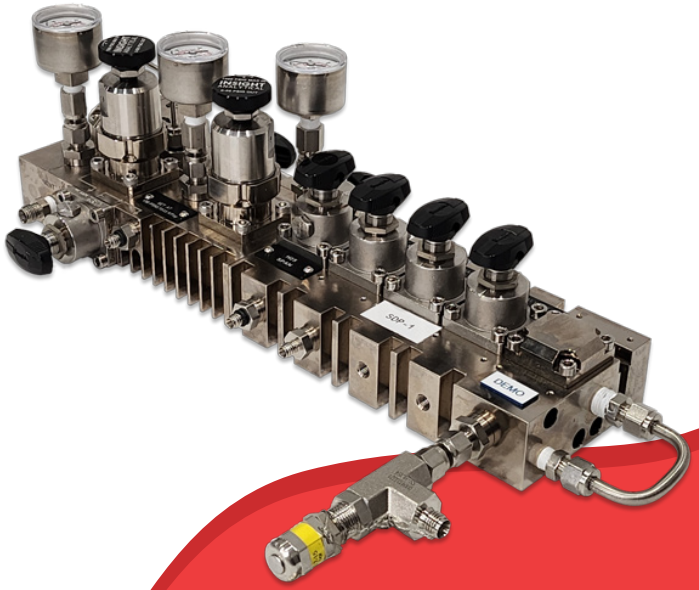
Sample Distribution Panel (SDP-1)

Product Overview

The Insight Analytical Sample Distribution Panel (SDP-1) is a compact, self-contained sample conditioning panel designed to route a single high-pressure gas sample to multiple destinations, including online analyzers, grab sample points, and other devices. It combines speed, precision, and simplicity in one modular assembly, making it ideal for high-performance analytical environments. The panel integrates high-efficiency filtration, dual-stage pressure regulation, pressure relief, and offers up to two high-pressure sample taps and five low-pressure taps, each optionally equipped with dedicated calibration gas inlets. Built from nickel-plated aluminum for corrosion resistance and thermal stability, the SDP-1 is designed for use in heated enclosures or temperature-controlled environments. Its low internal volume and thermal uniformity optimize response time while maintaining sample integrity. This durable and compact solution is well-suited for petrochemical, refining, and environmental monitoring applications, where precise control and reduced emissions are critical.



Maximum Pressure Rating: 1500 psig (10,342 kPag)

Temperature Range: -6°C to 65°C

Delivery Pressure Range:
High pressure outlets: Equivalent to the inlet pressure (maximum 1500 psig (10,342 kPag))

Low pressure outlets: 0 to 50 psig (0 to 345 kPag)

Inlet and Outlet Connection Size:
1/8" Tube Swagelok Compression Fitting

Vent Connection Size: 1/4" Tube Swagelok Compression Fitting

Wetted Materials:
Electroless Nickel Plated Aluminum, 316 Stainless Steel, FKM O-Rings (other O-Ring material options available upon request)

NACE Compliance: NACE MR0175/ISO 15156 and MR0103 Compliant.

Dimensions: 11"H x 9.1"W x 6.8"D (304 x 231 x 175 mm)

Field of Application

Specifically designed for analyzer applications where sample gas needs to be routed to multiple online analyzers, grab sample points or other devices, this versatile sample system can be implemented to reduce costs, minimize complexity and improve response times.

The Sample Distribution Panel is fully customizable to include up to two high pressure sample taps for devices such as a ZEGAZ dew point analyzer, Insight Analytical Moisture Generator, composite sampler, or other device requiring full line pressure. Four low pressure sample taps with optional dedicated calibration gas inlets are available for online analyzer measurement of key contaminants such as H2S, O2, water vapor, and a GC for C1-C6+ and BTU analysis. A fifth low-pressure inlet/outlet is available for an additional analyzer or alternate low pressure sample inlet. No calibration port is available for the fifth low pressure sample tap position.

HIGH-PRESSURE TAPS

VERSATILE SYSTEM

LOW-PRESSURE TAPS

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3202 12th Ave. NE, Calgary, Alberta

Scan the QR Code to Learn More!

See more details on our website, or feel free to contact us with any questions!

Principle of Operation

The modular design allows components to be added or removed to suit a specific application and enables a standardized approach to be taken for gas sample system designs.

The Sample Distribution Panel produces faster response times compared to other conventional or SP76 based systems due to the low internal volume of passages in the machined block, the novel geometry inside of the membrane filter, and seamless connections between components.

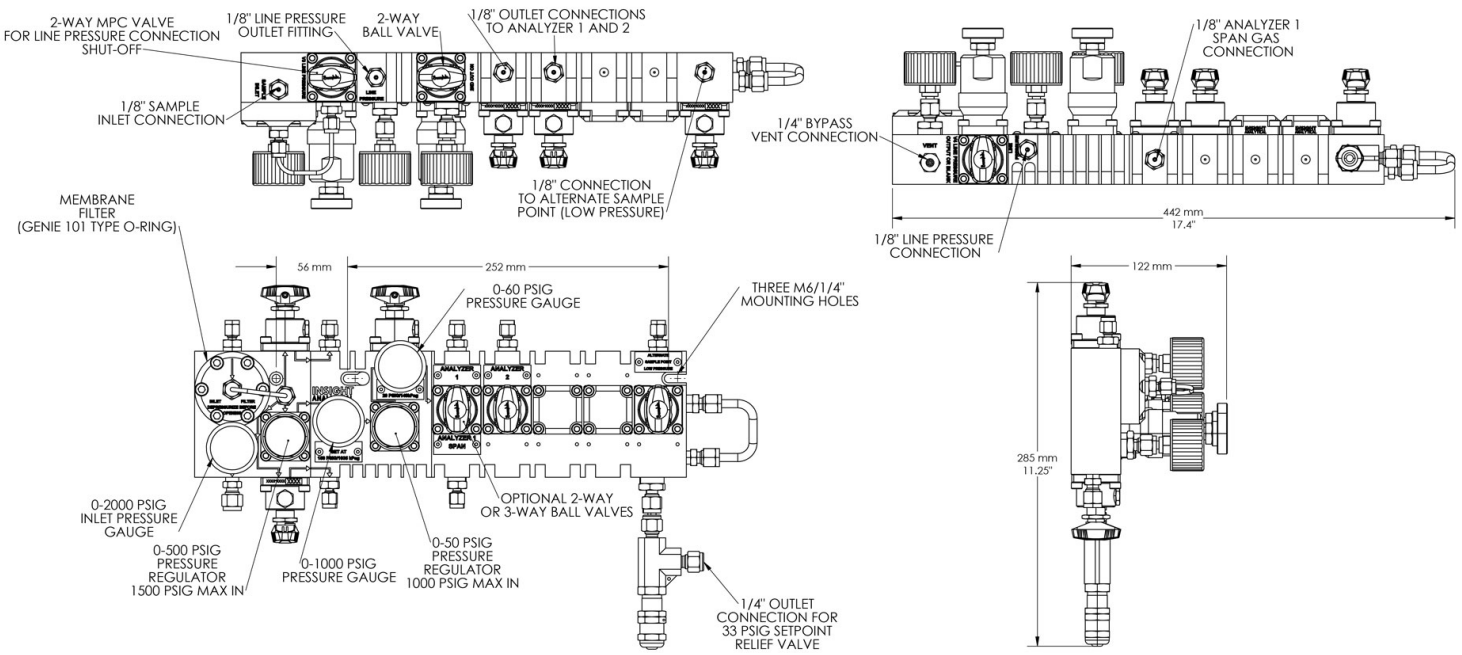
A 1"/25mm diameter membrane filter is built into the machined block with proprietary geometry to reduce the internal volume and increase the mixing compared to other commercially available designs, with the result being significantly faster response times without compromising the effectiveness of the filtering.

The area and mass of the electroless nickel plated machined aluminum block increases heat transfer to the two SP76 type pressure regulators, countering the cooling created by the Joule-Thomson effect and keeps the pressure reduction closer to isothermal conditions compared to conventional or SP76 based systems without actively heated pressure regulators.

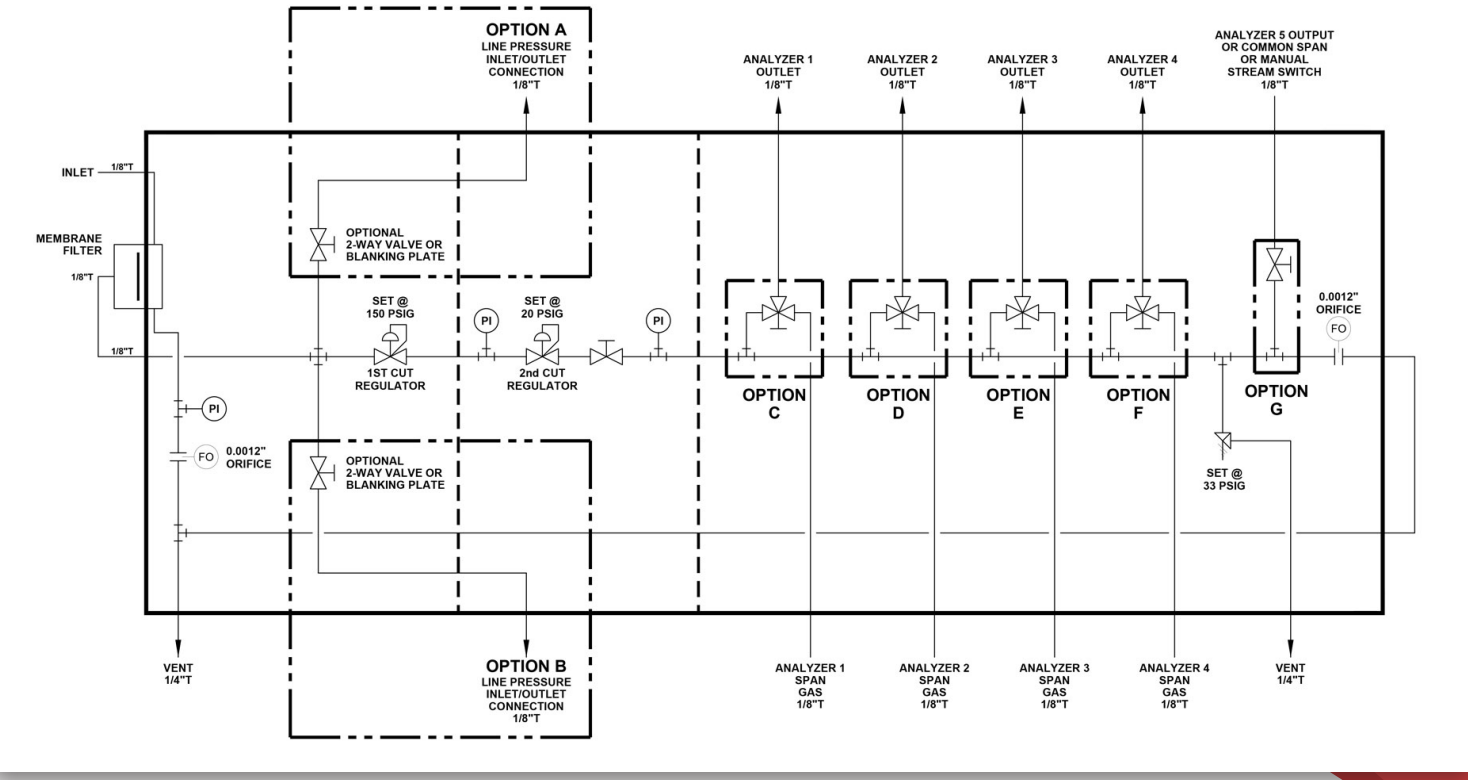
Most of the fittings in this system are made with o-ring type Swagelok fittings rather than NPT threads to reduce the possibility of leaks. The only NPT threads in the system are on the pressure gauge and rotameter connections.

Advantages

- Reduces costs, minimizes complexity, and improves response times of analyzer applications where sample gas needs to be routed to multiple online analyzers.
- More compact than sample systems using conventional discrete components connected with tubing.
- More economical than SP76/NeSSI style sample systems but with better performance.
- Enables standardization of sample distribution systems across installations.
- It has no electrical components, so it is suitable to be used in explosive gas atmospheres, such as natural gas plants or metering stations without additional certifications.
- Easier to work on and understand than SP76/NeSSI style sample systems.
- The novel geometry inside of the membrane filter results in faster response time than conventional membrane filter housings.
- Reduces the likelihood of gas leaks because of reduced connections and replacing NPT/sealant type connections with o-ring seals.
- Reduced issues with contamination from liquid thread sealant.
- Reduced issues with thread galling which is common with NPT threads – increased life for fittings, components, and other connections because of the reduction in the use of NPT threads.
- Faster response time for a given sample flow rate means that lower sample flow rates can be used for a given sample response time resulting in lower fugitive/engineered emissions.
- Modular nature of the system means it is possible to replace the entire system with a spare and perform repair/maintenance in the shop rather than in the field, resulting in less downtime.
- Use of electroless nickel plating on the machined aluminum block provides a hard, corrosion resistant and inert surface while still providing the advantages of aluminum including high thermal conductivity, light weight and reasonable cost.



TYPE 2 SAMPLE SYSTEM BLOCK ASSEMBLY - GENERAL ARRANGEMENT



TYPE 2 SAMPLE SYSTEM BLOCK ASSEMBLY - FLOW SCHEMATIC