

# Mid-West<sup>®</sup> Instrument

## “Piston Type”

### Differential Pressure Gauges Switches & Transmitters Models 120, 122, 123 & 124



A low cost differential pressure gauge for use in measuring the pressure drop across filters, strainers, separators, valves, pumps, chillers, etc., and for local flow indication and control.



Model 120  
0-50 PSID  
2-1/2" Dial

- Simple, rugged, compact design.
- Working pressure up to 10,000 PSIG (690 bar)
- Over-range protection to maximum pressure.
- Housing materials: Aluminum or 316L Stainless Steel with 316 stainless steel internals.
- Weather-resistant construction standard.
- Shatter resistant lens.
- Temperature Limits: -40°F(-40°C) to +200°F(+93°C)
- Variety of Dial type and Sizes (3-1/2", 4-1/2") (Uni-directional or Bi-directional)
- Available DP Ranges: Inches H<sub>2</sub>O, PSID, bar, and Kpa
- 1/4" FNPT & 1/2" FNPT Process Connections
- Multiple mounting options available

*“A World Leader  
in Differential Pressure,  
Gauges, Switches &  
Transmitters*

Model 122  
with 3 color dial



Model 123  
0-400 PSID

Model 121  
0-30 PSID  
with Switch



An optional maximum indication follower pointer provides automatic indication of maximum differential occurring during a time period or system cycle. Reversed pressure ports are optionally available to facilitate installation and readability depending on which side of a filter, etc., the instrument must be installed.

Model	Body Material	Accuracy	Min. ΔP Range	Max. ΔP Range	MWP PSIG (Bar)	Switch Options
120	Aluminum & 316L S.S.	±2%	0-5 PSID (0-0.35 bar)	0-110 PSID (0-7 bar)	6,000 (400)	1 & 2 switch Hermetically Sealed
122	Aluminum	±5%	0-5 PSID (0-0.35 bar)	0-110 PSID (0-7 bar)	5,000 (340)	1 & 2 switch Hermetically Sealed
123	Aluminum & 316L S.S.	±2%	0-150 PSID (0-10 bar)	0-400 PSID (0-27 bar)	5,000 (340)	1 & 2 switch Hermetically Sealed
124	316L Stainless Steel	±2%	0-5 PSID (0-0.35 bar) 0-150 PSID (0-10.0 bar)	0-110 (0-7.0 bar) 0-400 (0-27.0 bar)	10,000 (690)	1 & 2 switch Hermetically Sealed Or 4-20 mA Transmitter

**Proof Pressure:** Two times rated working pressure at ambient temperature

**Standards:** Model 120 -124 Series gauges either conform to and/or are designed to the requirements of the following standards:

ASME B1.20.1  
ASME B40.100  
CSA-C22.2 No. 14.25 and 30  
EN-61010-1

NACE MR0175  
NEMA Std. No. 250  
SAE J514  
UL Std. No. 50,508 and 1203

# “Piston Type” Differential Pressure Gauge Switch & Transmitter Options Models 120, 122, 123 & 124



The Model 120-124 Series DP gauges are available with one or two hermetically sealed reed switches or 4-20mA transmitter depending on model. (See chart below)

The switches are adjustable (see table for adjustment range) within a defined percentage of the full scale range of the gauge and are available in SPDT and SPST, normally open or normally closed configurations for various load power ratings. The switches can be set to activate or deactivate on rising or falling pressure.

The standard reed switch is enclosed in a weather-resistant plastic housing. Adjustment of the switch setting is made with an external screw adjustment.

The switch functionality will be different for gauges with bi-directional operation for positive and negative delta pressure. For example a SPDT switch with positive .P applied to the gauge, the red wire will be N.O. and the black will be N.C.. For negative .P the functionality will be reversed.

Location for a single SPDT (grommet or conduit) switch will be on the bottom of the gauge body for a normal port and on the top for a reverse port. Locations for a single SPST (grommet or conduit) N.O. or SPST N.C. switch will be on the bottom and top respectively for a normal port gauge. The locations will be reversed for a reverse port gauge.

A non-indicating (no dial) differential pressure switch is also available.

Hazardous Location switches are 3<sup>rd</sup> Party Certified Class I Div 2 or Class I Div 1 dependant on type of switch. Listings are for the entire design and not just the enclosure. Standard and weatherproof units are CE marked for conformance with the Low Voltage Directive to harmonized standard EN 61010-1.

Transmitters feature Microprocessor based, external zero interface, 8-28 Vdc loop powered, 2 wire interface. Standard output of 4-20mA with a max loop resistance of 1000 Ohms.

Model Type	•120, ^122,+123, +124 SPDT	•120,+122, •123, SPDT	•120, ^122,+123, +124 SPST NO	•120, •123,•124 SPST NC	•120, •123,•124 SPST NO/NC	124 4-20mA
Power	3 W	60 W	60 W	60 W	60 W	4-20 mA Loop Power
Max Current	0.25 Amps	1.0 Amps	3.0 Amps	3.0 Amps	3.0 Amps	8-28 VDC Loop Powered 2-Wire interface
Max Voltage VAC/VDC	125	240	240	240	240	1000 Ohm max Loop resistance at 28 vdc
Setting Full Scale	•10-90%	•25-100%	•25-95%	•25-95%	•25-95%	20-100%
	^10-100%	+25-100%	+25-95%			
	+15-90%		^25-100%			
Hysteresis (Max / Norm)	10% / 5% (FS)	20% / 13% (FS)	15% / 8% (FS)	15% / 8% (FS)	15% / 8% (FS)	N/A
Repeatability	1% F.S.	1% F.S.	1% F.S.	1% F.S.	1% F.S.	1% F.S.
Leads 22 Awg	(3) 24"	(3) 24"	(2) 24"	(2) 24"	(2) 24"	N/A



# Mid-West<sup>®</sup> Instrument

## Standard Dial Ranges: Models 120, 122, 123, and 124

PSID	Range Type			Dual Scale
	Kpa	Bar		
0-5 PSID	0-100 Kpa	0-1.0 Bar		0-5 PSID & 0-0.35 Kg/Cm2
0-10 PSID	0-160 Kpa	0-1.6 Bar		0-5 PSID & 0-35 KPA
0-15 PSID	0-250 kpa	0-2.5 Bar		0-10 PSID & 0-0.7 BAR
0-20 PSID	0-400 Kpa	0-4.0 Bar		0-10 PSID & 0-0.7 KG/CM2
0-25 PSID	0-600 Kpa	0-6.0 Bar		0-10 PSID & 0-70 KPA
0-30 PSID	0-700 Kpa	0-7.0 Bar		0-100 PSID & 0-7 BAR
0-50 PSID				0-100 PSID & 0-7 KG/CM2
0-60 PSID				0-100 PSID & 0-700 KPA
0-75 PSID				0-15 PSID & 0-1 BAR
0-100 PSID				0-15 PSID & 0-1 KG/CM2
0-110 PSID				0-15 PSID & 0-100 KPA
**0-150 PSID				0-20 PSID & 0-1.4 BAR
**0-200 PSID				0-20 PSID & 0-140 KPA
**0-250 PSID				0-25 PSID & 0-1.75 BAR
**0-300 PSID				0-25 PSID & 0-1.75 KG/CM2
				0-25 PSID & 0-175 KPA
				0-30 PSID & 0-2 BAR
				0-30 PSID & 0-2 KG/CM2
				0-30 PSID & 0-200 KPA
				0-50 PSID & 0-3.5 BAR
				0-50 PSID & 0-3.5 KG/CM2
				0-50 PSID & 0-350 KPA
				0-75 PSID & 0-500 KPA

The above mentioned ranges are some of the most popular requested today. Mid-West Instrument can provide special un-cataloged dial range requirements. As well as multiple scale dials, multiple color dials and special decals. Please consult factory for complete information.

Model	Min. ΔP Range	Max. ΔP Range
120	0-5 PSID (0-0.35 bar)	0-110 PSID (0-7 bar)
122	0-5 PSID (0-0.35 bar)	0-100 PSID (0-7 bar)
**123	0-150 PSID (0-10 bar)	0-400 PSID (0-27 bar)
**124	0-5 PSID (0-0.35 bar)	0-110 PSID (0-7.0 bar)
	0-150 PSID (0-10.0 bar)	0-400 PSID (0-27.0 bar)

**Proof Pressure:** Two times rated working pressure at ambient temperature

**Temperature Limits:** -40°F (-40°C) to +200°F (+93°C) - These limits are based on the entire instrument being saturated to these temperatures. System (process) temperatures may exceed these limitations with proper installation. Contact our customer service representative for details.

**Standards:** Model 120 -124 Series gauges either conform to and/or are designed to the requirements of the following standards:

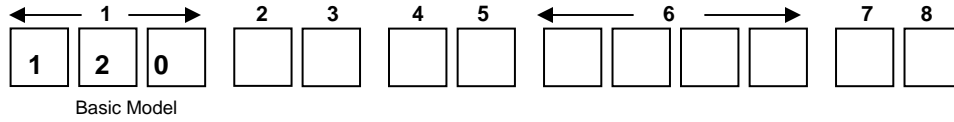
ASME B1.20.1	NACE MR0175
ASME B40.100	NEMA Std. No. 250
CSA-C22.2 No. 14.25 and 30	SAE J514
EN-61010-1	UL Std. No. 50,508 and 1203

## Standard Model Specifications: 120-AA-00-00

6000 PSIG Working Pressure, Aluminum Body & End Plugs, Stainless Steel Piston,  
Ceramic Magnet, Buna-N Seals, 1/4" FNPT Back Connections,  
2-1/2" round dial, Engineered Plastic Case with Shatter Resistant Acrylic Lens,  
Accuracy ±2% Full Scale (Ascending)

**Mid-West Instrument**  
1-800-648-5778

**Range 0-5 PSID to 0-110PSID (0.35 to 7.0 bar)**



Range: \_\_\_\_\_



<b>2</b>	<b>Material</b>
<b>A</b>	Aluminum Body / Stainless Steel Piston
<b>S</b>	316 S.S Body / Stainless Steel Piston
<b>M</b>	Monel Body / Monel Piston
<b>N</b>	Aluminum Bronze Body / Aluminum Bronze Piston
<b>Z</b>	Special ( <i>Un-coded Options</i> )
<b>3</b>	<b>Dial Size &amp; Type</b>
<b>A</b>	2-1/2" Round Uni-Directional Dial w/Engineered Plastic Dial Case
<b>C</b>	4-1/2" Round Uni-Directional Dial w/Engineered Plastic Dial Case
<b>E</b>	3-1/2" Round Uni-Directional Dial w/Anodized Aluminum Housing Dial Case
<b>G</b>	4-1/2" Round Uni-Directional Dial w/Anodized Aluminum Housing Dial Case
<b>T</b>	Non-Indicating DP Switch Only
<b>Z</b>	Special ( <i>Un-coded Options</i> )
<b>4</b>	<b>Seal Materials</b>
<b>0</b>	Buna-N ( <i>Standard</i> )
<b>1</b>	Viton®-A Registered Trademark of Dupont
<b>2</b>	Neoprene
<b>4</b>	Teflon®-A Registered Trademark of Dupont
<b>5</b>	Ethylene Propylene
<b>6</b>	Perfluorelastomers
<b>9</b>	Special ( <i>Un-coded Options</i> )
<b>5</b>	<b>Process Connections</b>
<b>0</b>	1/4" FNPT Back Connections ( <i>Standard</i> )
<b>2</b>	1/4" FNPT End Connections
<b>3</b>	1/4" FNPT Bottom Connections
<b>4</b>	1/2" FNPT End Connections
<b>6</b>	7/16"-20 Straight Thread "O" Ring Port ( <b>Back Connection</b> )
<b>7</b>	1/2" FNPT Stainless Steel Adapters / Back or Bottom Connections
<b>9</b>	Special ( <i>Un-coded Options</i> )

**Factory preset switches at no charge (Specify Setting)**

## Standard Model Specifications – continued Model 120

6	Additional Options
O	None
A	Reversed High / Low Process Connections. <b>(Not available with Electrical options J &amp; K)</b>
C	Mounting Holes in Gauge Body for Field Mounting Electrical Configurations Options A & B
D	Mounting Holes in Gauge Body for Field Mounting Electrical Configurations Options L & M
F	Carbon Steel 2" Pipe Mounting Kit <b>(not available with C, D, E or F electrical switch options)</b>
G	Stainless Steel 2" Pipe Mounting Kit <b>(not available with C, D, E or F electrical switch options)</b>
L	Liquid Fill <b>(2-1/2" &amp; 4-1/2" Dials Only)</b> Not Available with Maximum Follower Pointer
M	Maximum Indicator Follower Pointer
N	NACE
Q	CRN <b>(Canadian Registration Number)</b>
S	Shatter Proof Glass Lens <b>(Available only with 4-1/2" metal front)</b>
T	Oxygen Cleaning
U	Stainless Steel Tag with S.S. Wire
V	Stainless Steel Tag and S.S. Screw <b>(Contact Factory on Switch Options) Not on Gauge Body for Hazardous Locations</b>
W	Wall Mount Kit <b>(Not Available with Back Connections)</b> <b>(not available with E or F switch options)</b>
Z	Special <b>(Un-coded Options)</b>
<b>NOTE: Not All Options Available in Combination with other Options</b>	
7	Electrical Configurations (CE marked, except E, F, J & K)
A	One (1) Switch in standard enclosure with grommet Wire Seal
B	Two (2) Switch in standard enclosures with grommet Wire Seal
C	One (1) Switch in standard enclosure with 1/4" FNPT electrical connection NEMA 4X
D	Two (2) Switch in standard enclosures with 1/4" FNPT electrical connection NEMA 4X
E	One (1) Switch in general purpose enclosure, Division 2 Hazardous Locations <b>(1) (3)</b>
F	Two (2) Switches in general purpose enclosure, Division 2 Hazardous Locations <b>(1) (3)</b>
G	One (1) Switch & gauge in NEMA 4X plastic enclosure <b>(Not available with end connections)</b>
H	Two (2) Switches & gauge in NEMA 4X plastic enclosure <b>(Not available with end connections)</b>
J	One (1) Switch in explosion proof enclosure with glass window cover, Division 1 Hazardous Locations <b>(2) (3)</b>
K	Two (2) Switches in explosion proof enclosure with glass window cover, Division 1 Hazardous Locations <b>(2) (3)</b>
L	One (1) Switch in standard enclosure with plug-in connector (DIN 43650/IP65-PG11)
M	Two (2) Switch in standard enclosures with plug-in connector (DIN 43650/IP65-PG11)
Z	Special <b>(Un-coded Options)</b>
	<b>(1)</b> Complete assembly 3rd Party Certified Class I, Div.2, Groups A, B, C, & D; Class II, Div.2, Groups F and G.
	<b>(2)</b> Complete assembly 3rd Party Certified Class I, Div.1, Groups C & D; Class II, Div. 1, Groups E, F, & G.
	<b>(3)</b> 5000 PSIG SWP for Stainless Steel: 3000 PSIG SWP for Aluminum
8	Electrical Specifications (For Resistive Loads)
A	SPDT 3W, 0.25 Amp, 125 VAC/VDC (standard) (Switch adjustable range of 10-90%)
E	SPST 60W, 3.0 Amp, 240 VAC/VDC (Normally Open) (Switch adjustable range of 25-95%)
F	SPST 60W, 3.0 Amp, 240 VAC/VDC (Normally Closed) (Switch adjustable range of 25-95%)
G	SPST 60W, 3.0 Amp, 240 VAC/VDC (1) Normally Open, (1) Normally Closed (Switch adjustable range of 25-95%)
H	SPDT 60W, 1.0 Amp, 240 VAC/VDC (Switch adjustable range of 25-100%)
Z	Special <b>(Un-coded Options)</b>

**MID-WEST INSTRUMENT** has been serving a variety of industries (Power, Chemical, Petro-Chemical, HVAC, Water Filtration etc...) for over 50 years. Over 700,000 piston type units have been produced bearing the Mid-West name or private branded for our OEM customers!

Mid-West understands that in today's demanding environment, flexibility, quick response time and the ability to ship most of our product line in 2 weeks or less is essential to our customers. Standard configurations can be customized and modified to suit our customer's needs for ease of installation or retrofit.

If you are in need of additional information please visit our web site at [www.midwestinstrument.com](http://www.midwestinstrument.com) or contact us toll free at **1-800-648-5778** and one of our knowledgeable sales coordinators will be happy to assist you...