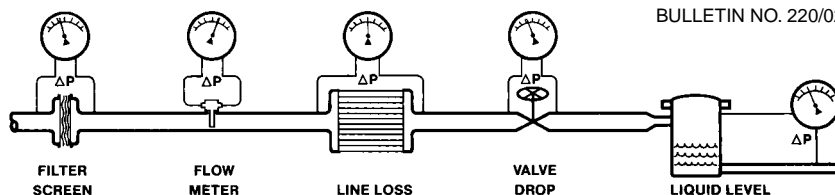


Mid-West[®]

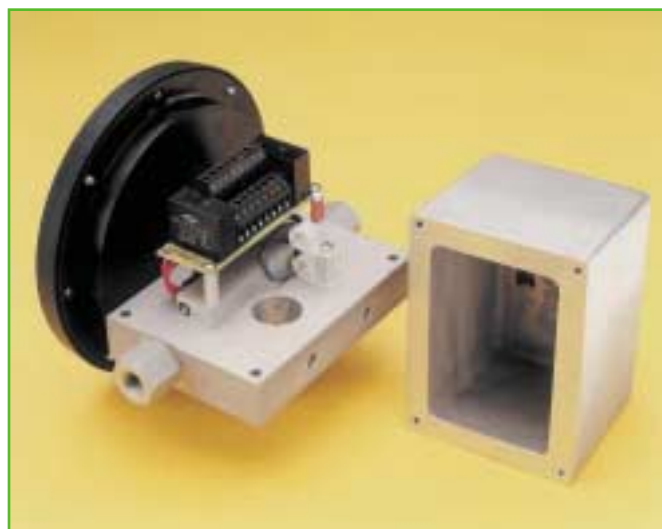
Instrument



Model 220 Series HAZARDOUS LOCATION Indicating/Nonindicating Switch Class I, Division I, Groups C, & D Approved Class II, Division I, Groups E, F & G Approved **MEDIUM RANGE: 0-5 P.S.I.D. to 0-100 P.S.I.D. (0.35 to 7.0 bar)**

A low cost differential pressure gauge for use in measuring the pressure drop across filters, strainers, separators, valves, and pumps in Hazardous Locations.

- Simple, rugged, compact design.
- Working pressure 4000 P.S.I.G. (275 bar).
- Over-range protection to maximum pressure.
- Aluminum gauge body, Aluminum gauge body with 316 SS Insert, or 316 SS body.
- Wetted Internals - 316 SS and Ceramic moving components.
- Weather-resistant construction standard.
- Accuracy $\pm 3-2-3\%$ standard.
- Shatter Resistant lens
- 2 1/2" and 4 1/2" plastic dial assemblies.
- 3 1/2" and 4 1/2" anodized aluminum dial assemblies.
- Five Year Limited Warranty.



- Field wire terminal strip interface.
- Up to 10 A 120/240 VAC switching with DPDT Relay outputs.
- Hermetically Sealed Switch Outputs up to 3 amps in SPST configuration and up to 1 amp in SPDT configuration.
- SPST outputs available in Normally Open or Normally Closed configurations.
- Up to two independent adjustable switch points.
- 3/4" Conduit Interface
- CSA Certified to **Canadian and US** standards.
- Certified for Class I, Division I, Groups C & D and Class II, Division I, Groups E, F, & G; Class I, Division II, Groups A, B, C, & D, Class II, Division II, Groups F & G.
- Division II unit is NEMA 4X rated.

Operation & Description: The movement of a floating piston magnet against a calibrated spring senses differential pressure. The gauge pointer, outside the pressure housing, follows the movement of the piston magnet and indicates differential pressure. Magnetically operated reed switches, also located outside the pressure housing, actuate dependent upon the positional relationship between the reed switch and the internal magnetic piston. The reed contact(s) can be positioned to actuate within a defined percentage of the full-scale range of the gauge. For switching higher currents, the reed switches are used to control output relay(s).

Note: Due to precision sizing of the piston and the body, bore leakage across the piston will not exceed 15 SCFH air at 100 PSID at ambient conditions. **This gauge should not be used in Hazardous Environments with the low process port open to atmosphere.**

The gauge body is available in Aluminum or Stainless Steel materials with Stainless Steel and Ceramic internal moving components. A new lower cost Stainless Steel option is also available for the Model 220 Gauge Body. In lieu of an all stainless steel body, a precision honed stainless steel tube insert is used within the standard aluminum body. This option provides a low cost alternative to the customer that needs 316 SS wetted parts.

The switching components are housed under a copper free Aluminum cover. The combination of the gauge body and the cover make up the flame-proof seal. Electrical interface to the internal field wire terminal strip is via a 3/4" NPT industry standard conduit connection located through the gauge body.

The hazardous environment indicating differential pressure switch is available with one or two hermetically sealed reed switches with optional one or two DPDT relay outputs. Each switch is independently adjustable within a defined percentage of the full scale range of the gauge and is 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 differential pressure. If the optional relay output is specified, an input operating voltage **must also be specified.**

Output Specifications: (Resistive Load)

Type	SPST	SPDT	SPDT	DPDT Relay
ELEC Spec.	A	A	A	B, C, D,E, F, G, H
Output Option Code	E, F, or G	H	A	R
*Power	60W	60W	3W	N/A
Max. Current	3 Amps	1.0 Amps	0.25 Amps	10 Amps
Max. Volts VAC/VDC	240	240	125	277 / 30
Setting (F.S.)	15% to 90%	25% to 90%	10% to 90%	15% to 90%
Hysteresis (Max/Nom)	15% / 9% Full Scale (F.S.)	25% / 18% Full Scale (F.S.)	10% / 6% Full Scale (F.S.)	15% / 10% Full Scale (F.S.)
Repeatability	1% F.S.	1% F.S.	1% F.S.	1% F.S.



Reed Switch Terminal Strip Output Interface

*Product of the switching voltage and current shall not exceed the power rating.

Hazardous Locations Certification: The Model 220 is CSA Certified for Use in Hazardous Locations for two configurations. Electrical configurations A & B are CSA certified for use in **Class I, Division II, Group A, B, C, & D and Class II, Division II, Groups F & G** environments. The Division II certification applies to only the 'A' Electrical Input Specification option in combination with Output options 'A' through 'H'. The enclosure also carries a 4/4X environmental rating.

Electrical configurations C & D are certified for use in **Class I, Division I, Groups C, & D, Class II, Division I, Groups E, F, & G**. This certification is applicable to all combinations of Electrical input specifications and output specifications.

Both configurations are certified for **both** the **U.S. and Canadian** markets, to the applicable U.S. and Canadian standards.

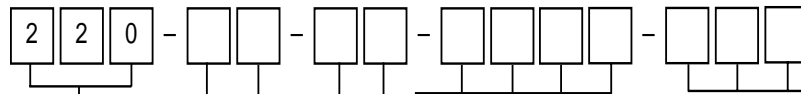
STANDARD MODEL SPECIFICATIONS

220-AA-00-0 (AAA), 4000 P.S.I.G. Working Pressure, Aluminum body and end plugs, Stainless Steel Piston and spring, ceramic magnet, Buna N Seals, 2 1/2" Round Dial, 1/4" FNPT End Connections, Engineering Plastic Gauge Case with Shatter Resistant Acrylic Lens. One 3W, 0.25 AMP, 125 VAC/VDC SPDT Reed Switch With terminal strip in an Aluminum Explosion Proof Housing; 3/4" FNPT Electrical Access. **CSA Certified.**

220-CA-00-0 (AAA), 4000 P.S.I.G. Working Pressure, Aluminum Outer Body with 316 S.S. Pressure Containing Element, End Plugs, Piston, and Spring, Ceramic Magnet, Buna N Seals, 2 1/2" Round Dial, 1/4" NPT End Connections, Engineering Plastic Gauge Case with Shatter Resistant Acrylic Lens. One 3 W., 0.25 Amp, 125 VAC/VDC S.P.D.T. Switch with Terminal Strip in an Aluminum Explosion Proof Housing, 3/4" FNPT Electrical Access. **CSA Certified.**

220-SA-00-0 (AAA), 4000 P.S.I.G. Working Pressure, 316 S.S. Body, End Plugs, Piston and Spring Ceramic Magnet, Buna N Seals, 2 1/2" Round Dial, 1/4" FNPT End Connections, Engineering Plastic Gauge Case with Shatter Resistant Acrylic Lens. One 3 W., 0.25 Amp, 125 VAC/VDC S.P.D.T. Switch with Terminal Strip in an Aluminum Explosion Proof Housing, 3/4" FNPT Electrical Access. **CSA Certified.**

PART NUMBERING SYSTEM



① BASIC MODEL NUMBER

② MATERIAL

- A. Aluminum Body, Aluminum Bore, S.S. Piston (4000 P.S.I.G.)
- C. Aluminum Body, 316 S.S. Bore, S.S. Piston (4000 P.S.I.G.)
- S. S.S. BODY, 316 S.S. BORE, S.S. PISTON (4000 P.S.I.G.)
- Z. SPECIAL

③ DIAL TYPE (Engineering Plastic Housing Unless Stated)

- A. 2-1/2" Round Uni-Directional Dial
- C. 4-1/2" Round Uni-Directional Dial
- E. 3-1/2" Round Aluminum Dial Housing
- F. 4-1/2" Round Aluminum Dial Housing
- T. Differential Pressure Switch Only (Without Indication)
- Z. Special (Uncoded Options)

④ SEALS

- 0. Buna N (Standard)
- 1. *Viton®
- 2. Neoprene
- 4. **Teflon®
- 5. Ethylene Propylene
- 6. Perfluoroelastomer
- 9. Special (Uncoded Options)

⑤ CONNECTIONS

- 2. 1/4" FNPT End Connections (Standard)
- 7. 1/2" FNPT END CONNECTED (316 S.S.)
- 9. Special (Uncoded Options)

⑥ OPTIONS (Up to four options)

- O. None
- B. DIN 2353 12-S (12mm) Steel Tube Fittings (2)
- F. Pipe Mounting Kit (Carbon Steel)
- M. Maximum Indicator Follower Pointer
- T. Oxygen Cleaning
- U. S.S. Tag with S.S. Wire
- V. S.S. Tag with S.S. Screw
- Z. Special (Uncoded Options)

⑦ ELECTRICAL CONFIGURATIONS (Select One)

(Switch Adjustable Range 10-90% except where stated below)
(T6 Temperature Class unless specified otherwise)

- A. One Control Switch in NEMA 4X Enclosure^{1,7}
- B. Two (2) Control Switches in NEMA 4X Enclosure^{1,7}
- C. One (1) Control Switch in NEMA 7 (Exp. Proof Enclosure)²
- D. Two (2) Control Switches in NEMA 7 (Exp. Proof Enclosure)²
- Z. Special

⑧ ELECTRICAL SPECIFICATIONS

(Select 1 Input and 1 Output)

INPUT OPTIONS:

- A. No Input Power (For Reed Outputs A, E, F, G, H)
- B. 5/6 VDC
- C. 12 VDC
- D. 24 VDC
- E. 48 VDC
- F. 24 VAC
- G. 120 VAC
- H. 240 VAC (T4A Temperature Class)

⑨ OUTPUT OPTIONS: (For Resistive Loads)³

- A. S.P.D.T., Reed, 3W, 0.25 Amp, 125 VAC/VDC⁴
- E. S.P.S.T., Reed 60W, 3 Amp, 240 VAC/VDC (N.O.)⁵
- F. S.P.S.T., Reed 60W, 3 Amp, 240 VAC/VDC (N.C.)⁵
- G. Two (2) S.P.S.T., Reeds, 60W, 3 Amp, 240 VAC/VDC
(One Normally Open, One Normally Closed, B & D Electrical Configurations Only)⁵
- H. S.P.D.T., Reed 60W, 1 Amp, 240 VAC/VDC⁶
- R. D.P.D.T. Relay, 10A, @ 30 VDC, 120/240 VAC⁵
- Z. Special (Contact Factory)

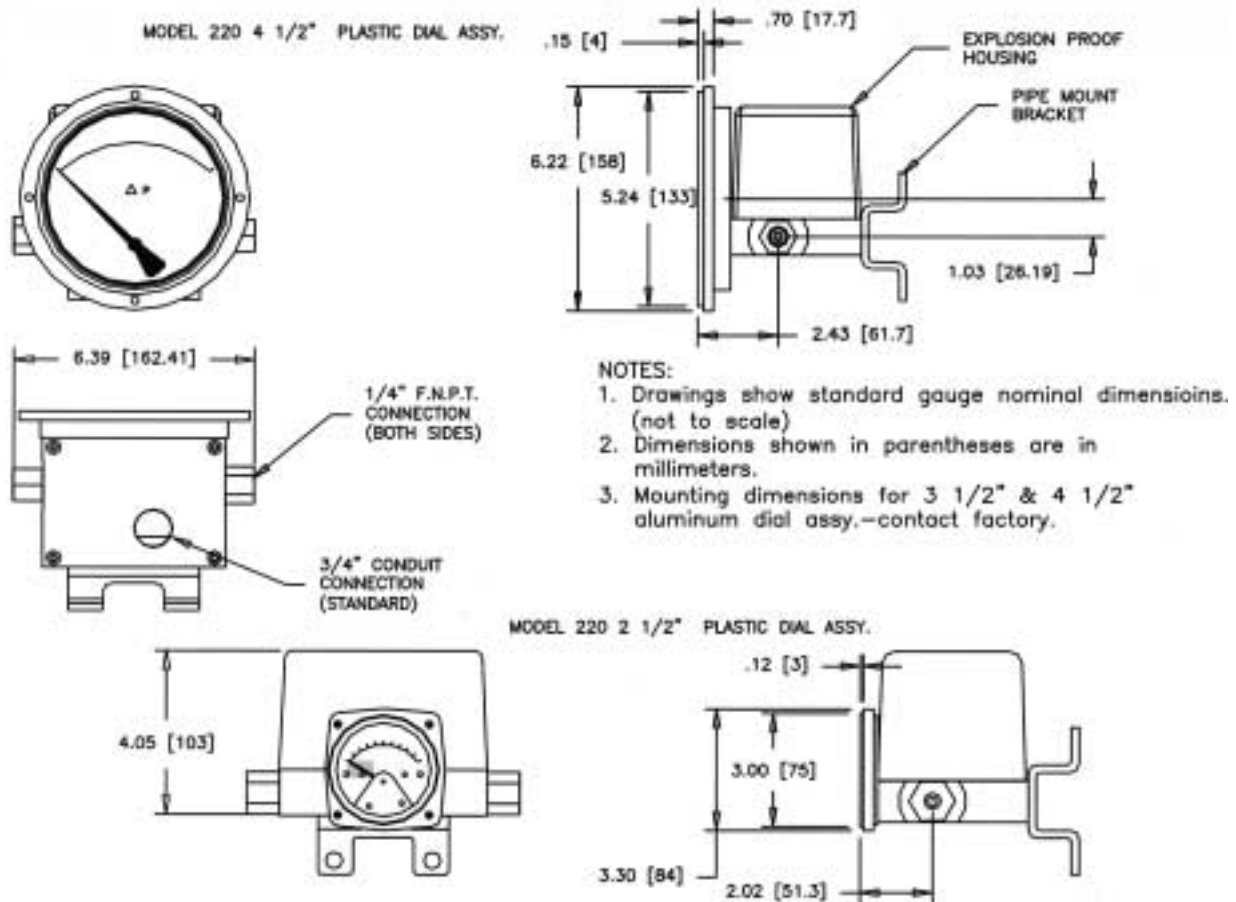
- (1) Complete Assembly CSA Certified, Rated Class I, Div. II, Groups A,B,C, & D; Class II Division II, Groups F & G, (R Output option excluded)
- (2) Complete Assembly CSA Certified, Rated Class I, Div. I, Groups C & D; Class II Division I, Groups E, F, & G
- (3) For output options A through H, the product of the switching Voltage and current shall not exceed the power rating
- (4) Switch adjustable range 10 - 90% of the gauge full scale range
- (5) Switch adjustable range 15 - 90% of the gauge full scale range
- (6) Switch adjustable range 25 - 90% of the gauge full scale range
- (7) Enclosure Type 4/4X

NOTE: Not all options available in combination with Other options.

*Viton® is a Registered Trademark of DuPont Dow Elastomers.

**Teflon® is a Registered Trademark of DuPont.

MOUNTING INFORMATION & DIMENSIONAL DATA



Manufacturer reserves the right to change specifications without prior notice.

PROOF PRESSURE: 12,000 PSI.

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: All Model 220 Series differential pressure gauges either conform to and/or are designed to the requirements of the following standards:

ASME B1.20.1
ASME B40.1
CSA-C22.2 No. 14, 25 and 30
UL Std. No. 50, 508, 698, and 1203

NACE MR0175
NEMA Std. No. 250
SAE J514



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