Process Insights™
Premium Insights Into Process

PROCESS INTERFACE

PRODUCT DATASHEET

Gas Process Flow Cell

Compatible with NIR and UV-VIS Analyzers

More signal

Less noise

Lower detection limits

- For online spectral analysis of phosgene, HCl, and hydrocarbon gas service
- Continuous PAT at high temperatures and pressures
- Reproducible optical path length permits servicing in the field
- Rugged design translates to longer service life

Gas Process Flow Cell

Because of its versatility and ruggedness, the GUIDED WAVE Gas Flow Cell is the leading option for online spectral analysis of phosgene, HCl, and hydrocarbon gas service. The sturdy design guarantees years of continuous use at high temperatures and pressures.

For measuring gases online by process spectroscopy, a longer pathlength is usually necessary because of the low density of gaseous streams. A longer flow cell, while being very effective, is also more difficult to design. For example, transmission probes for gas measurements must be aligned over a greater distance and must permit easy servicing without upsetting the optical focus of the cell. Additionally, many gas streams are considered hazardous making it critical that the sealing mechanism is both reliable and durable. The Gas Flow Cell meets or exceeds most standards for use found in chemical plants, refineries, food, and food supplement processing facilities, semiconductor, or electrical component fabrication shops.

A Simple, Serviceable Design

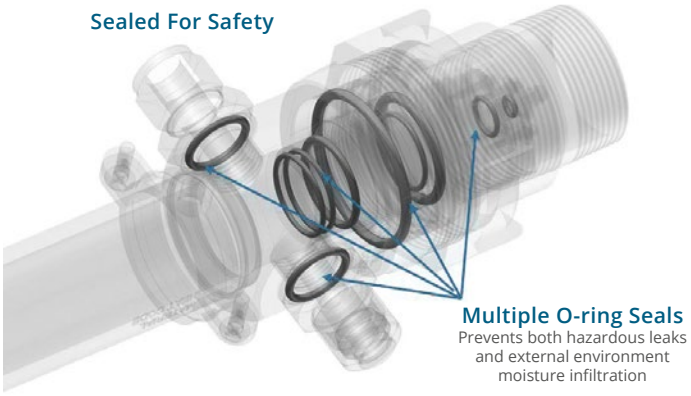
The Gas Flow Cell is a convenient, compact, rugged sample interface that is easy to install and even easier to service. The Gas Flow Cell's sapphire windows can be cleaned by simply removing a clean-out plug for direct access to the windows without disconnecting process lines or fiber optic cables. This clean-out port is a brand innovation. If necessary, the flow cell can be completely disassembled for inspection or deep cleaning. The reassemble step is easily accomplished without changing the pathlength, a crucial parameter for repeatable measurements.

Process-Resistant Construction

The Gas Flow Cell is designed to withstand corrosive processes. It is constructed from 316L stainless steel. It can also be made from other materials depending upon specific application requirements, such as Hastelloy C-276. Elastomeric seals prevent leakage and protect the Gas Flow Cell's vital internal optics. The process and processing environment dictate the actual o-ring material that is best suited for the application. Suitable o-ring materials must be specified to meet the process chemistry and safety requirements. Common materials, such as Viton, Kalrez®, EPDM, etc., are readily available. Consult appropriate resources for temperature specifications of various o-ring materials and chemical compatibility with the process. An option to include 6mm thickness windows increases the maximum operating pressure to 1000 psi.

Dual Seal for Added Safety

Perhaps the most crucial aspect of any online sample interface design is the sealing approach. Since process gas streams will be under pressure and the composition is often hazardous, leaks are unacceptable. Additionally, moisture infiltration from the external environment adversely affects performance too. Our brand utilizes multiple o-ring seals that effectively address both issues. The Gas Flow Cell includes a dual seal at the sapphire "window-to-process" interface. This protects the expensive internal optics.



Exceptional Light Transmission

Like all our optical sample interfaces, the Gas Flow Cell provides exceptional optical performance. Internal optics result in a collimated light beam for consistently accurate measurements. Typically, peak transmission exceeds 35%. That means more signal, less noise, and lower limits of detection for the measurement. The optics on the Gas Flow Cell are permanently aligned at the factory. As a result, there is no need for any optical adjustments in the field. Additionally, there is no chance for optical misalignment to occur under normal processing conditions or during servicing.

Pathlengths and Operating Range

The Gas Flow Cell is available in four standard pathlengths (25, 50, 75, and 100 cm), and in UV-VIS and NIR versions. It operates over the following temperature and pressure ranges:

- Temperature: ≤300 C° (o-ring material dependent)
- Pressure: 0-500 psi [3450 kPa] 2mm sapphire windows

Optically Matched with All Our Analyzers and Compatible with Most Other Spectrometer Brands

The sample interface is a crucial component of a complete fiber optic-based analyzer system. For maximum performance, the probe or flow cell must be optically matched with both the analyzer (spectrometer) and the fiber that transmits the spectral signal. All our sample interfaces, analyzers, and fiber optic cables are optically matched, so when used in combination they achieve the highest possible consistency and performance. The Gas Flow Cell is also manufactured to facilitate full integration with any fiber optic system configured with SMA 905 connectors. This includes FT-NIR analyzers. When choosing a sample interface for an FT-NIR analyzer the current fiber core size must be taken into consideration. The Gas Flow Cell design works best when used with fibers having a core diameter of 400 to 600 micron.

One of the primary advantages of UV-VIS and NIR process spectroscopy is the utilization of intrinsically safe fiber optic cables to remotely locate the analyzer relative to the sample interface (probe or flow cell) installed in the process. Get the full power of this technology and choose the Gas Flow Cell along with one of our optically matched analyzers and process grade fiber optic cables – *for control you can measure!*

Specifications	
Optical Pathlength:	25; 50; 75; 100 cm (other lengths available on request)
Spectral Range:	UV-VIS (200 – 800 nm); NIR (800- 2100 nm)
Fiber Connector:	SMA 905
Optical Efficiency:	>35% transmission from 800 – 1650 nm (%T)
Temperature Range:	≤300 °C (o-ring material dependent)
Pressure Range:	0-500 psi [3450 kPa] 2mm sapphire windows; 0-1000 psi [6895 kPa] 6mm sapphire windows; 0-500 psi [3450 kPa] 6 mm fused silica deep UV
Body Material:	316L SS standard; Hastelloy C-276, others available on request
O-Ring Material:	Viton, EPDM, Kalrez, silicon, other materials available upon request
Process Connection:	.500 OD x .035 seamless tubing
Flow Cell Body Length:	Optical pathlength +10 inches

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GAIN REAL-TIME INSIGHT INTO YOUR PROCESS

Process Insights manufactures and delivers premium sensors, monitors, detectors, analyzers, instrumentation, and software that are mission-critical to keep your operations, personnel, and the environment safe – every day across the globe.

Get the most reliable, precision analytical technologies available on the market today. We will work to match your needs and budget, and provide the optimal, and most stable process analysis solution for your application.

CENTERS OF EXCELLENCE | PROVIDING PROVEN SOLUTIONS

Process Insights is committed to solving our customers' most complex analytical, process, and measurement challenges everyday.

Process Insights – The Americas

4140 World Houston Parkway Suite 180, Houston, TX 77032, USA +1 713 947 9591

Process Insights – EMEA

ATRICOM, Lyoner Strasse 15, 60528 Frankfurt, Germany +49 69 20436910

Process Insights – APAC

Wujiang Economic and Technology, Development Zone, No. 258 Yi He Road, 215200 Suzhou, Jiangsu Province, China +86 400 086 0106

For a complete range of products, applications, systems, and service options, please contact us at:
info@process-insights.com

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