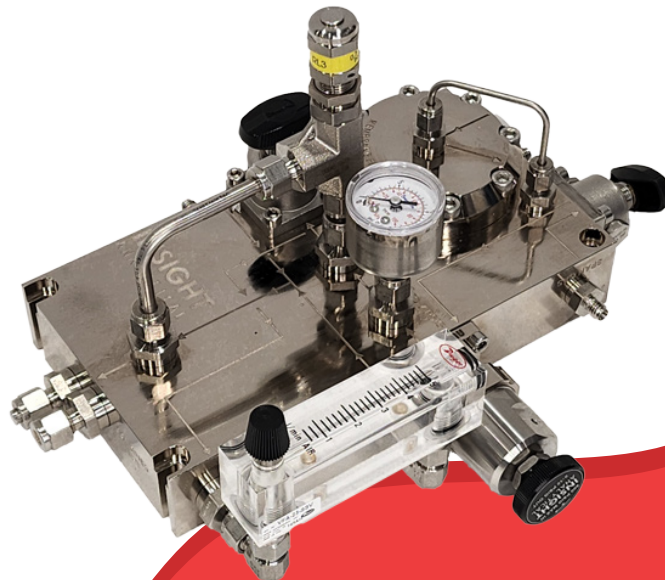


Product Overview

The Insight Analytical Fast Sample System (Patent Pending) is a compact, self-contained gas sample conditioning block designed for use with portable or fixed gas analyzers. The FSS-1 simplifies gas sampling by integrating pressure control, filtration, and venting into a single machined block that reduces internal volume and connection points. This design minimizes leaks, improves safety, and significantly accelerates response time compared to SP76/NeSSI or conventional component systems. Its proprietary 2" membrane filter geometry enhances mixing and filtration efficiency, while the electroless nickel-plated aluminum body maximizes thermal conductivity and corrosion resistance. The SP76-style regulator mounts directly to the block, countering Joule-Thomson cooling and promoting near-isothermal pressure reduction. The system's compact footprint fits easily in tight installations and eliminates the need for external housings or electrical components, making it ideal for hazardous environments like natural gas metering stations, process plants, or field analyzers.



Maximum Pressure Rating: 100 psig (690 kPag) (1000 psig (6,895 kPag) available upon request)

Temperature Range: -6°C to 65°C

Delivery Pressure Range: 0 to 10 psig (0 to 69 kPag) (higher delivery pressures available upon request)

Flow Rate Range: See the Maximum Recommended Sample Flowrates Through a Membrane Filter chart.

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

Most gas analyzers require clean, dry, and non-corrosive samples delivered within specific temperature, pressure, and flow parameters. To achieve this, a reliable sample conditioning system must be used when extracting gas from process streams. These systems typically include filtration, pressure regulation, calibration gas introduction, safety features, and optional flow control for analyzers lacking internal control mechanisms.

The FSS-1 addresses all these needs while eliminating the complexity of traditional sample systems. It is ideal for use in gas phase applications where condensation is not a concern, such as natural gas analysis and emission monitoring.

Its compact, low-volume block design is optimized for quick response and ease of use. Compared to bulky conventional or SP76-based systems, the FSS-1 integrates high-performance components into one efficient platform.



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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 Fast Sample System 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 2"/50mm 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 time without compromising the effectiveness of the filtering.

The area and mass of the electroless nickel plated machined aluminum block increases heat transfer to the SP76 type pressure regulator, countering the

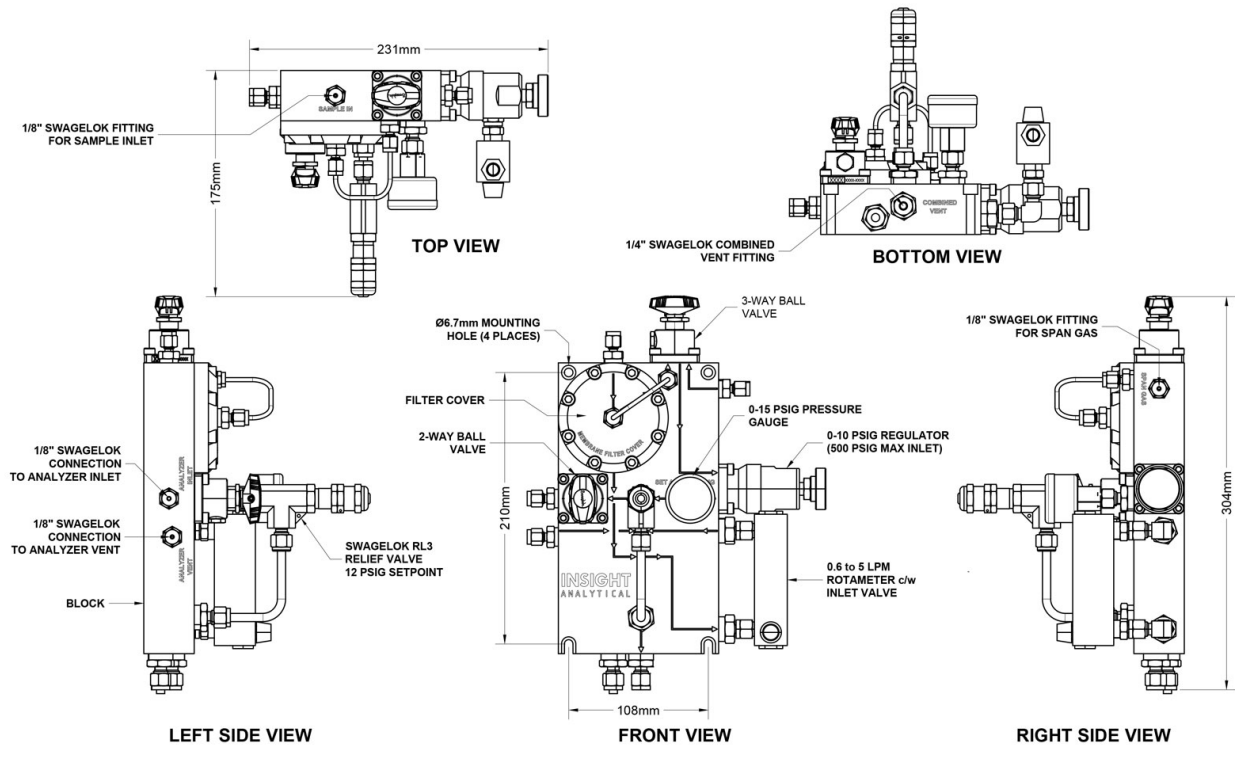
cooling created by the Joule-Thomson effect and keeps the pressure reduction closer to isothermal conditions compared to conventional or SP76 based systems without actively heated pressure regulators.

The standard version is configured for use with analyzers that require clean, dry sample gas delivered at pressure just above atmospheric and that have their own internal flow control. Alternate versions of this system are available with the 2-way shut off valve replaced with a metering valve for flow control and an additional rotameter added to the vent for applications with analyzers requiring external flow control.

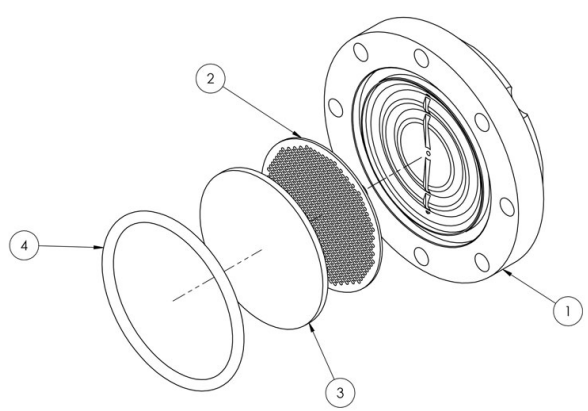
The standard version of the fast sample system is designed with a combined filter and pressure relief vent intended for applications that are venting to atmosphere.

Advantages

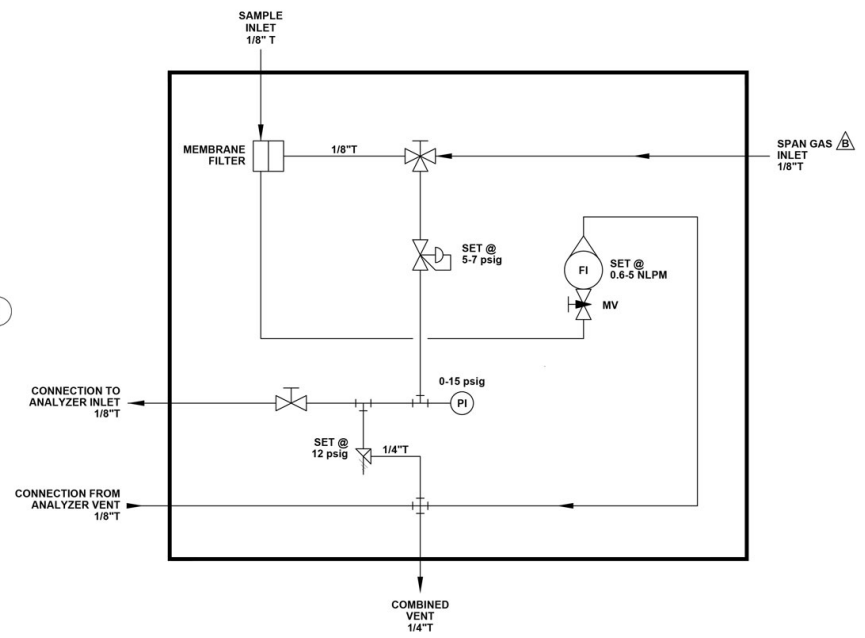
- More economical than SP76/NeSSI style sample systems but with better performance.
- More compact than sample systems using conventional discrete components connected with tubing.
- It has no electrical components, so it is suitable to be used in explosive gas atmospheres, such as natural gas plants or metering stations without additional certifications.
- Easier to work on and understand than SP76/NeSSI style sample systems.
- Incorporates a larger diameter membrane filter than SP76/NeSSI style systems can accommodate and 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.
- 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 rotameter connections.



TYPE 1 SAMPLE SYSTEM BLOCK ASSEMBLY - GENERAL ARRANGEMENT



ITEM NO.	DESCRIPTION	QTY.
1	TYPE 1 ANALYZER SAMPLE SYSTEM BLOCK FILTER COVER	1
2	MEMBRANE SUPPORT PLATE	1
3	GENIE 123 TYPE 6 MEMBRANE	1
4	SIZE 227 HNBR O-RING	1



TYPE 1 SAMPLE SYSTEM BLOCK ASSEMBLY - FLOW SCHEMATIC - MEMBRANE FILTER