

Mid-West[®] Instrument

“Diaphragm Type”

Differential Pressure Gauges for Ammonia Service Application

When it comes to tough application solutions Mid-West Instrument provides the answer!!



Model 130
Range 0-5" H2O

The Use of Differential Pressure gauges for Ammonia service in PowerGen emission control is a critical application. The use of special materials along with over 7 years of ammonia service experience has enabled our customers to have confidence that we provide a quality gauge that works not only at start up but for years to come in this harsh environment. Mid-West Instrument has optimized the internal wetted parts as well as the external parts to hold up to the rigors of this environment. We have optimized the design to improve removal of condensate from the system. Neoprene and Ethylene Propylene elastomers are highly recommended in Ammonia service especially at elevated temperatures.

Model 130 Polysulfone or Stainless Steel is ideally suited for Ammonia service applications. Magnetic coupling between the sensing element and the indicating pointer provides for complete isolation of the process fluid within the pressure capsule. The Model 130 also has Over-range protection to full rated working pressure.

| Model | Accuracy | Min. ΔP Range | Max. ΔP Range | Safe Working Pressure PSIG (Bar) | Optional Switches |
|--|----------------|--|--|----------------------------------|-------------------|
| 130 | ±3/2/3% or *5% | 0-5" H2O (0-12.4 mbar) | 0-400" H2O (0-1 bar) | *300 (20) **500 (34) | 1 or 2 |
| * ±5% Range 0-5" to 0-9.9" H2O | | | * PolySulfone Engineered Plastic **Stainless Steel | | |
| (Optional Switches available on Stainless Steel body only.) | | | | | |
| Body Materials | | Glass Reinforced Polysulfone Engineered Plastic or 316 Stainless steel | | | |
| Seal & Diaphragm (under 20" H2O) | | Neoprene Diaphragm & Seals | | | |
| Seal & Diaphragm (over 20" H2O) | | Ethylene Propylene Diaphragm & Seals | | | |
| Wetted Parts | | Body material & 316L Stainless Steel internal metal parts | | | |
| Process Connections | | 1/4" FNPT S.S. Adapters (Polysulfone Body) | | | |
| Process Connections | | 1/2" FNPT S.S. Adapters (316 Stainless Steel Body) | | | |
| Mounting | | Panel Mount (Std.) Pipe Mount Optional | | | |
| Lens | | Shatter Resistant Acrylic | | | |
| Gauge Front | | 4-1/2" Engineered Plastic (Ammonia Service Tested) | | | |
| Temperature Limits | | -40°F to +200°F | | | |

Contact Mid-West at 1-800-648-5778 for assistance with your Ammonia Service application.

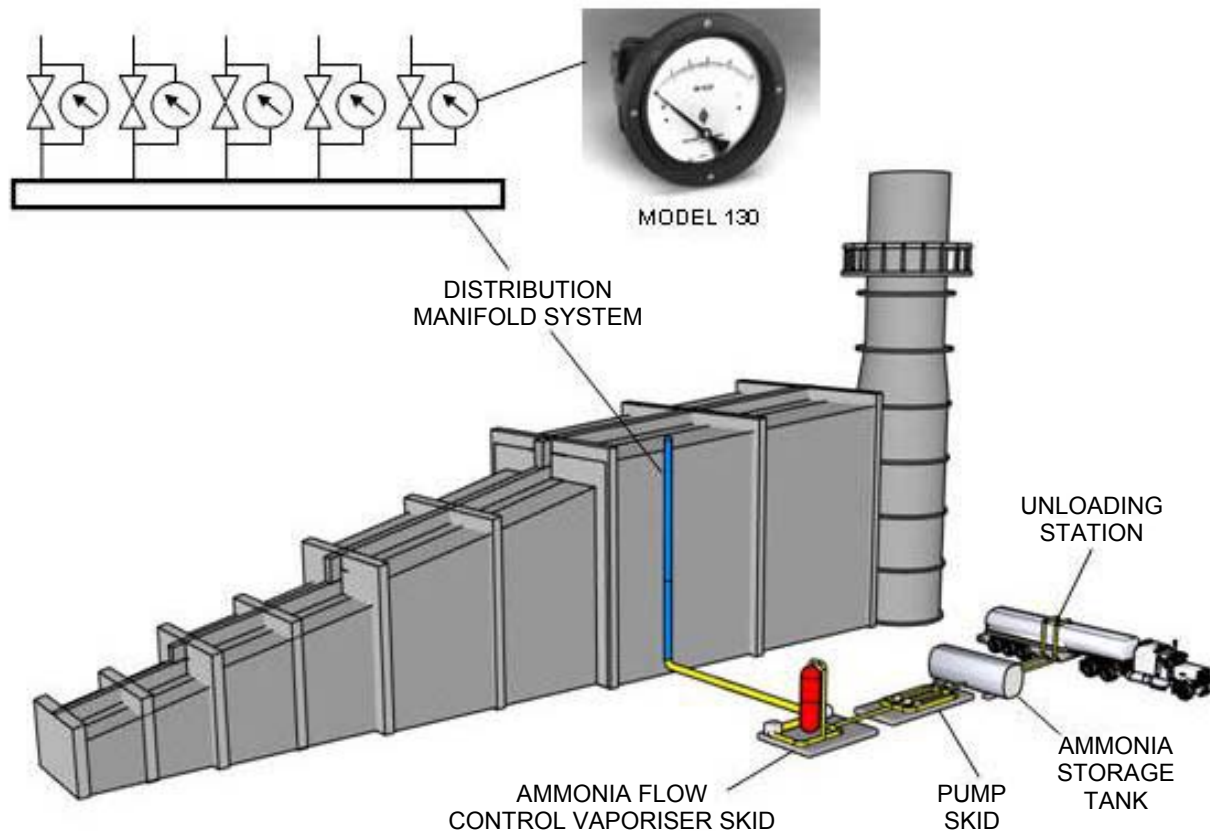
SCR Post-Combustion NOx Control Model 130-PC or 130-SC

Nitrogen oxides (NOx) are a combustion by-product of fossil fuels burned to produce energy. NOx emissions are regulated under the Clean Air Act.

A Selective Catalytic Reduction System (SCR) is a post combustion technology used to reduce NOx emissions. Ammonia (NH3) is injected into the flue gas. This mixture flows through a catalyst bed where the NH3 and the NOx react to form nitrogen and water vapor.

Aqueous or anhydrous ammonia is pumped from a tank and sprayed into a vaporizer where it is heated and mixed with air. The ammonia-air mixture flows through a distribution manifold system into an injection grid. The injection grid distributes the mixture into the flue gas stream.

The amount of ammonia is adjusted to produce the desired degree of reaction with the NOx. Mid-West Instrument model 130-PC or 130-SC are used to balance the flow of the ammonia-air mixture throughout distribution manifold system. The model 130-PC or 130-SC are also used to monitor an ammonia filter prior to injection into the vaporizer.

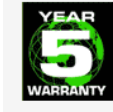


The list below represents just a few Model 130 Ammonia Service Gauge Customers

Deltak, Big River Electric Corp, Express Integrated Technologies, Peerless Mfg
Georgia Power, Ozonia North America, Marathon Petroleum, Hopkins Power Plant
Black Hills Generation, Conoco Phillips, Alstom Power, TVA, Mid-American Power
Excel Energy, Babcock & Wilcox, Southern Company, Notre, Wahlco, Black & Vetch

Mid-West[®] Instrument

“Diaphragm Type” Differential Pressure Gauges Switches & Transmitters Model 140



Model 140 Diaphragm type DP Gauge provides outstanding capabilities not previously available in a modestly priced differential pressure gauge/switch.

Common Applications: Filter/Strainer Monitoring, Compressed Air, Hydraulic, Refrigerant, Pump Performance Testing, Heat Exchanger Pressure Drop Monitoring, Water Treatment Applications, Tank Level Monitoring Horizontal or Vertical, Flow Monitoring & Balancing

Ideally suited for use on dissimilar fluids and wet gas or fluids with a high concentration of solids, etc.

Model 140 0-30 PSID
with 2-1/2" Dial



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

Features:

- Total separation of high and low pressures by a Convuluted Elastomer Diaphragm.
- Over range protection to full rated working pressure.
- Body Materials: Aluminum, Brass or 316L stainless steel Hasteloy available upon request.
- Internal metal parts 316 stainless steel.
- 1/4" FNPT & 1/2" FNPT Process Connections
- Sensor magnetically coupled to the indicating pointer and optional switches.
- Weather-resistant construction standard.
- Shatter resistant acrylic lens.
- Variety of Dial type and Sizes: 2-1/2", 3-1/2" & 4-1/2"
- DP Ranges available in: Inches H2O, PSID, bar, and Kpa
- Available with Square Root dials for flow measurement
- Multiple mounting options available
- Temperature Limits: -40°F(-40°C) to +200°F(+93°C)



Model 140 0-40 PSID & 0-2.8 Bar
with 4-1/2" Dial & maximum follower pointer



Model 140 0-30 PSID & 0-200 kPa
with 2-1/2" Dial & Special Color Dial

| Model | Accuracy | Min. ΔP Range | Max. ΔP Range | Max. Line Pressure PSIG (bar) | Optional Switches |
|-------|--|-------------------------------|-------------------------|-------------------------------|---|
| 140 | ±5% 0-50" H2O to 0-399" H2O ±3/2/3% 0-15 PSID to 0-100 PSID | 0-50" H2O (0-125 mbar bar) | 0-100 PSID (0-7 bar) | 3000 (200)** | 1 or 2 Switches or 4-20 mA Transmitter |

** Brass Body Working Pressure rated @ 1500 PSIG (103 bar)

“Diaphragm Type” Differential Pressure Gauge Switch & Transmitter Options Models: 140 & 142



Model 140 shown with “AA” switch option

(1) Reed switch located inside NEMA 4x enclosure with 7 position terminal strip. An opening at rear of enclosure accepts ½” flexible weather-proof or conduit connector (supplied by customer).

Model 140 shown with “EA” switch option.

(1) Reed switch in general purpose enclosure Division 2 Hazardous locations with 7 position terminal strip. An opening at rear of enclosure accepts ½” flexible weather-proof or conduit connector (supplied by customer).

Model 140 & 142 “Delta Meters” are available with either one or two hermetically sealed reed switches for either high alarm, low alarm, or both and a 4-20mA transmitter depending on model. The switches are Single Pole Double Throw (SPDT) or Single Pole Single Throw (SPST) with adjustable set points. Switches can be set to activate/deactivate on rising or falling pressure.

Model 140& 142 standard switch enclosure is non-corrosive molded plastic that is oil tight, dust tight, and water tight per NEMA 4X. External access to the switch adjustment is provided. 3rd party certified Explosion Proof enclosures with SPDT or SPST switches rated Class I, Groups C & D, Class II, Groups E, F, & G are available. Switch leads are 24”, 18 Awg, and are color coded where applicable.



Model 142 shown with “BA” switch option

(2) Reed switches located inside NEMA 4x enclosure with 7 position terminal strip. An opening at rear of enclosure accepts ½” flexible weather-proof or conduit connector (supplied by customer).

| Model Type | 140, 142 SPDT | 140 SPST NO | 142 SPST NO | 140, 142 Transmitter 4-20mA |
|-------------------------|------------------------------|-------------------------|-------------------------|--|
| Power | 3 W | 25 W | 25 W | 4-20 mA Loop Power |
| Max Current | 0.25 Amps | 0.5 Amps | 0.5 Amps | 8-28 VDC Loop Powered 2-Wire interface |
| Max Voltage VAC/VDC | 125 VAC/VDC | 230 VAC/VDC | 230 VAC/VDC | 1000 Ohm max Loop resistance at 28 vdc |
| Setting Full Scale | “140” 15-90% “142” 15-95% | 15-90% | 15-95% | 20-100% |
| Hysteresis (Max / Norm) | 10% / 5% (FS) | 15% / 8% (FS) | 15% / 8% (FS) | N/A |
| Repeatability | 1% F.S. | 1% F.S. | 1% F.S. | 1% F.S. |
| Connections | (3) 24" Leads 22 AWG | (2) 24" Leads 22 AWG | (2) 24" Leads 22 AWG | Terminal Strip |

Standard Model Specifications: 140-AA-00-00

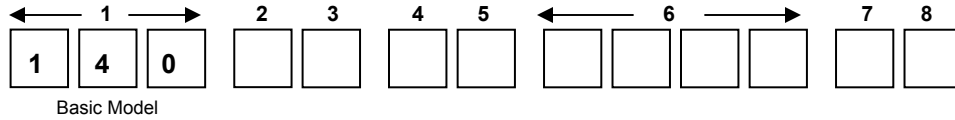
3000 PSIG Working Pressure, Aluminum body, 316L Stainless Steel Internal Metal Parts,
Ceramic Magnets, Buna-N Diaphragm and Seals, Teflon Guide Bushings, 1/4" FNPT Back Connections,
2-1/2" round dial, Engineered Plastic Case with Shatter Resistant Acrylic Lens

0-50" H2O to 0-399" H2O Accuracy ±5% F.S. (Ascending)

Mid-West Instrument 0-15 PSID to 0-100 PSID Accuracy ±3/2/3% F.S (Ascending)

1-800-648-5778

Range 0-50" H2O to 0-100 PSID (0-125 mbar to 0-7.0 bar)



Range: _____



| 2 | Material |
|----------|---|
| A | Aluminum Body / 316 Stainless Steel Internal Metal Parts & Teflon Guide Bushings |
| B | Brass Body / 316 Stainless Steel Internal Metal Parts & Teflon Guide Bushings |
| S | 316 Stainless Steel Body / 316 Stainless Steel Internal Metal Parts & Teflon Guide Bushings |
| Z | Special (Un-coded Options) |
| 3 | Dial Size & Type |
| A | 2-1/2" Round Uni-Directional Dial w/Engineered Plastic Housing Assembly |
| C | 4-1/2" Round Uni-Directional Dial w/Engineered Plastic Housing Assembly |
| E | 3-1/2" Round Uni-Directional Dial w/Anodized Aluminum Housing Dial Case |
| G | 4-1/2" Round Uni-Directional Dial w/Anodized Aluminum Housing Dial Case |
| T | Non-Indicating DP Switch Only |
| Z | Special (Un-coded Options) |
| 4 | Seal Materials |
| 0 | Buna-N (Standard) |
| 1 | Viton®-A Registered Trademark of Dupont |
| 2 | Silicone |
| 5 | Ethylene Propylene |
| 9 | Special (Un-coded Options) |
| 5 | Process Connections |
| 0 | 1/4" FNPT Back Connections (Standard) |
| 2 | Dual 1/4" FNPT Top & Bottom Connections (Non-Electrical Option Units Only) |
| 3 | 1/4" FNPT Bottom Connections |
| 4 | 7/16"-20 straight thread O-Ring (Back Connections only) |
| 7 | 1/2" FNPT End Connections (2000 PSIG SWP for S.S. & Alm. Gauge Body) (not available with C & D switch options) |
| 8 | 1/4" FNPT End Connections (2000 PSIG SWP for S.S. & Alm. Gauge Body) (not available with C & D switch options) |
| 9 | Special (Un-coded Options) |

Standard Model Specifications – continued Model 140

| 6 | Additional Options |
|---|--|
| O | None |
| A | Reversed High / Low Process Connections. (Not available with electrical options C, D, T & W) |
| E | Two (2) 1/4-20 Mounting Holes |
| F | Carbon Steel 2" Pipe Mounting Kit (Not available with reversed port switch option) |
| G | Stainless Steel 2" Pipe Mounting Kit (Not available with reversed port switch option) |
| K | 1/2" FNPT Stainless Steel Adapters (Not available with end connections) |
| L | Liquid Fill (4-1/2" available with "G" option Aluminum Dial Case only) (not available with shatterproof lens) |
| M | Maximum Indicator Follower Pointer (not available with Liquid fill option) (not available with shatterproof lens) |
| N | NACE (Available for Aluminum & Stainless Steel Gauge Bodies only) |
| Q | CRN (Canadian Registration Number) Aluminum or S.S. Body only (2,000 PSIG SWP for Aluminum Body) |
| S | Shatter Proof Glass Lens (Available only with option "G" 4-1/2" Aluminum Dial Case) (not available with liquid fill) |
| T | Oxygen Cleaning |
| U | Stainless Steel Tag with S.S. Wire |
| V | Stainless Steel Tag and S.S. Screw (Contact factory on switch options) |
| W | Wall Mount Kit |
| X | Chemical Seals (Contact Factory for Accuracy) |
| Z | Special (Un-coded Options) |
| NOTE: Not All Options Available in Combination with other Options | |
| 7 | Electrical Configurations (CE marked, except C, D, T & W) |
| O | None |
| A | One (1) Reed Switch in NEMA 4X/IP66 Enclosure |
| B | Two (2) Reed Switches in NEMA 4X/IP66 Enclosure |
| C | One (1) Switch in Explosion Proof Enclosure. Division 1 Hazardous Locations (1) |
| D | One (2) Switches in Explosion Proof Enclosure. Division 1 Hazardous Locations (1) |
| E | One (1) Reed Switch in NEMA 4X/IP66 Aluminum Enclosure, Division 2 Hazardous Locations (2)(3) |
| F | Two (2) Reed Switches in NEMA 4X/IP66 Aluminum Enclosure, Division 2 Hazardous Locations (2)(3) |
| T | 4-20 mA Transmitter in NEMA-4X/IP66 aluminum enclosure |
| W | 4-20 mA Transmitter in general purpose enclosure, Division 2 Hazardous Locations (2)(3)(4) |
| Z | Special (Un-coded Options) |
| (1) Complete assembly 3rd Party Certified Class I, Div.1, Groups C & D; Class II, Div. 1, Groups E, F, & G. | |
| (2) Complete assembly 3rd Party Certified Class I, Div.2, Groups A, B, C, & D; Class II, Div.2, Groups F and G. | |
| (3) 1625 PSI SWP for NACE in combination with E, F and W electrical configuration | |
| (4) Contact factory for tank level or flow applications with transmitter configuration | |
| 8 | Electrical Specifications (For Resistive Loads) |
| O | None |
| A | SPDT 3W, 0.25 Amp, 125 VAC/VDC (standard) (Switch adjustable range of 15-90%) |
| B | SPST, 25W, 0.5 Amp., 230 VAC/VDC (Normally Open) (Switch adjustable range of 15-90%) |
| T | 4-20 mA Transmitter (8-28 VDC Loop Power) (± 2% Accuracy from 20-100% of scale, Ascending) |
| Z | Special (Un-coded Options) |

Factory preset switches at no charge (Specify Setting)

MID-WEST INSTRUMENT has been serving a variety of industries (Power, Chemical, Petro-Chemical, HVAC, Water Filtration etc...) for over 50 years. Over 1,000,000 DP Gauges 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 or contact us toll free at **1-800-648-5778** and one of our knowledgeable sales coordinators will be happy to assist you.