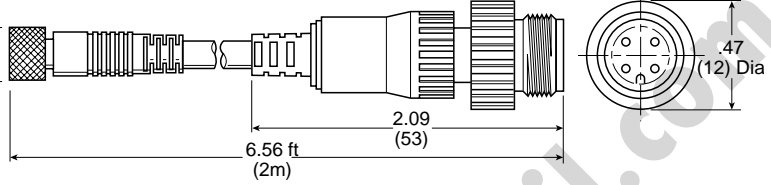
Accessories

Cables

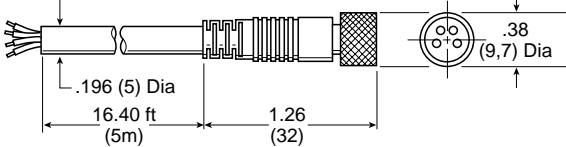
CB-M8-4P-2M, Female to Open Lead



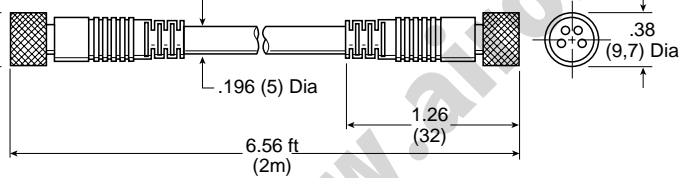
CB-M8-4P-M12-2M, M8 Female to M12 Male



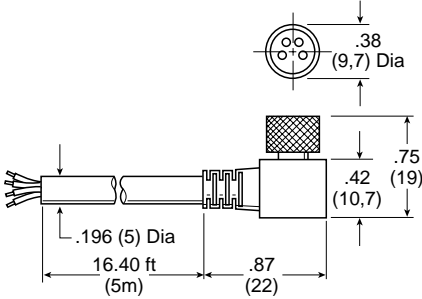
CB-M8-4P-5M, Female to Open Lead



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



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



Pin Out Connection

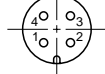
Female Interface
4-Pin, M8



Male Interface
4-Pin, M8



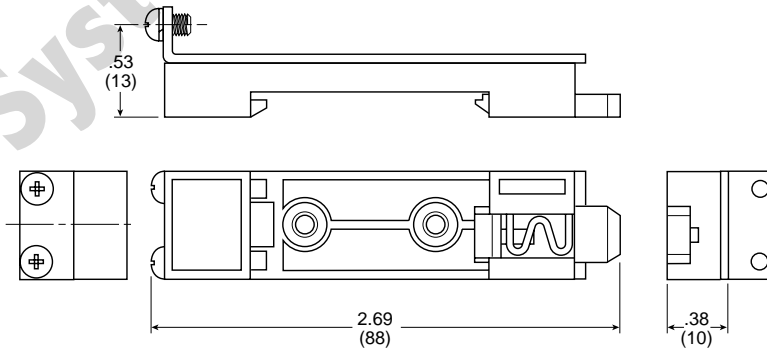
Male Interface
4-Pin, M12



Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

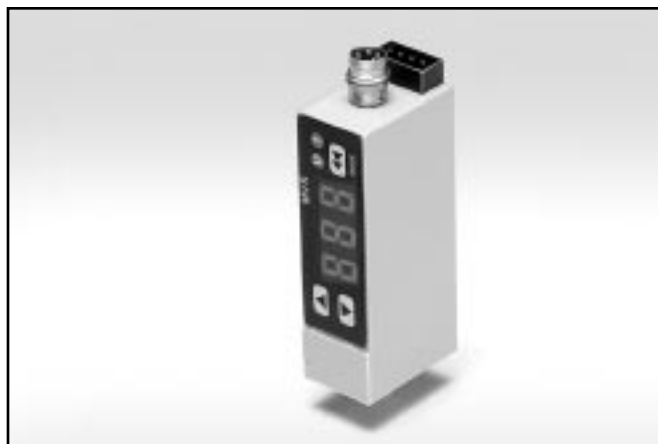
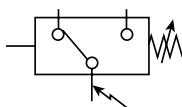
MPS-ACCK4

Din Rail





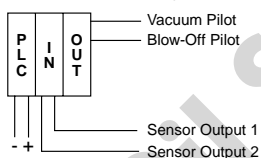
MVS-201



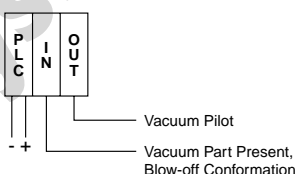
C

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		MVS-201-PCP
	NPN Sinking	NPN Sinking		MVS-201-NC
		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	MC2-C201G
CVR2			CVR2-C201G
CVK		2 Wire Leads	CVK-D201G



Specifications

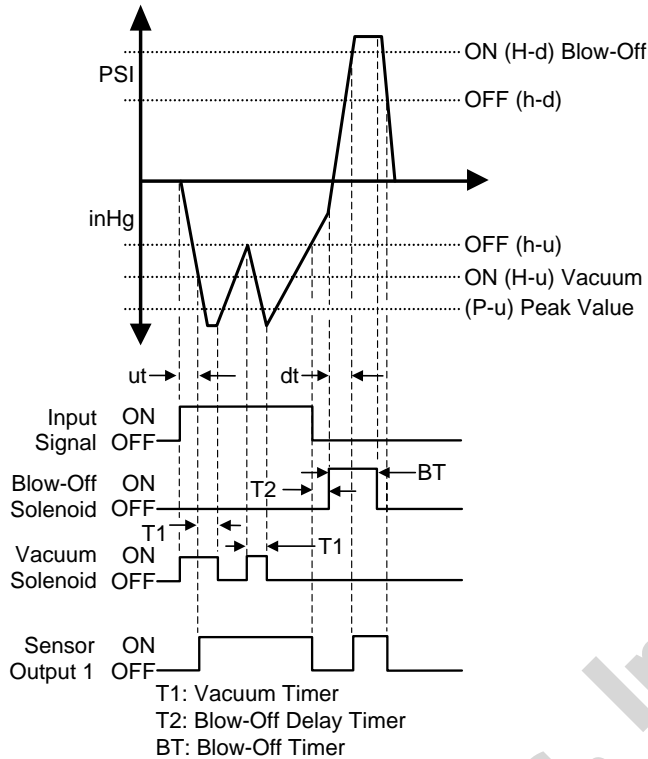
Pressure Range	Compound (R)
Units of Measure Display Resolution	bar: 0.01
	kPa: 1
	kgf/cm ² : 0.01
	PSI: 0.1
Media	Non-Lubricated Air and Non-Corrosive Gases
Proof Pressure	116.0 PSI
Operating Temperature	32 to 122°F (0 to 50°C)
Storage Temperature	14 to 140°F (-10 to 60°C)
Humidity	35 to 85% RH
Electrical 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 Mode	Individually Selectable N.O. or N.C., max 125mA, 30V, with Overcurrent Protection
Response Time	OP1, OP2, OP3 Hysteresis: 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	Body: Polycarbonate
Mass	1.7 oz. (45g)



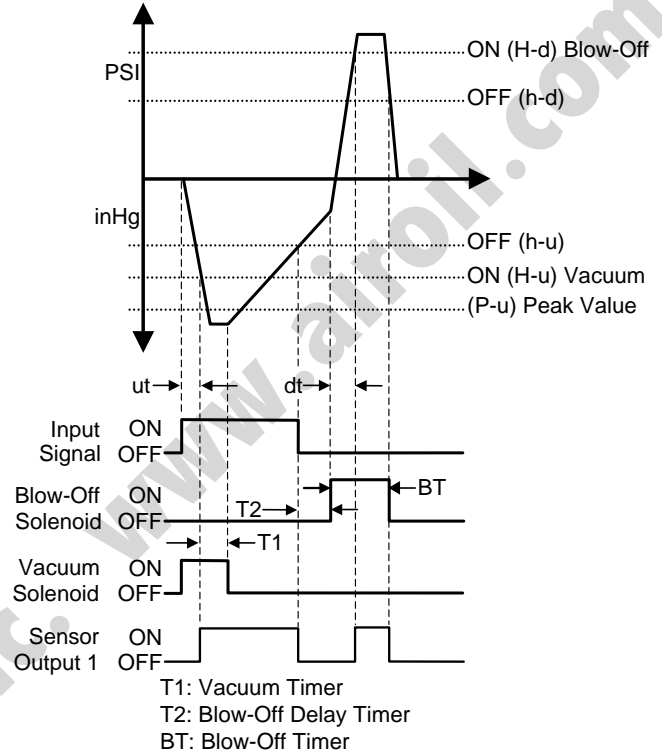
Operating Modes

Description of operation modes and terms on page C20.

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).

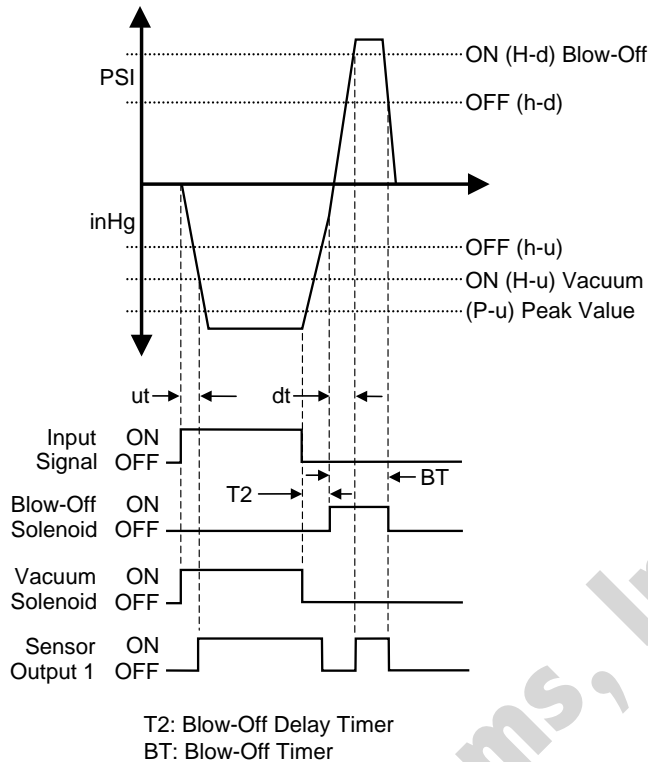


Operating Modes

Description of operation modes and terms on page C20.

Mode: OP3 "Signal Controlled Vacuum"

H-V / H-d: Switchpoints
 h-v / h-d: Switchpoints
 P-V: Peak Value



T2: Blow-Off Delay Timer
 BT: Blow-Off Timer

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.



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Wiring Diagram

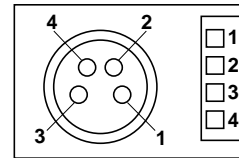
M8 Pin

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

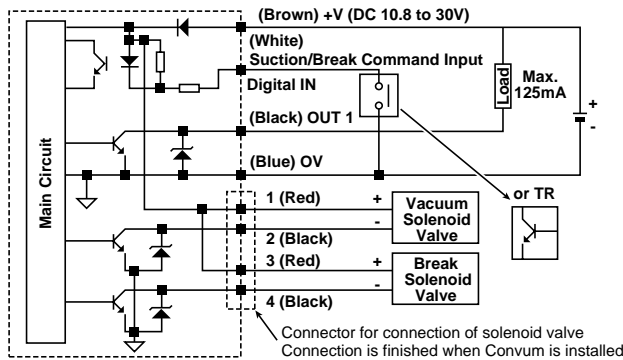
201 Pin

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

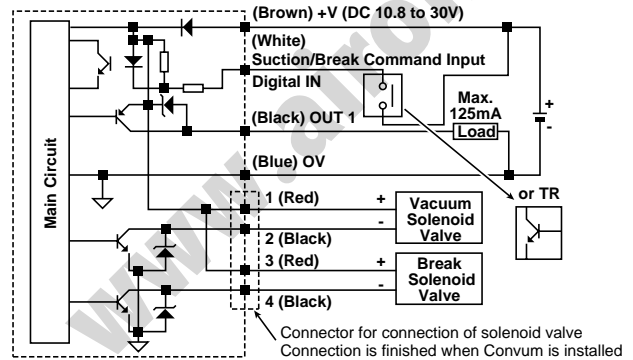
Sensor Male Pin Out



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 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.

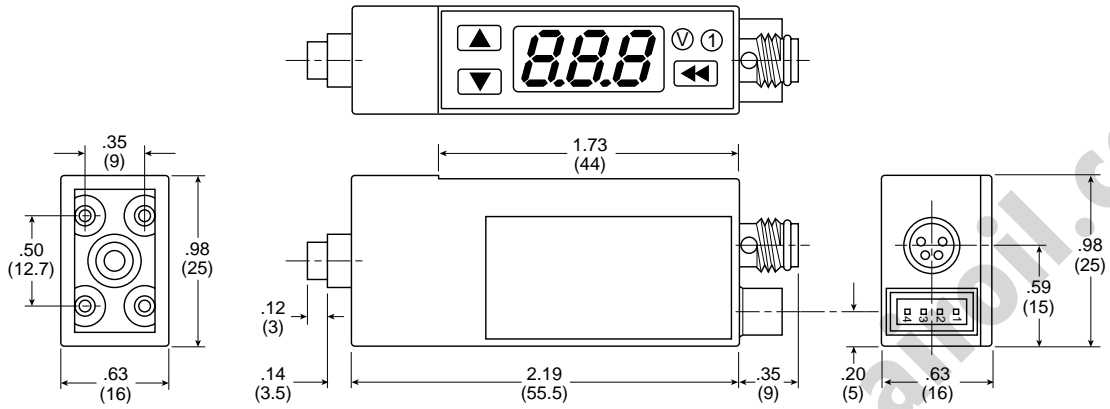
Error Messages

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



Dimensions

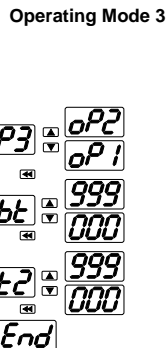
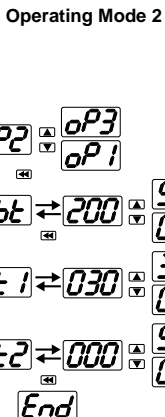
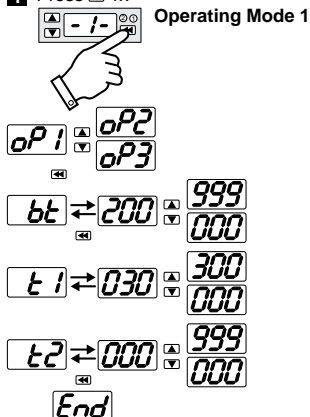
M8, 4-Pin



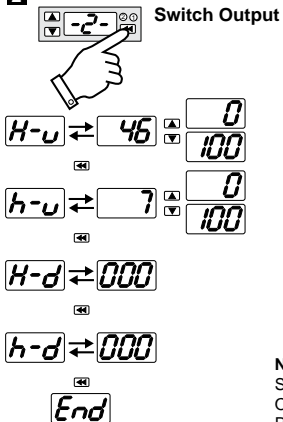
Air-Oil Systems, Inc. www.air-oil.com



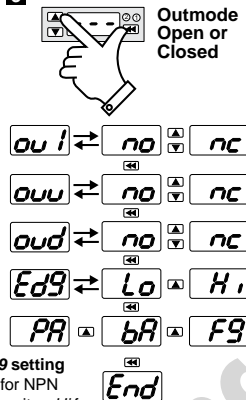
1 Press 1x



2

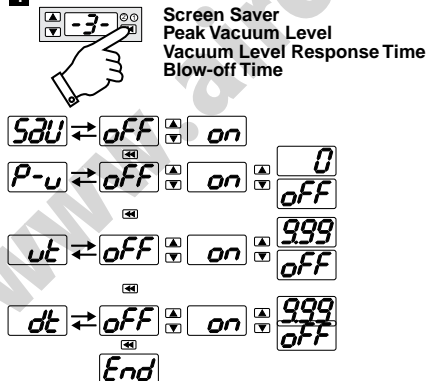


3

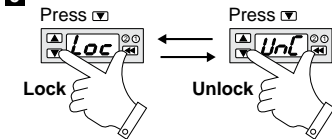


Note: Ed9 setting
 Set to Lo for NPN
 Output Circuit or Hi for
 PNP Output Circuit.

4



5



Programming Symbols Legend

- Operation 1: Air Conservation / Timer
- Operation 2: Vacuum Timer Option
- Operation 3: Signal Controlled Vacuum
- Blow-Off Timer
- Controlled Vacuum Signal with Timer
- Blow-Off Activation Timer
- Switch Output Value (H-v)
- Switch Output Hysteresis Value (h-v)
- Blow-off Output Value (H-d)
- Blow-off Output Hysteresis Value (h-d)
- Error Message - Peak Vacuum Level
- Error Message - Vacuum Response Time

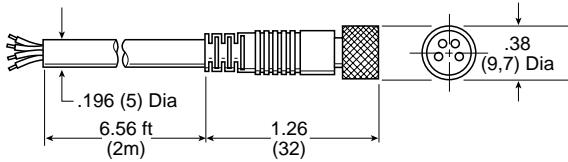
- Error Message - Blow-off Time
- Output 1
- Vacuum Valve (Leave NO)
- Blow-off Release Valve (Leave NO)
- Screen Saver Function
- Peak Vacuum Level Recorder (P-v)
- Vacuum Response Time Recorder
- Blow-Off Time Recorder
- Normally Open
- Normally Closed
- Low or High Signal to Vacuum Valve



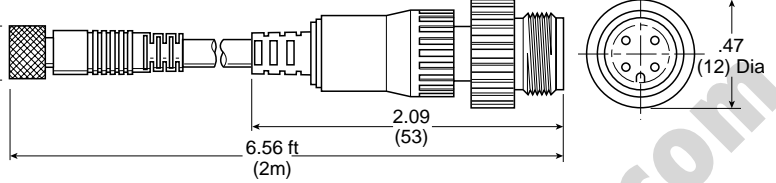
Accessories

M8 Cables for Sensor

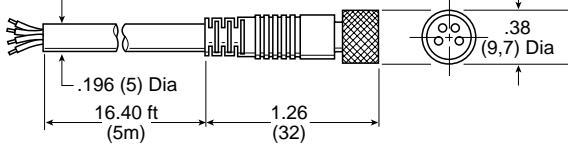
CB-M8-4P-2M, Female to Open Lead



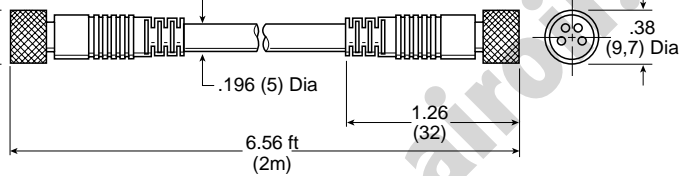
CB-M8-4P-M12-2M, M8 Female to M12 Male



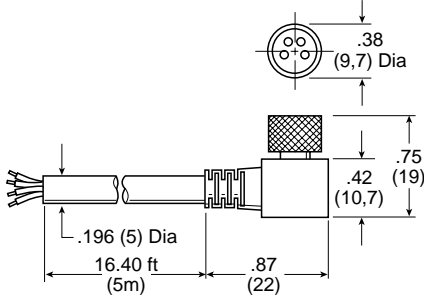
CB-M8-4P-5M, Female to Open Lead



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**



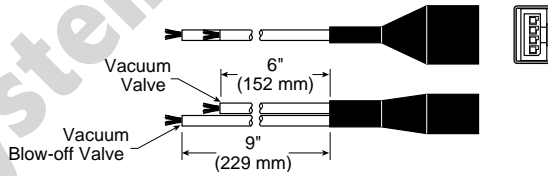
Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

MVS-201 Cables

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

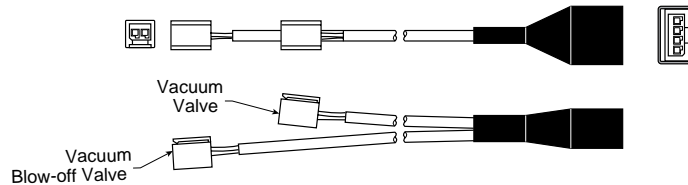
For CVK

CVK-D201G



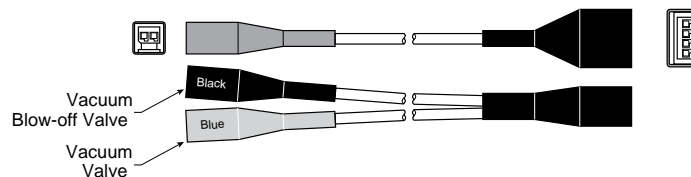
For CVR2

CVR2-C201G



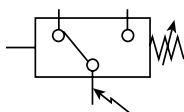
For MC2

MC2-C201G





MPS-32



Red ↔ Green Display



MPS-V32N-PC



MPS-V32N-PG

Mounting Bracket MPS-ACCK1 Included with Sensors.

Features

- **Pressure Ranges:**
 Vacuum Pressure 0 to -30 inHg
 Positive Pressure 0 to 145 PSI
- **Sensor Output:**
 2 NPN or PNP Open Collector
 Transistor Output, 30VDC, 125mA
 Optional Analog Output, 4 to 20mA
 Optional Analog Output, 1 to 5VDC
- **Switch Point and Window Comparator Mode**
- **4 Selectable Units of Measure**
 (mmHg, -bar, -kPa, inHg)
 (kgf/cm², PSI, bar, kPa)
- **Output Response Time Less Than 2.0 Milliseconds**
- **RoHS**
- **Air and Non-Corrosive Gases**
- **Error Message**

MPS-32 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	

C



MPS-32 Ordering Numbers

Pressure Range	Port Size	Output Circuit	Electrical Connector	Part Number
0 to -30 inHg	1/8 NPSF*	PNP Sourcing	4 Pin, M8	MPS-V32N-PC
			2M Lead Wire	MPS-V32N-PG
		NPN Sinking	4 Pin, M8	MPS-V32N-NC
			2M Lead Wire	MPS-V32N-NG
0 to 145 PSI	1/8 NPSF*	PNP Sourcing	4 Pin, M8	MPS-P32N-PC
			2M Lead Wire	MPS-P32N-PG
		NPN Sinking	4 Pin, M8	MPS-P32N-NC
			2M Lead Wire	MPS-P32N-NG
		PNP Sourcing with 4-20ma	4 Pin, M8	MPS-P32N-PCI
		PNP Sourcing with 1-5VDC	4 Pin, M8	MPS-P32N-PCA

* Mounting Bracket Included

Specifications

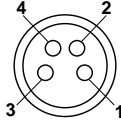
Pressure Range	Vacuum (V)	Positive (P)
Units of Measure Display Resolution (with unit-switching function)	bar: 0.001 kPa: 0.1 mmHg: 1 inHg: 0.1	bar: 0.01 MPa: 0.001 kgf/cm ² : 0.01 PSI: 1
Proof Pressure	-101 to 0 kPa	0 to 1 MPa
Media	Air & Non-Corrosive Gases	
Pressure Port	(N) 1/8" NPSF	
Operating Temperature	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	12 to 24VDC ±10% or less, Ripple (Vp-p) 10% or less	
Display	3 + 1/2 Digit, 2 Color, 7-Segment LED	
Display Refresh	.1 to 3.0 Seconds, Variable (Factory set at 0.1)	
Control Output	NPN (Sinking), PNP (Sourcing), Open Collector, max 125mA, 2 Output	
Switch Output	Output Signal, NPN or PNP, Normally Open or Closed, LED Indicator	
Output Modes	Hysteresis or Window Comparator	
Response Time	2ms or less, (Variable 32, 128, 1024ms)	
Repeatability	± 0.2% of F.S. ± 1 digit or less	± 03% of F.S. ± 1 digit or less
Analog Output	Voltage Output	1 to 5VDC (1 ± 0.04V, 5 ± 0.04V); Outout Impedance 1kΩ; Linearity 0.5% of F.S.; Response Time 2ms or less
	Current Output	4 to 20mA; Linearity ±0.5% of 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	32 to 122°F (0 to 50°C) 25°C (77°C) ± 2% of F.S. or less at range of 32 to 122°F (0 to 50°C)	
General Protection	IP50, CE Marked, EMC-EN61000-6-2: 2001	
Current Consumption	<80mA	
Vibration Resistance	10 to 150Hz, Double Amplitude 1.5mm, XYZ, 2 hrs.	
Shock Resistance	10G, XYZ	
Material	Housing: ABS (gray) , Pressure Port: Zinc Die-cast, Diaphragm: Silicone	
Mass	1.7 oz. (45g) (Not including cable)	



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



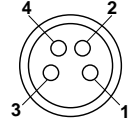
Lead Wiring



Sensor Pin Out with Analog Output Current Output

Pin

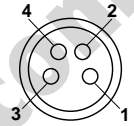
- 1 Brown: 24VDC
- 2 White: 4 to 20mA
- 3 Blue: 0VDC
- 4 Black: PNP Open Collector Output 1



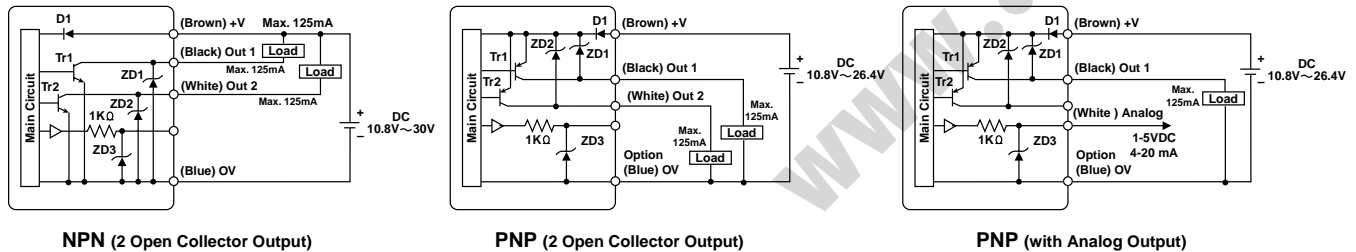
Voltage Output

Pin

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



Internal Circuit for Open Collector and Analog Output Wiring



NPN (2 Open Collector Output)

PNP (2 Open Collector Output)

PNP (with Analog Output)

⚠ Cautions

The MPS-32 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

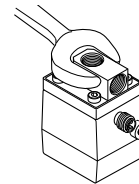
- Parker Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

Operations

- Dedicate a power supply of 10.8 to 26.4VDC 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

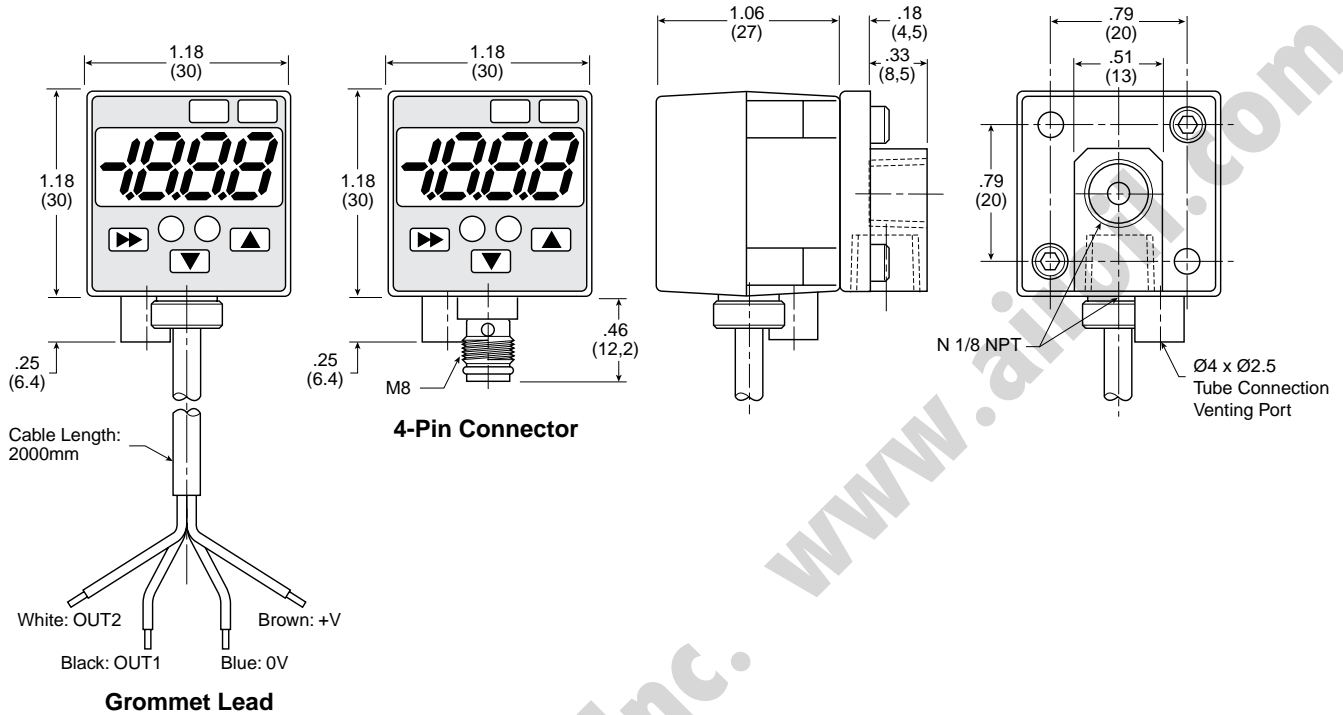
Display	Description	Solutions
Err	Zero Reset Error	Reset Zero Below 3% of F.S.
Er1	System Error (Internal)	Contact Factory
CE1	Over current of Output 1	Load current exceeds maximum 125mA.
FFF -FF	Applied pressure exceeds pressure range	Apply pressures within the rating of the sensor



Dimensions

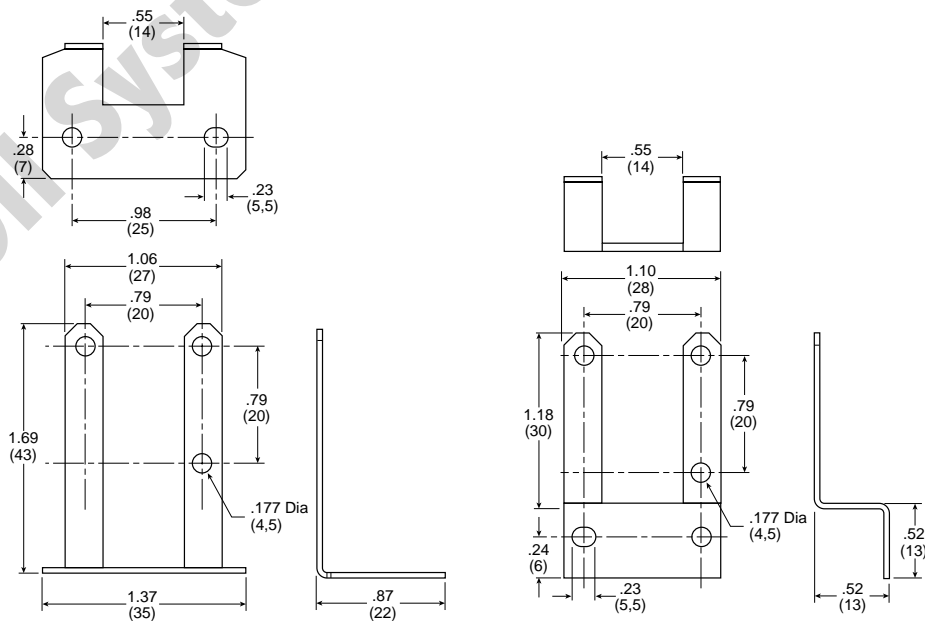
N

1/8" Female



MPS-ACCK1

**Mounting
 Brackets
 (Included)**





See page C52 for Symbol Explanation

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

ou1 \leftrightarrow no Δ nc
 ou2 \leftrightarrow no Δ nc
 -PA Δ -bA Δ -HG Δ -IH
 PA Δ bA Δ FG Δ PS
 ESY \leftrightarrow off Δ on

2 Press 2x
Output Mode 1 Hysteresis or Window Comparator

ou1 \leftrightarrow HYS Δ CnP Δ off
 End

3 Press 4x
Output Mode 2 Hysteresis or Window Comparator

ou2 \leftrightarrow HYS Δ CnP Δ off
 End

4 Press 1x
Output 1 Switch Point Setting Hysteresis Mode

H-1 \leftrightarrow 70 Δ 145
 0
 h-1 \leftrightarrow 13 Δ 145
 0

Window Comparator Mode
 Low
 A-1 \leftrightarrow 42 Δ 144
 0
 High
 b-1 \leftrightarrow 71 Δ 145
 1
 End

5 Press 3x
Output 2 Switch Point Setting Hysteresis Mode

H-2 \leftrightarrow 97 Δ 145
 0
 h-2 \leftrightarrow 13 Δ 145
 0

Window Comparator Mode
 Low
 A-2 \leftrightarrow 85 Δ 144
 0
 High
 b-2 \leftrightarrow 113 Δ 145
 1
 End

6 Press 5x
Automatic Teach Mode & Auto Surveillance

AUT
 Vacuum Cycle 803
 Release Cycle 0
 AL \leftrightarrow on Δ off
 ALn \leftrightarrow 1 Δ 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.

P-1 \leftrightarrow off Δ 0
 300

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

dSP \leftrightarrow 0.1 Δ 30
 0.1
 AuE \leftrightarrow 1 Δ 16 Δ 64
 End Δ 5 12

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

Pb \leftrightarrow off Δ on
 Pbt \leftrightarrow 10 Δ 99
 2
 Pbd \leftrightarrow PE Δ bo Δ du
 End

9 Press 8x
Special Display Features

dSF \leftrightarrow off Δ on
 Fnc \leftrightarrow 1b Δ 1d Δ 2b Δ 2d
 End Δ off Δ AL

10 Press 9x
Display Color Choices Red and / or Green, Energy Save
 Or Press 1x to Return

Wait 3 Seconds
 Col \leftrightarrow 2-r
 2-g
 1-r
 1-g
 End

	Output On	Output Off
2-r	Red	Green
2-g	Green	Red
1-r	Red	Red
1-g	Green	Green

11 Hold Press 1x
 Lock \leftrightarrow Unlock

12 Press 1x
 Peak Value \leftrightarrow Bottom Value

13 Press for 3 Seconds
 Zero Reset

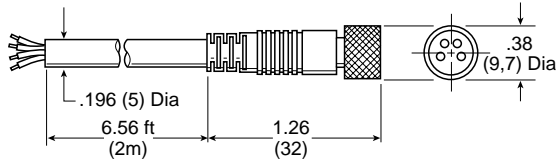
C



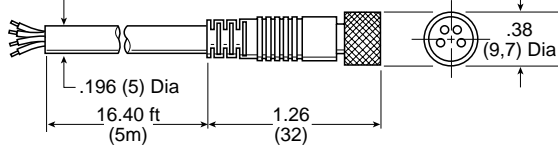
Accessories

Cables

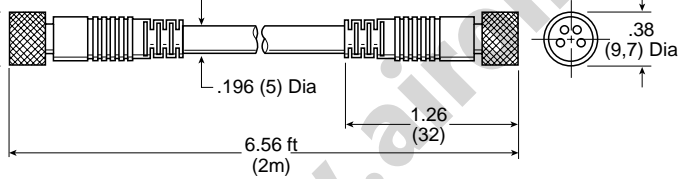
CB-M8-4P-2M, Female to Open Lead



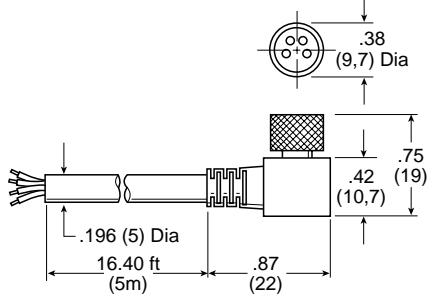
CB-M8-4P-5M, Female to Open Lead



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



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



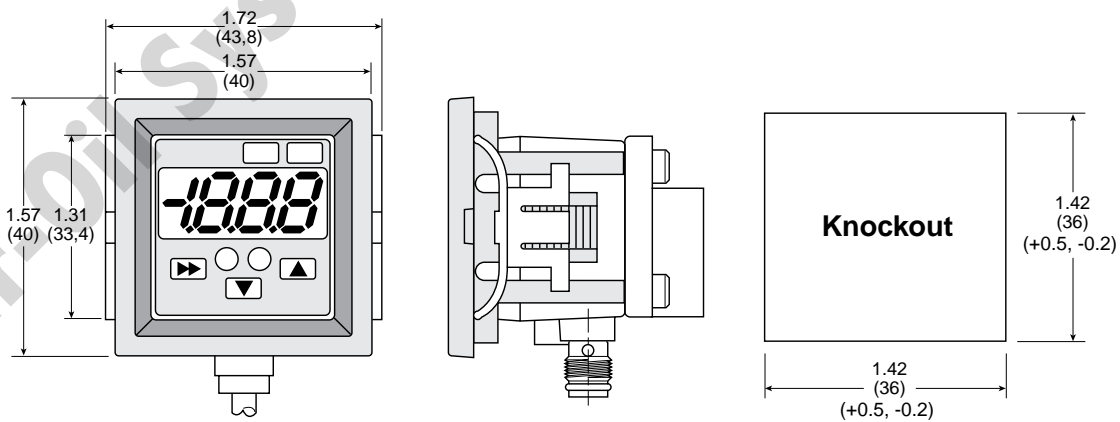
Pin Out Connection

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



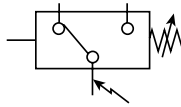
Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

MPS-ACCH7 Panel Mounting Bracket





MPS-6



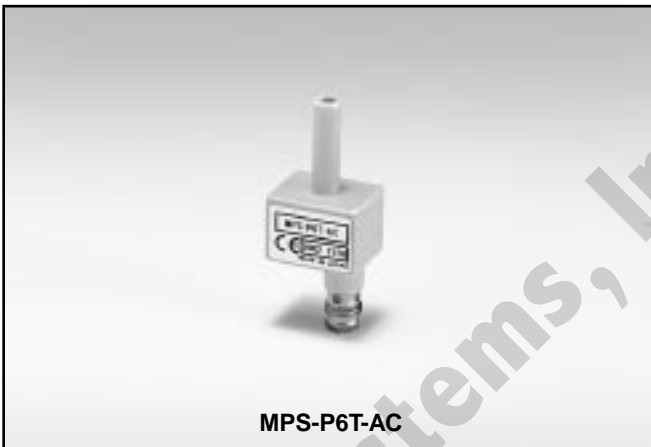
Features

- **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**

C



MPS-P6N-AC



MPS-P6T-AC

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	MPS-V6N-PC
		NPN Sinking		MPS-V6N-NC
		1-5VDC analog		MPS-V6N-AC
	6mm Tube Stud	PNP Sourcing	4 Pin, M8	MPS-V6T-PC
		NPN Sinking		MPS-V6T-NC
		1-5VDC analog		MPS-V6T-AC
0 to 145 PSI	1/8 NPSF*	PNP Sourcing	4 Pin, M8	MPS-P6N-PC
		NPN Sinking		MPS-P6N-NC
		1-5VDC analog		MPS-P6N-AC
	6mm Tube Stud	PNP Sourcing	4 Pin, M8	MPS-P6T-PC
		NPN Sinking		MPS-P6T-NC
		1-5VDC analog		MPS-P6T-AC

* 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.



CB-M8-4P-2E

Specifications

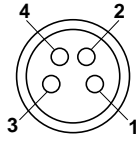
Media	Air and Non-Corrosives Gases
Pressure Port	(N) 1/8" NPT Male, (T) 6mm Tube Stud (Consult Factory for BSPP or BSPT Port)
Proof Pressure	(V) 72.5 PSI, (P) 217.5 PSI
Operating Temperature	32 to 122°F (0 to 50°C)
Storage Temperature	14 to 140°F (-10 to 60°C)
Humidity	35 to 85% RH
Electrical Connection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



Sensor Pin Out

Pin

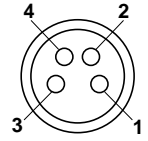
- 1 Brown: 24VDC
- 2 White: NPN / PNP Open Collector Output
- 3 Blue: 0VDC
- 4 Black: NPN / PNP Open Collector Output



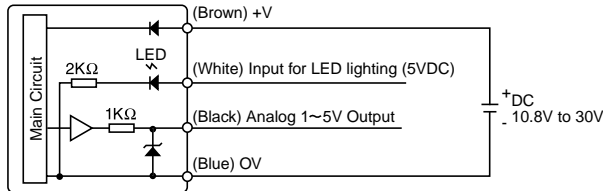
Sensor Pin Out with Analog Output

Pin

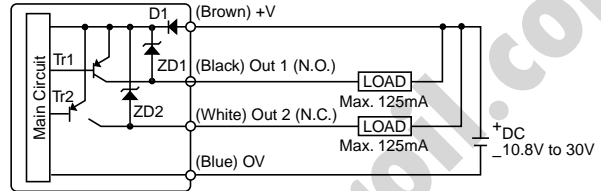
- 1 Brown: 24VDC
- 2 White: LED In 5VDC
- 3 Blue: 0VDC
- 4 Black: Analog 1 to 5VDC



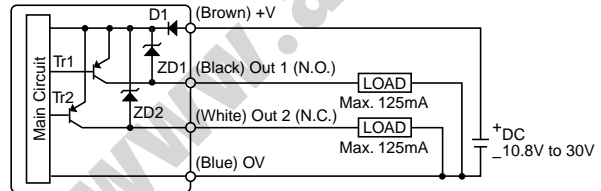
Internal Circuit



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 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

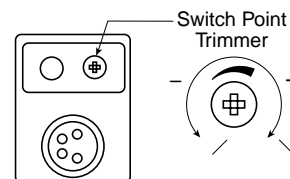
- Dedicate a power supply of 10.8 to 30VDC to the sensor and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
- A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.
- Verify the operating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

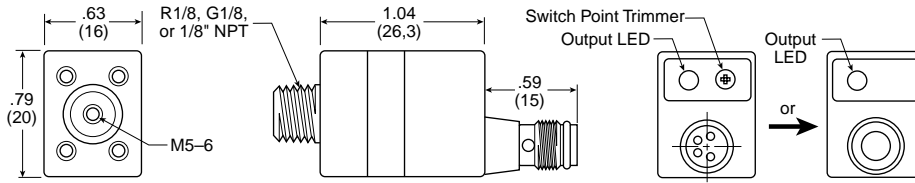




Dimensions

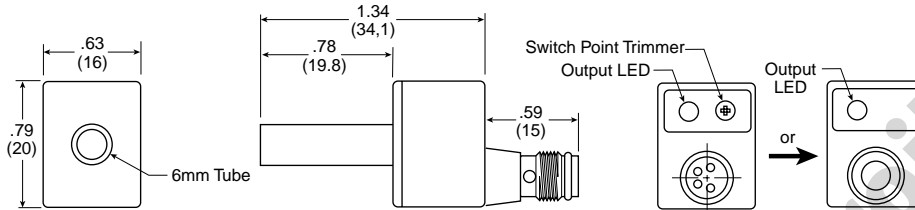
N, R, G

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



T6

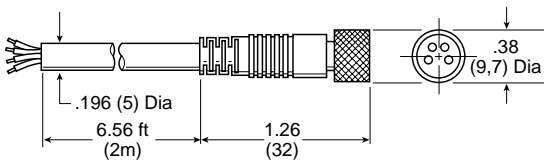
**Tube Stud,
M8, 4-Pin**



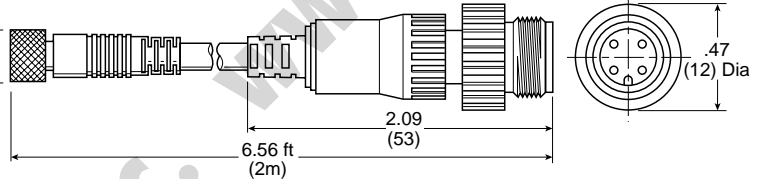
Accessories

Cables

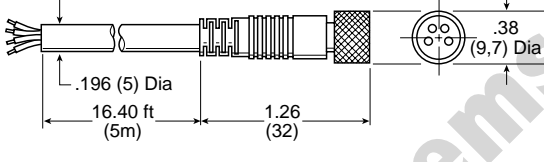
CB-M8-4P-2M, Female to Open Lead



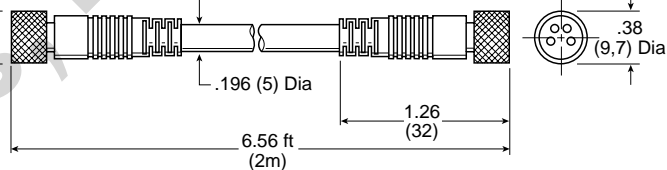
CB-M8-4P-M12-2M, M8 Female to M12 Male



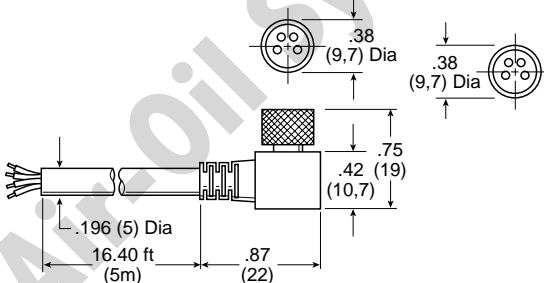
CB-M8-4P-5M, Female to Open Lead



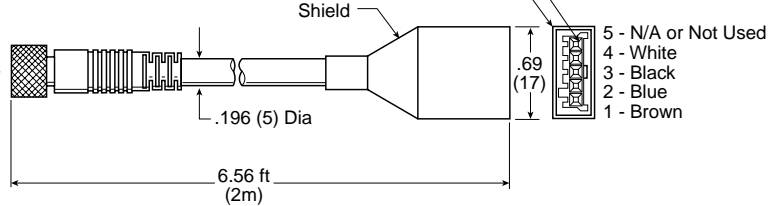
CB-M8-4P-M8-2M, M8 Female to M8 Male



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



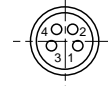
CB-M8-4P-2E, M8 Female



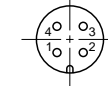
Female Interface 4-Pin, M8



Male Interface 4-Pin, M8



Male Interface 4-Pin, M12



Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black





MPS-7



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		

Mounting Bracket Included with Sensors.



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	MPS-71E-PC
		NPN Sinking		MPS-71E-NC
		PNP Sourcing	2M Lead Wire	MPS-71E-PG
		NPN Sinking		MPS-71E-NG
4 Remote Sensors	1	PNP Sourcing	2M Lead Wire	MPS-74E-PG
		NPN Sinking		MPS-74E-NG

** 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

Specifications

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



MPS-71 Open Collector Wiring

Pin # Grommet Lead Only

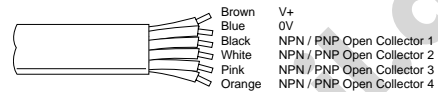
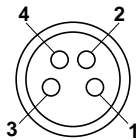
- 1 Brown: 24VDC
- 2 Black: NPN / PNP Open Collector 1
- 3 Blue: 0VDC
- 4 White: NPN / PNP Open Collector 2

MPS-74 Open Collector Wiring

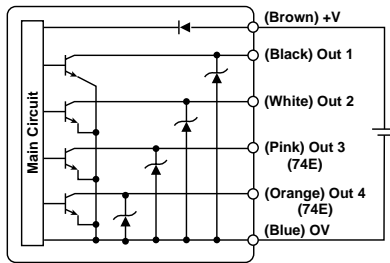
Pin # Grommet Lead Only

- 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

Sensor Male Pin Out



Internal Circuit



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

⚠ 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 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 V_p -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.

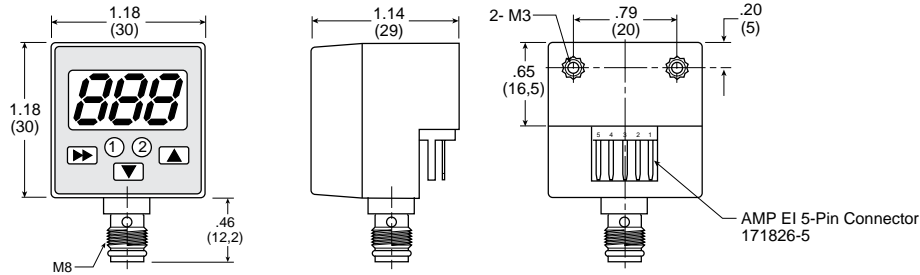
Error Messages

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



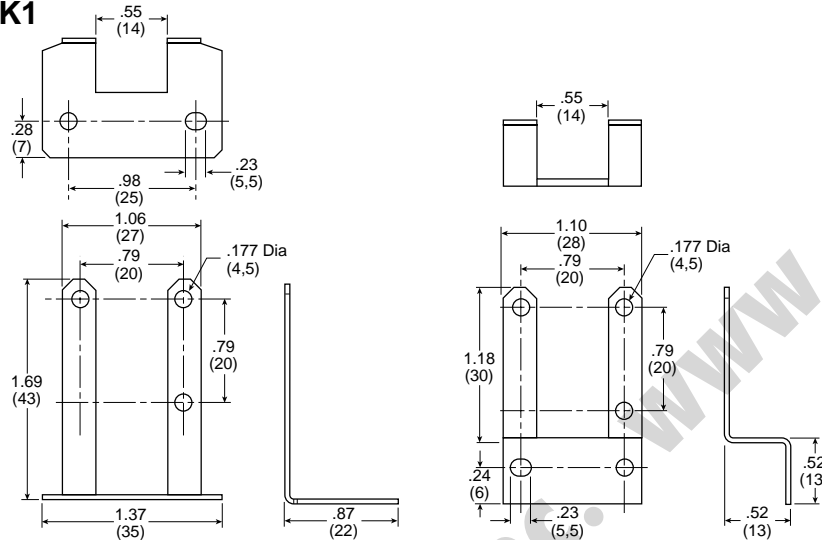
Dimensions

MPS-71

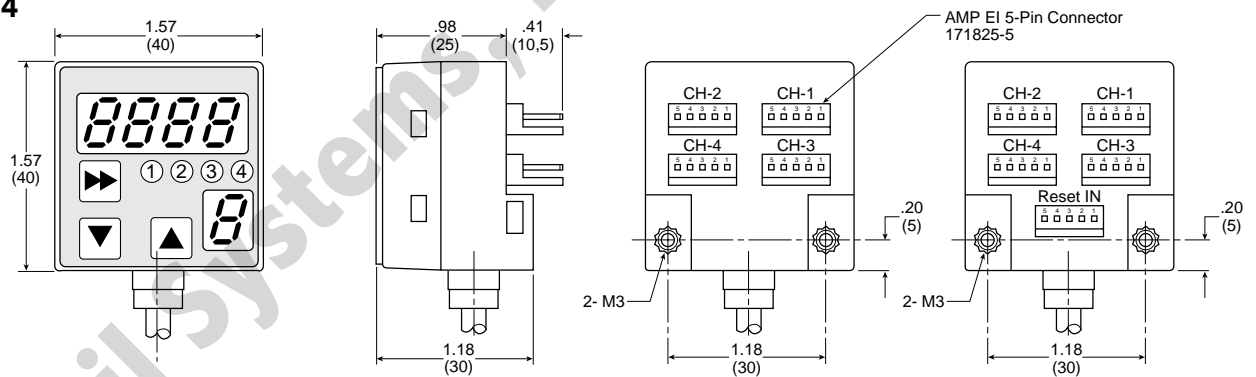


MPS-ACCK1

Mounting
Bracket
(Included)

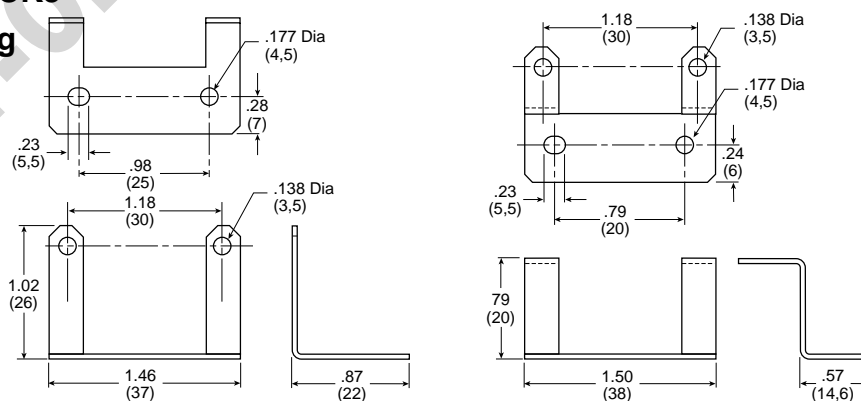


MPS-74



MPS-ACCK3

Mounting
Bracket
(Included)





See page C52 for Symbol Explanation

1 Hold Press 1x

Output Set Open or Closed
Easy Mode
Activation

ou1 ⇌ no nc
 ou2 ⇌ no nc
 -PR -bR -H9 -H
 PR bR F9 PS
 ESY ⇌ off on
 ...

2 Press 2x

Output Mode 1
Hysteresis or
Window
Comparator

ou1 ⇌ HYS CnP OFF
 End

3 Press 4x

Output Mode 2
Hysteresis or
Window
Comparator

ou2 ⇌ HYS CnP OFF
 End

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

5 Press 3x

Output 2
Switch Point
Setting
Hysteresis
Mode

H-2 ⇌ 97 195
 h-2 ⇌ 13 145

Window Comparator Mode
 Low
 A-2 ⇌ 85 144
 High
 b-2 ⇌ 113 145
 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.

7 Press 6x

Display Refresh
Settings / Output
Response Time
Interval

dSP ⇌ 0.1 30
 AuE ⇌ 1 16 64
 End 5 12

8 Press 7x

Display Peak Value
Bottom Value or
Their Difference

Pb ⇌ off on
 Pbt ⇌ 10 99
 Pbd ⇌ PE bo du
 End

9 Press 8x

Special Display
Features

dSF ⇌ off on
 Fnc ⇌ 1b 1d 2b 2d
 End off
 End RL

10 Press 9x

Select
Units of
Measure

Select
Pressure

P1 P2 P3 P4
 Vacuum Low Positive Compound
 Pressure Pressure Pressure Pressure
 End

11 Hold Press 1x

Lock

Hold Press 1x

Unlock

12 Press 1x

Peak Value

Press 1x

Bottom Value

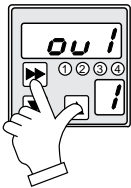
13 Press 3 Sec

Zero Reset

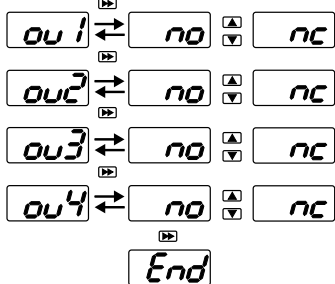
C



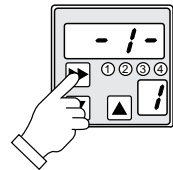
1 Hold Press 1x



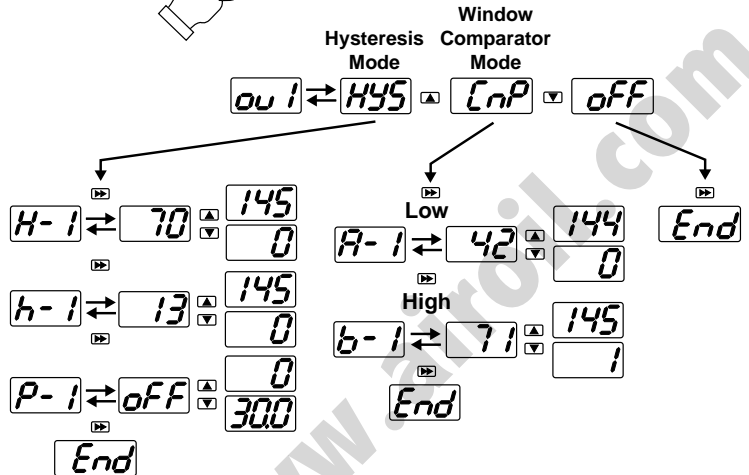
Output Selection
Normally Open / Normally Closed



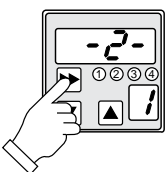
2 Press 1x



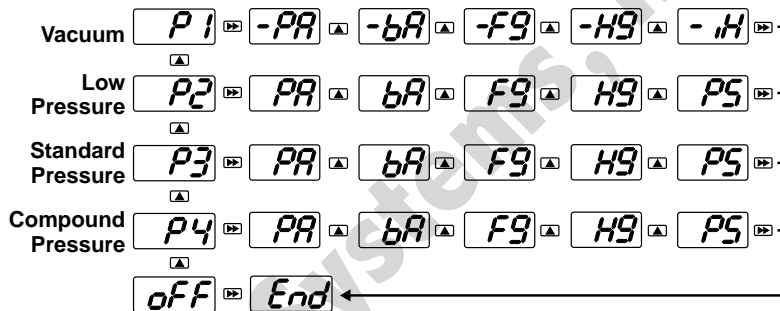
Select Output Mode
Hysteresis or Window Comparator
Output Setting
Peak Surveillance
(Repeat Procedure for Each Channel)



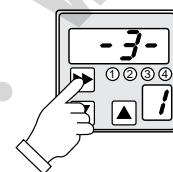
3 Press 2x



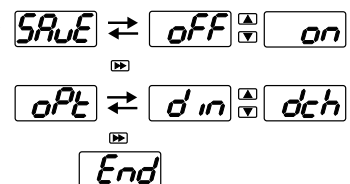
Select Remote Pressure
Select Unit of Measure



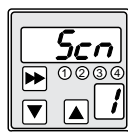
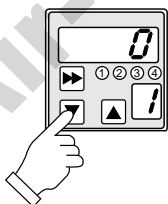
4 Press 3x



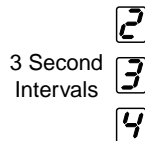
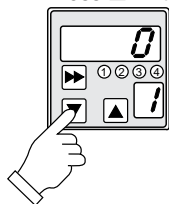
Energy Saving Mode
Digital IN Mode (Remote Zero Reset)



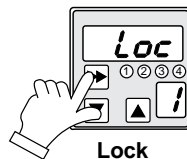
5 Press and Hold 3 Seconds
Scan Mode



Press 1x to Deactivate

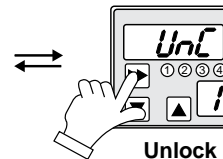


6 Hold Press 1x



Lock

Hold Press 1x



Unlock

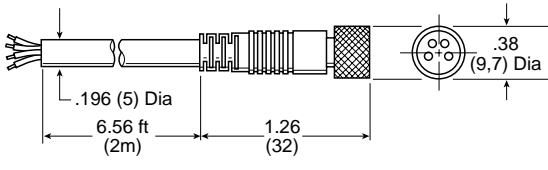




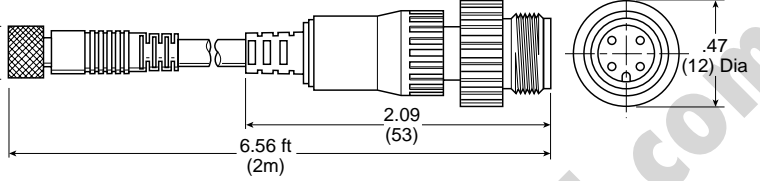
Accessories

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

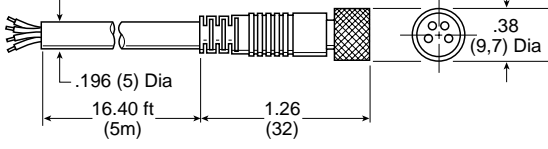
CB-M8-4P-2M, Female to Open Lead



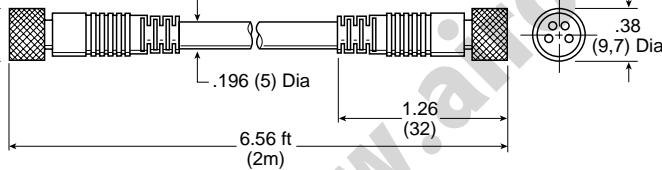
CB-M8-4P-M12-2M, M8 Female to M12 Male



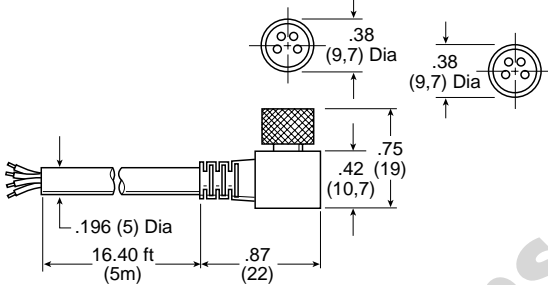
CB-M8-4P-5M, Female to Open Lead



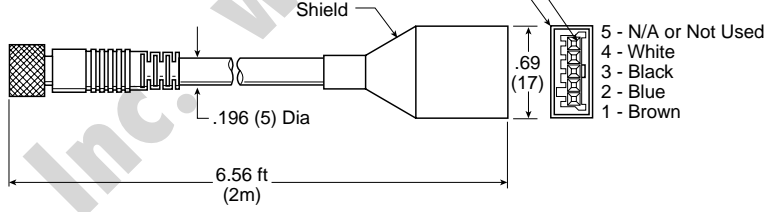
CB-M8-4P-M8-2M, M8 Female to M8 Male



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

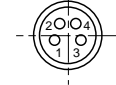


CB-M8-4P-2E, M8 Female

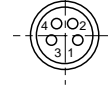


- 5 - N/A or Not Used
- 4 - White
- 3 - Black
- 2 - Blue
- 1 - Brown

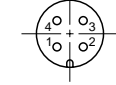
**Female Interface
 4-Pin, M8**



**Male Interface
 4-Pin, M8**



**Male Interface
 4-Pin, M12**



Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

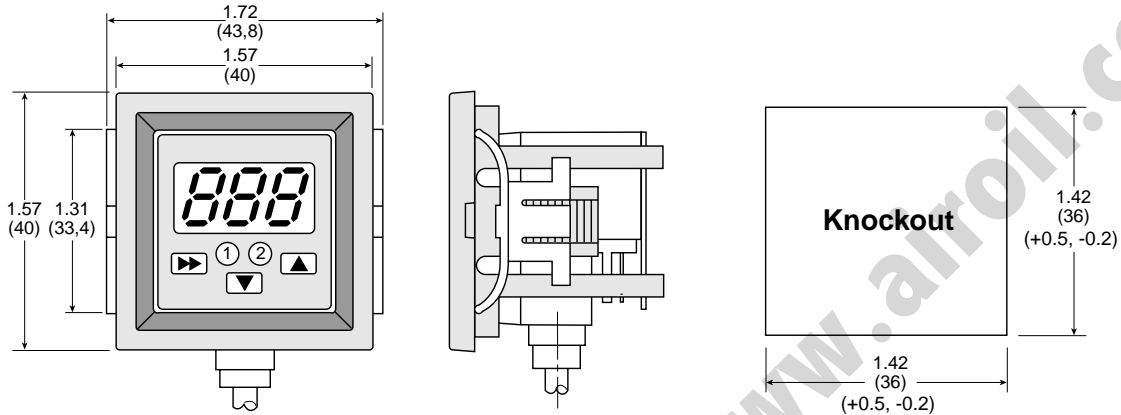
C



Accessories

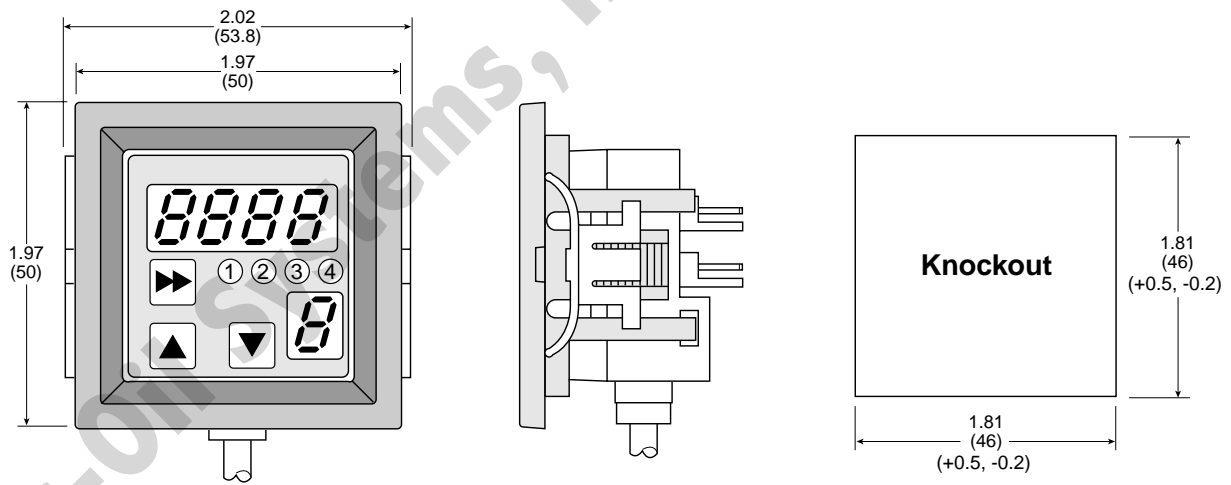
MPS-ACCH4

Panel Mounting Bracket for MPS-71



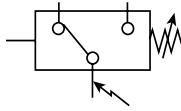
MPS-ACCH5

Panel Mounting Bracket for MPS-74



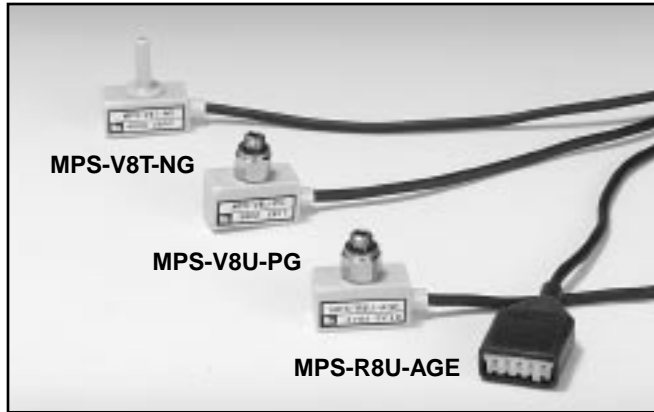


MPS-8



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**



C

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	MPS-V8U-PG
		NPN Sinking		MPS-V8U-NG
		1-5VDC Analog	2m grommet, MPS-7 Connector*	MPS-V8U-AGE
	4mm Tube Stud	PNP Sourcing	4 Pin, M8	MPS-V8T-PG
		NPN Sinking		MPS-V8T-NG
		1-5vVDC Analog	2m grommet, MPS-7 Connector*	MPS-V8T-AGE
-14.7 to 72.5 PSI	M5 Bottom Swivel Male	1-5VDC Analog	2m grommet, MPS-7 Connector*	MPS-R8U-AGE
	4mm Tube Stud	1-5VDC Analog	2m grommet, MPS-7 Connector*	MPS-R8T-AGE

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

C

Specifications

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



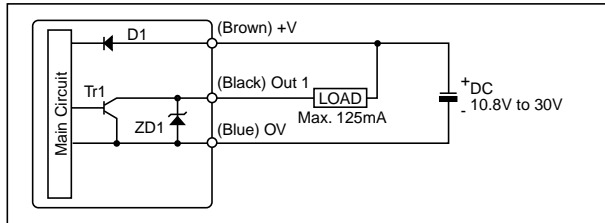
Open Collector Wiring

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

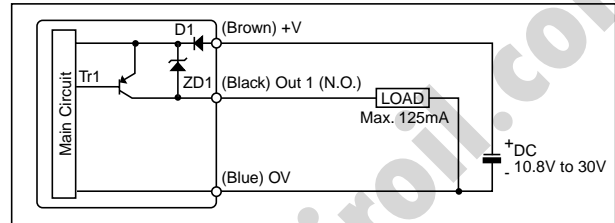
Analog Wiring

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

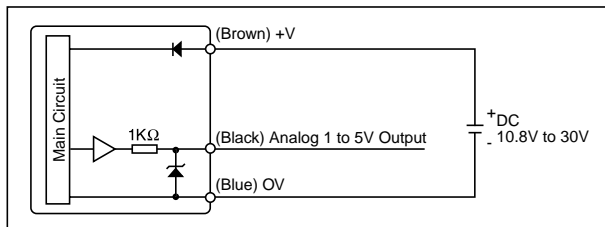
Internal Circuit



NPN Open Collector



PNP Open Collector



Analog

C

⚠ 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 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.

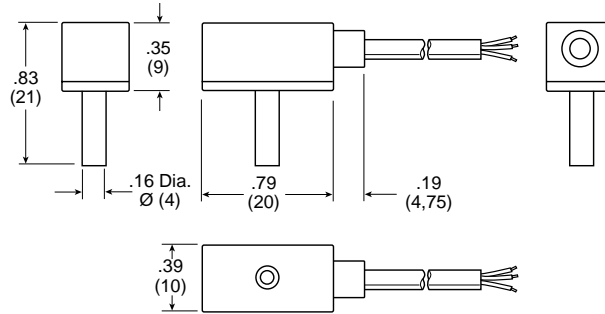
Installation

- 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.

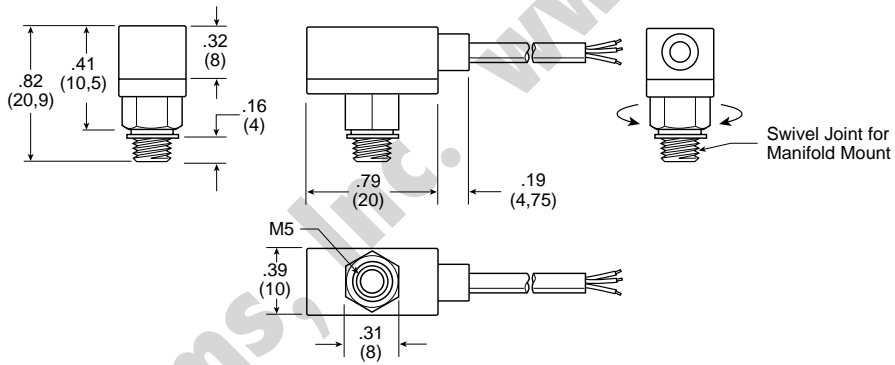


Dimensions

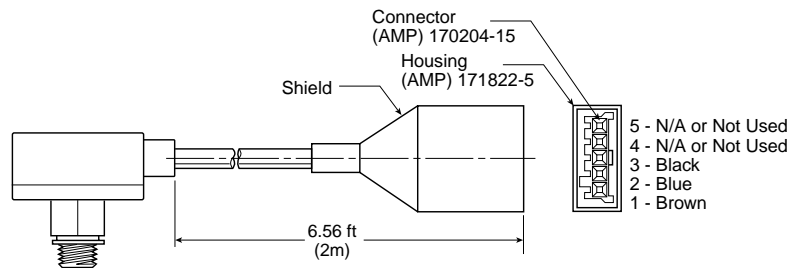
MPS-8T
4mm Tube Stud



MPS-8U
M5 Male Swivel, Grommet

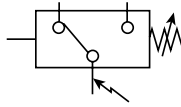


2m Grommet
MPS-7 Connector





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°**

C



SCPSD-1000P-1727



SCPSD-600-14-15

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	7/16-20 UNF-2b (SAE-4)	(2) PNP	M12, 4 Pin	SCPSD-0100P-0727
-14.7 to 100 PSI	7/16-20 UNF-2b (SAE-4)	(1) PNP with 4-20MA	M12, 4 Pin	SCPSD-0100P-1727
-14.7 to 250 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP	M12, 4 Pin	SCPSD-0250P-0727
-14.7 to 250 PSI	7/16-20 UNF-2b (SAE-4)	(1) PNP with 4-20MA	M12, 4 Pin	SCPSD-0250P-1727
0 to 1000 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP with 4-20MA	M12, 5 Pin	SCPSD-1000P-1725
0 to 1000 PSI	7/16-20 UNF-2b (SAE-4)	(1) PNP with 4-20MA	M12, 4 Pin	SCPSD-1000P-1727
0 to 3000 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP	M12, 4 Pin	SCPSD-3000P-0727
0 to 3000 PSI	7/16-20 UNF-2b (SAE-4)	(1) PNP with 4-20MA	M12, 4 Pin	SCPSD-3000P-1727
0 to 3000 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP with 4-20MA	M12, 5 Pin	SCPSD-3000P-1725
0 to 5000 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP	M12, 4 Pin	SCPSD-5000P-0727
0 to 5000 PSI	7/16-20 UNF-2b (SAE-4)	(1) PNP with 4-20MA	M12, 4 Pin	SCPSD-5000P-1727
0 to 5000 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP with 4-20MA	M12, 5 Pin	SCPSD-5000P-1725
0 to 9000 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP	M12, 4 Pin	SCPSD-9000P-0727
0 to 9000 PSI	7/16-20 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

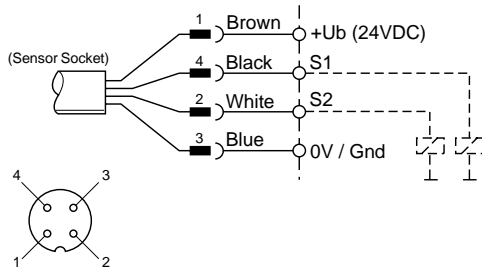
Pressure Code	0100	0250	016	1000	3000	5000	9000	250	600
Units of Measure	PSI ,bar, MPA								
Measure Range (PSI, bar)	-14.7 to 100	-14.7 to 250	-1 to 16	0 to 1000	0 to 3000	0 to 5000	0 to 9000	0 to 250	0 to 600
Overload Pressure (PSI, bar)	360	725	40	2900	7250	11600	21750	500	1200
Burst Pressure (PSI, bar)	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)								



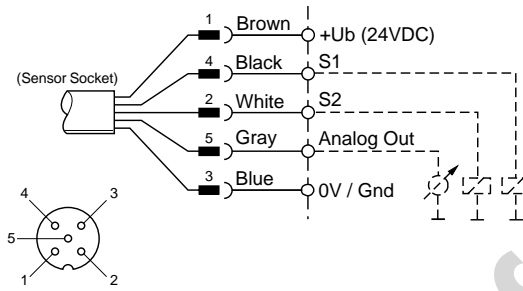


Internal Circuit

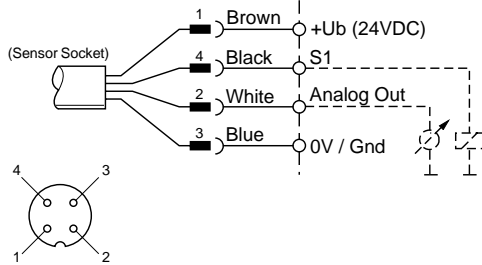
M12, 4-Pin, (2) PNP Outputs



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.

C

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

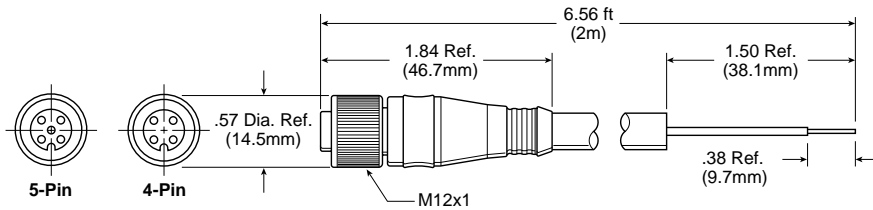
Error Messages

Display	Description
Att	The set value is lower than the other respective parameters. When Enter is activated, the smaller value is matched up.
Err1	System Error (Internal)
Err2	Nominal instrument pressure range was exceeded by 10%. Please check system pressure.
Err3	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 **Female Interface**
4-Pin, M12

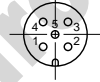


Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black
5	Gray



Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

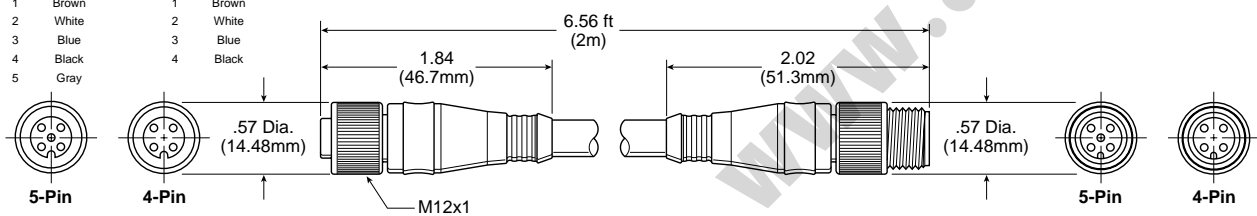
Male Interface
5-Pin, M12



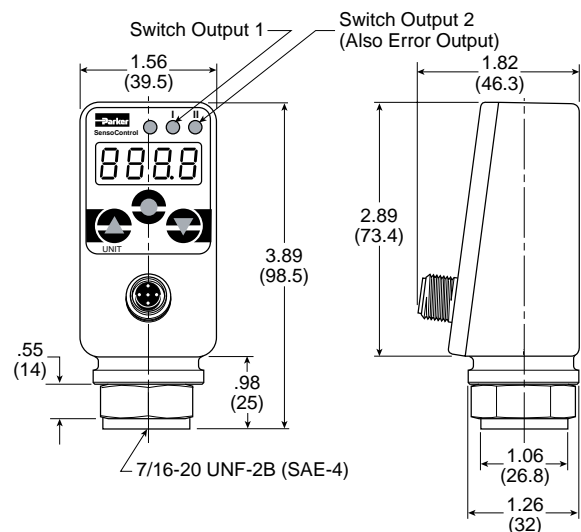
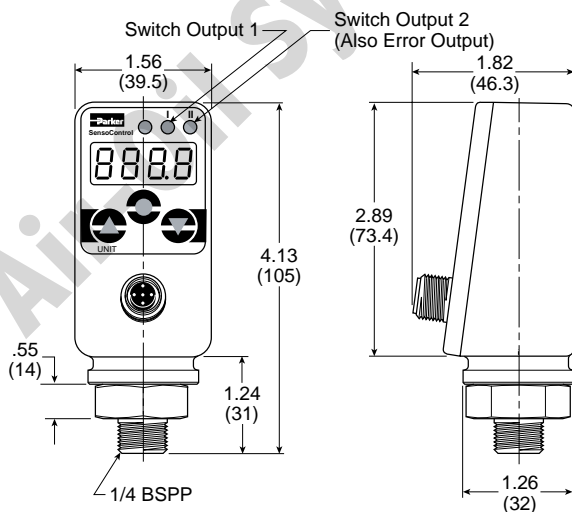
Male Interface
4-Pin, M12

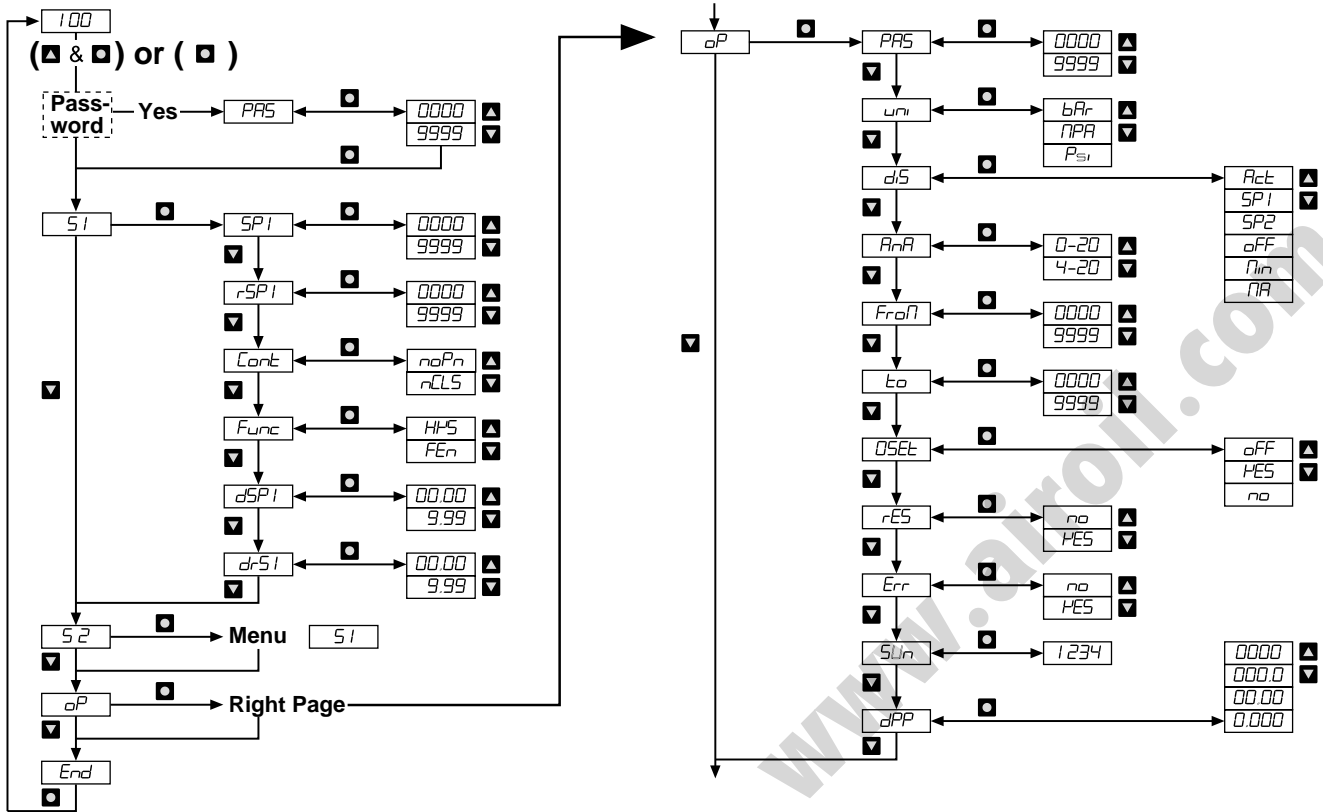


CB-M12-4P-M12-2M, Female to Male
CB-M12-5P-M12-2M, Female to Male



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.

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

Menu for programming the switch outputs:
S1 S1 = Switch output 1
S2 S2 = Switch output 2 (Menu is not active if S2 is being used as an error output)

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

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

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

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

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

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

cont Switch output as
noPn = closer
nCLS = opener

Func Selection of switching functions:
HySt = Hysteresis function
FEn = Window function

Delay times; input from 0 to 9.99 s.

dSP1 dSP1 = 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. <input type="checkbox"/>
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 <input type="checkbox"/>

Electrical Test Unit (M12, 5-Pin)

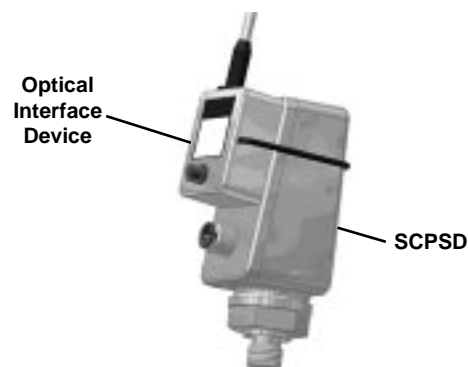
SCSN-450-PSD



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.



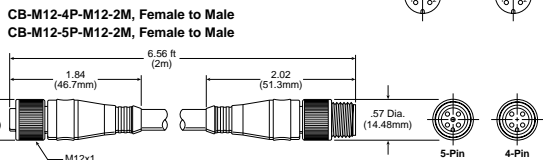
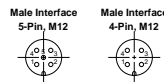
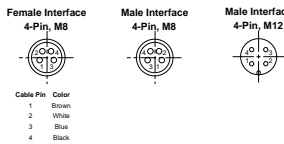
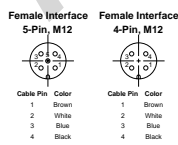
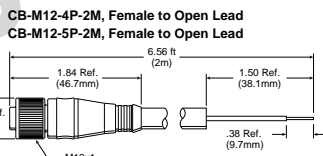
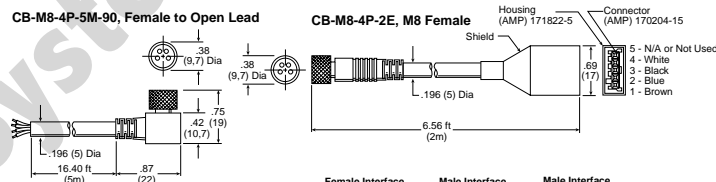
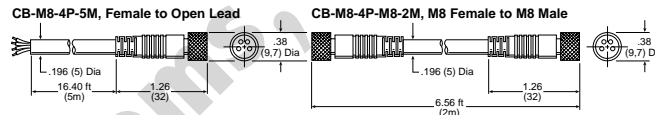
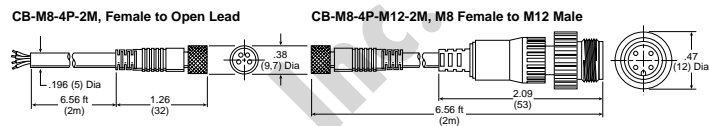


Features

- 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



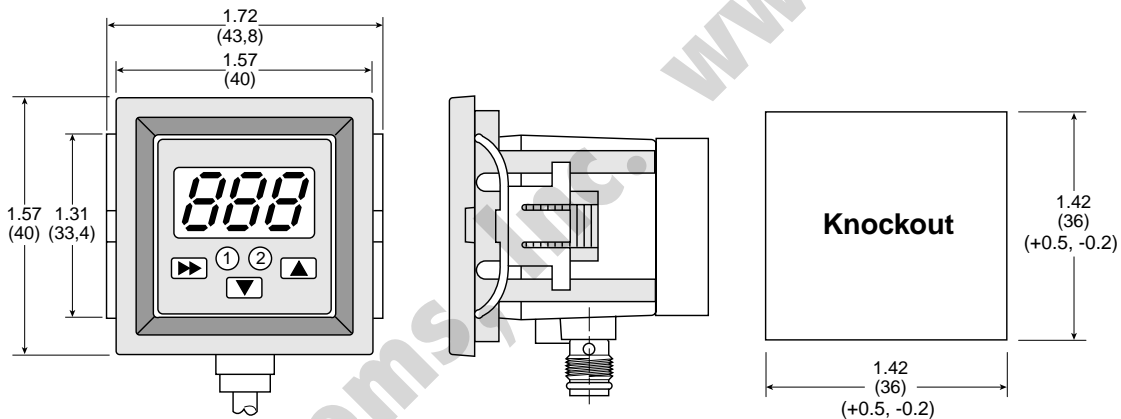


Panel Mounting Kits

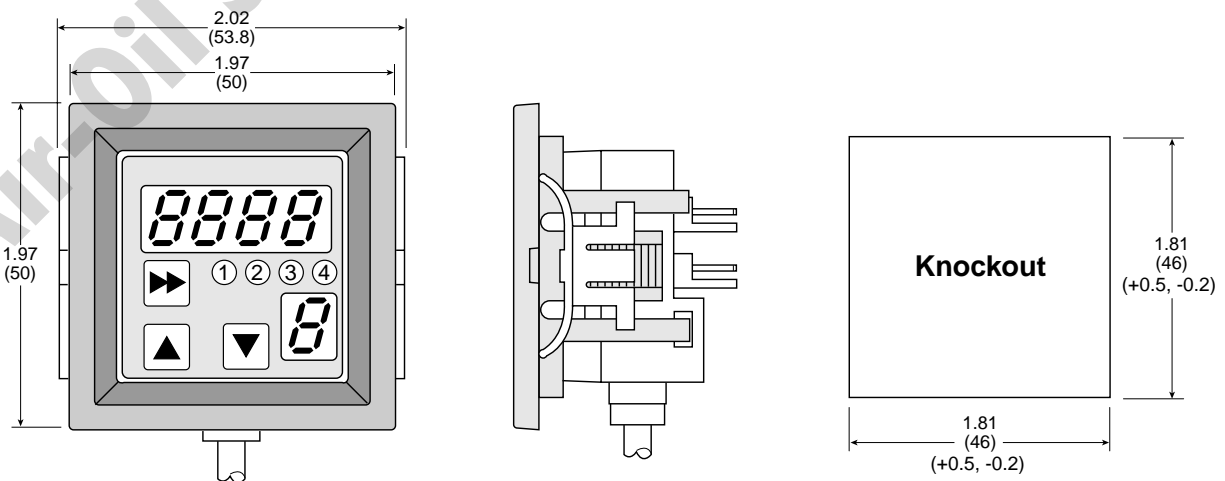
Description	For Use With
MPS-ACCH7	MPS-32
MPS-ACCH4	MPS-71
MPS-ACCH5	MPS-74

Panel Knockout Dimensions

MPS-ACCH7, MPS-ACCH4



MPS-ACCH5



Programming Symbols Legend

ou1	Output 1
ou2	Output 2
ou3	Output 3
ou4	Output 4
nc	Output Normally Closed (Passing)
no	Output Normally Open (Non-Passing)
-PA PA	Pressure Units (Pascal). Negative Units for Vacuum Sensors
-bA bA	Pressure Units (Bar). Negative Units for Vacuum Sensors
-H9 H9	Pressure Units (mm.Hg). Negative Units for Vacuum Sensors
-iH	Pressure Units (in.Hg). Negative Units for Vacuum Sensors
-F9 F9	Pressure Units (kgf/cm ²). Negative Units for Vacuum Sensors
PS	Pressure Units (PSI)
ESY	Easy Mode. Sensor will only allow changes to set points
off	Off, or Energy Saving Display; reduces current consumption of Sensor
on	On
HYS	Hysteresis Mode. Select Hysteresis Set Point and Hysteresis Range
[nP	Windows Comparative Mode Select High and Low Set Point
H-1	Hysteresis Mode Set Point. Output 1
H-2	Hysteresis Mode Set Point. Output 2
h-1	Hysteresis Mode. Hysteresis Range Output 1
h-2	Hysteresis Mode. Hysteresis Range Output 2
A-1	Windows Comparative Mode Low Set Point Output 1
b-1	Windows Comparative Mode High Set Point Output 1
A-2	Windows Comparative Mode Low Set Point Output 2
b-2	Windows Comparative Mode High Set Point Output 2
AUT	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
AL	Auto Surveillance Mode On/Off. Set after Automatic Teach
ALn	Auto Surveillance based on cycles times. Provides output if Peak Value is not obtained in a specified number of cycles. (1-100)
dSP	Display Refresh Setting. Display updates from .1 to 1 sec. .3 sec factory set. Does not affect Sensor Response Time
AE	Output Response Time. Multiplies the sensor response time. Increases sensor response time. (Anti-chatter Mode)

Pressure Sensors Technical Data

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

C

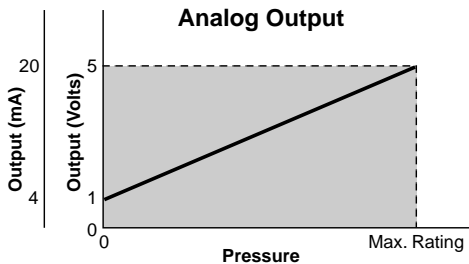
A

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 ² : 0.01	kgf/cm ² : 0.001	mmHg: 1	kgf/cm ² : 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

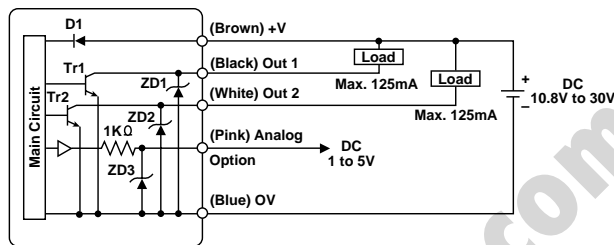
Amount of electrical noise in the surrounding environment that could affect the sensor performance.

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.

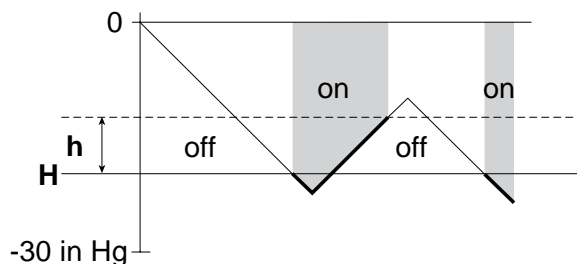
Operating Voltage

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.

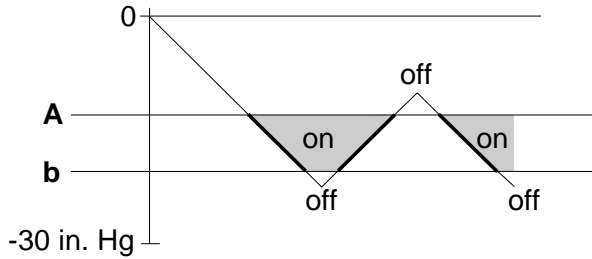


C

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

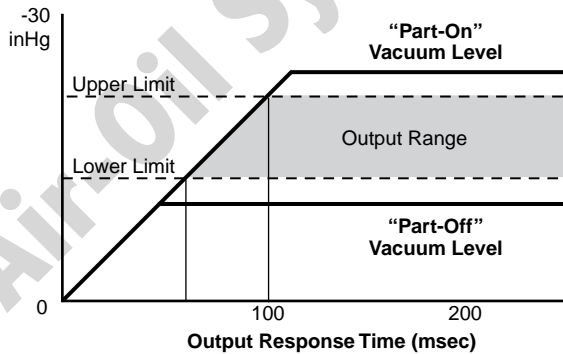
Response time of the output signal after the pressure switch point is achieved. Measured in milliseconds.

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.



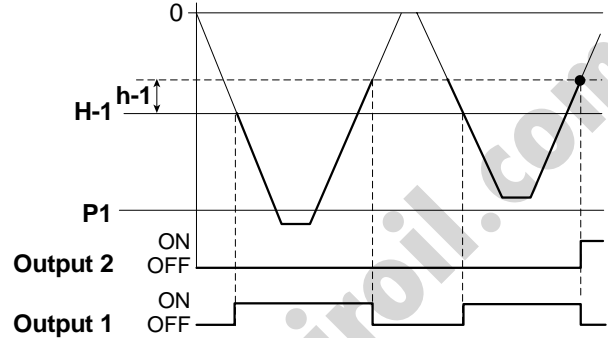
P

Panel Mounting Brackets

Brackets used to panel mount the sensor.

Peak Surveillance

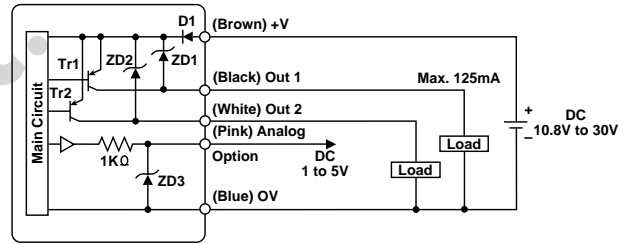
Maintenance function that can monitor peak values of the system. During the pressure cycle, if peak pressure (P-1) is not attained after set point (H-1) is attained, an error code PErr is displayed on the sensor.



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.

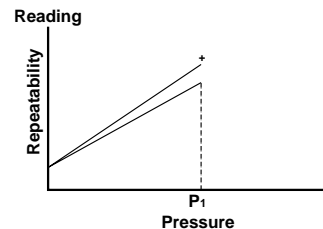
PNP Output (With Analog Output)



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 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

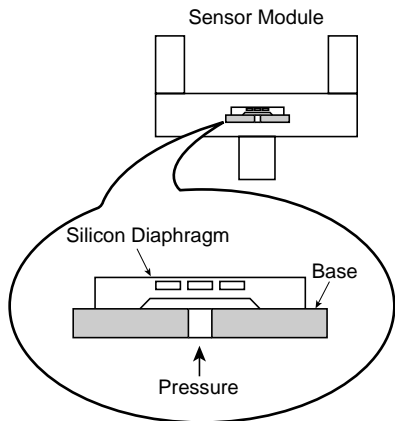
The number of the ON-OFF output signals in one product. Product with 2 setting points means 2 output type.

Shock Resistance

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

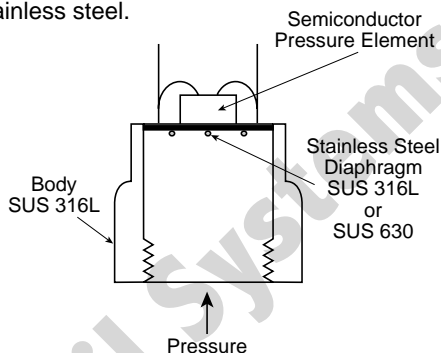
Silicon Diaphragm

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.

C

www.airoil.com

Safety Guide For Selecting And Using Pneumatic Division Products And Related Accessories

WARNING:

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF PNEUMATIC DIVISION PRODUCTS, ASSEMBLIES OR RELATED ITEMS ("PRODUCTS") CAN CAUSE DEATH, PERSONAL INJURY, AND PROPERTY DAMAGE. POSSIBLE CONSEQUENCES OF FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THESE PRODUCTS INCLUDE BUT ARE NOT LIMITED TO:

- Unintended or mistimed cycling or motion of machine members or failure to cycle
- Work pieces or component parts being thrown off at high speeds.
- Failure of a device to function properly for example, failure to clamp or unclamp an associated item or device.
- Explosion
- Suddenly moving or falling objects.
- Release of toxic or otherwise injurious liquids or gasses.

Before selecting or using any of these Products, it is important that you read and follow the instructions below.

1. GENERAL INSTRUCTIONS

- 1.1. Scope:** This safety guide is designed to cover general guidelines on the installation, use, and maintenance of Pneumatic Division Valves, FRLs (Filters, Pressure Regulators, and Lubricators), Vacuum products and related accessory components.
- 1.2. Fail-Safe:** Valves, FRLs, Vacuum products and their related components can and do fail without warning for many reasons. Design all systems and equipment in a fail-safe mode, so that failure of associated valves, FRLs or Vacuum products will not endanger persons or property.
- 1.3. Relevant International Standards:** For a good guide to the application of a broad spectrum of pneumatic fluid power devices see: ISO 4414:1998, Pneumatic Fluid Power – General Rules Relating to Systems. See www.iso.org for ordering information.
- 1.4. Distribution:** Provide a copy of this safety guide to each person that is responsible for selection, installation, or use of Valves, FRLs or Vacuum products. Do not select, or use Parker valves, FRLs or vacuum products without thoroughly reading and understanding this safety guide as well as the specific Parker publications for the products considered or selected.
- 1.5. User Responsibility:** Due to the wide variety of operating conditions and applications for valves, FRLs, and vacuum products Parker and its distributors do not represent or warrant that any particular valve, FRL or vacuum product is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through its own analysis and testing, is solely responsible for:
 - Making the final selection of the appropriate valve, FRL, Vacuum component, or accessory.
 - Assuring that all user's performance, endurance, maintenance, safety, and warning requirements are met and that the application presents no health or safety hazards.
 - Complying with all existing warning labels and / or providing all appropriate health and safety warnings on the equipment on which the valves, FRLs or Vacuum products are used; and,
 - Assuring compliance with all applicable government and industry standards.
- 1.6. Safety Devices:** Safety devices should not be removed, or defeated.
- 1.7. Warning Labels:** Warning labels should not be removed, painted over or otherwise obscured.
- 1.8. Additional Questions:** Call the appropriate Parker technical service department if you have any questions or require any additional information. See the Parker publication for the product being considered or used, or call 1-800-CPARKER, or go to www.parker.com, for telephone numbers of the appropriate technical service department.

2. PRODUCT SELECTION INSTRUCTIONS

- 2.1. Flow Rate:** The flow rate requirements of a system are frequently the primary consideration when designing any pneumatic system. System components need to be able to provide adequate flow and pressure for the desired application.
- 2.2. Pressure Rating:** Never exceed the rated pressure of a product. Consult product labeling, Pneumatic Division catalogs or the instruction sheets supplied for maximum pressure ratings.
- 2.3. Temperature Rating:** Never exceed the temperature rating of a product. Excessive heat can shorten the life expectancy of a product and result in complete product failure.
- 2.4. Environment:** Many environmental conditions can affect the integrity and suitability of a product for a given application. Pneumatic Division products are designed for use in general purpose industrial applications. If these products are to be used in unusual circumstances such as direct sunlight and/or corrosive or caustic environments, such use can shorten the useful life and lead to premature failure of a product.
- 2.5. Lubrication and Compressor Carryover:** Some modern synthetic oils can and will attack nitrile seals. If there is any possibility of synthetic oils or greases migrating into the pneumatic components check for compatibility with the seal materials used. Consult the factory or product literature for materials of construction.
- 2.6. Polycarbonate Bowls and Sight Glasses:** To avoid potential polycarbonate bowl failures:
 - Do not locate polycarbonate bowls or sight glasses in areas where they could be subject to direct sunlight, impact blow, or temperatures outside of the rated range.
 - Do not expose or clean polycarbonate bowls with detergents, chlorinated hydro-carbons, ketones, esters or certain alcohols.
 - Do not use polycarbonate bowls or sight glasses in air systems where compressors are lubricated with fire resistant fluids such as phosphate ester and di-ester lubricants.

2.7. Chemical Compatibility: For more information on plastic component chemical compatibility see Pneumatic Division technical bulletins Tec-3, Tec-4, and Tec-5

2.8. Product Rupture: Product rupture can cause death, serious personal injury, and property damage.

- Do not connect pressure regulators or other Pneumatic Division products to bottled gas cylinders.
- Do not exceed the maximum primary pressure rating of any pressure regulator or any system component.
- Consult product labeling or product literature for pressure rating limitations.

3. PRODUCT ASSEMBLY AND INSTALLATION INSTRUCTIONS

3.1. Component Inspection: Prior to assembly or installation a careful examination of the valves, FRLs or vacuum products must be performed. All components must be checked for correct style, size, and catalog number. DO NOT use any component that displays any signs of nonconformance.

3.2. Installation Instructions: Parker published Installation Instructions must be followed for installation of Parker valves, FRLs and vacuum components. These instructions are provided with every Parker valve or FRL sold, or by calling 1-800-CPARKER, or at www.parker.com.

3.3. Air Supply: The air supply or control medium supplied to Valves, FRLs and Vacuum components must be moisture-free if ambient temperature can drop below freezing

4. VALVE AND FRL MAINTENANCE AND REPLACEMENT INSTRUCTIONS

4.1. Maintenance: Even with proper selection and installation, valve, FRL and vacuum products service life may be significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a component failure, and experience with any known failures in the application or in similar applications should determine the frequency of inspections and the servicing or replacement of Pneumatic Division products so that products are replaced before any failure occurs. A maintenance program must be established and followed by the user and, at minimum, must include instructions 4.2 through 4.10.

4.2. Installation and Service Instructions: Before attempting to service or replace any worn or damaged parts consult the appropriate Service Bulletin for the valve or FRL in question for the appropriate practices to service the unit in question. These Service and Installation Instructions are provided with every Parker valve and FRL sold, or are available by calling 1-800-CPARKER, or by accessing the Parker web site at www.parker.com.

4.3. Lockout / Tagout Procedures: Be sure to follow all required lockout and tagout procedures when servicing equipment. For more information see: OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – (Lockout / Tagout)

4.4. Visual Inspection: Any of the following conditions requires immediate system shut down and replacement of worn or damaged components:

- Air leakage: Look and listen to see if there are any signs of visual damage to any of the components in the system. Leakage is an indication of worn or damaged components.
- Damaged or degraded components: Look to see if there are any visible signs of wear or component degradation.
- Kinked, crushed, or damaged hoses. Kinked hoses can result in restricted air flow and lead to unpredictable system behavior.
- Any observed improper system or component function: Immediately shut down the system and correct malfunction.
- Excessive dirt build-up: Dirt and clutter can mask potentially hazardous situations.

Caution: Leak detection solutions should be rinsed off after use.

4.5. Routine Maintenance Issues:

- Remove excessive dirt, grime and clutter from work areas.
- Make sure all required guards and shields are in place.

4.6. Functional Test: Before initiating automatic operation, operate the system manually to make sure all required functions operate properly and safely.

4.7. Service or Replacement Intervals: It is the user's responsibility to establish appropriate service intervals. Valves, FRLs and vacuum products contain components that age, harden, wear, and otherwise deteriorate over time. Environmental conditions can significantly accelerate this process. Valves, FRLs and vacuum components need to be serviced or replaced on routine intervals. Service intervals need to be established based on:

- Previous performance experiences.
- Government and / or industrial standards.
- When failures could result in unacceptable down time, equipment damage or personal injury risk.

4.8. Servicing or Replacing of any Worn or Damaged Parts: To avoid unpredictable system behavior that can cause death, personal injury and property damage:

- Follow all government, state and local safety and servicing practices prior to service including but not limited to all OSHA Lockout Tagout procedures (OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – Lockout / Tagout).
- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to system and Pneumatic Division products before installation, service, or conversion.
- Installation, servicing, and / or conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversions air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or if the product does not operate properly, do not put product or system into use.
- Warnings and specifications on the product should not be covered or painted over. If masking is not possible, contact your local representative for replacement labels.

4.9. Putting Serviced System Back into Operation: Follow the guidelines above and all relevant Installation and Maintenance Instructions supplied with the valve FRL or vacuum component to insure proper function of the system.

Offer of Sale

The items described in this document and other documents or descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors, are hereby offered for sale at prices to be established by Parker Hannifin Corporation, its subsidiaries and its authorized distributors. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any such item, when communicated to Parker Hannifin Corporation, its subsidiaries or an authorized distributor ("Seller") verbally or in writing, shall constitute acceptance of this offer.

1. Terms and Conditions of Sale: All descriptions, quotations, proposals, offers, acknowledgments, acceptances and sales of Seller's products are subject to and shall be governed exclusively by the terms and conditions stated herein. Buyer's acceptance of any offer to sell is limited to these terms and conditions. Any terms or conditions in addition to, or inconsistent with those stated herein, proposed by Buyer in any acceptance of an offer by Seller, are hereby objected to. No such additional, different or inconsistent terms and conditions shall become part of the contract between Buyer and Seller unless expressly accepted in writing by Seller. Seller's acceptance of any offer to purchase by Buyer is expressly conditional upon Buyer's assent to all the terms and conditions stated herein, including any terms in addition to, or inconsistent with those contained in Buyer's offer. Acceptance of Seller's products shall in all events constitute such assent.

2. Payment: Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

4. Warranty: Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 18 months from date of shipment from Parker Hannifin Corporation. THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED.

NOTWITHSTANDING THE FOREGOING, THERE ARE NO WARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER'S DESIGN OR SPECIFICATIONS.

5. Limitation of Remedy: SELLER'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER'S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.

6. Changes, Reschedules and Cancellations: Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitations, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid

by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer, or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets (hereinafter "Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.