

PRODUCT DATASHEET

Axial Process Flow Cell

Compatible with NIR and UV-VIS Analyzers



More signal

Less noise

Lower detection limits

- For process streams including APHA or yellowness
- Suitable for liquids and vapors
- Efficient long path flow cell for low levels of detection
- Cleanout ports at each window make flow cell maintenance easy

Axial Process Flow Cell

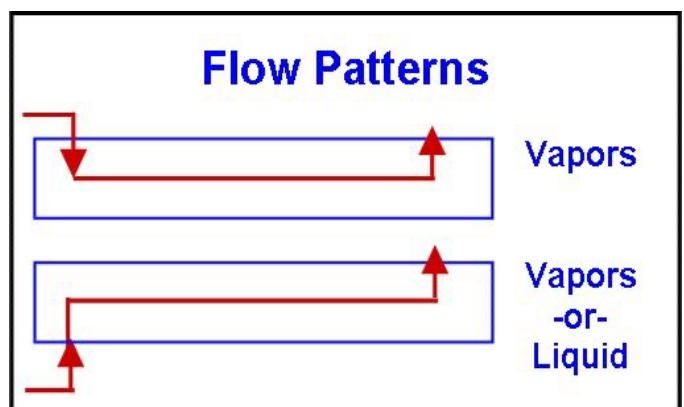
Flow cell performance strongly affects the overall system performance of a process analyzer. High optical efficiency and low sensitivity to environmental factors are essential to sensitive, reliable measurements. Best system performance requires a flow cell that is insensitive to vibration, temperature, and pressure changes. Stable performance is especially difficult to achieve when a long-path flow cell is dictated by low limits of detection. The GUIDED WAVE Axial Flow Cell provides pathlengths of 30 mm to 100 mm with exceptional immunity to environmental conditions.

Effective For Low-Level Detection

High optical throughput and exception stability make the Axial Flow Cell particularly effective in achieving low levels of detection. For example, water levels less than 100 ppm can be routinely measured in organics when the Axial Flow Cell is used with a good quality analyzer (photometer or spectrometer). Similarly, the lowest APHA color values are easily measured, and the onset of yellowness is easily detected.

A Simple, Serviceable Design

The Axial Flow Cell is a convenient, compact, rugged sample interface that is easy to install and even easier to service. Key elements of the design include simple, serviceable o-ring seals, sapphire windows, and o-ring sealed optics to prevent ambient moisture infiltration. 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. Any two of the four sample connection locations can be used as clean-out ports for the optics. The additional ports can also be used to trap bubbles or particle debris in the process line.



Four Sample Connection Locations for Improved Serviceability

Process-Resistant Construction

The Axial Flow Cell is designed to withstand corrosive processes. The standard Axial Flow Cell 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 Axial 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.

Dual Seal for Added Safety

Perhaps the most crucial aspect of any online sample interface design is the sealing approach. Since process fluid 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. This protects the expensive internal optics.

Exceptional Light Transmission

Like all our sample interfaces, the Axial Flow Cell provides exceptional optical performance. Internal optics result in a collimated light beam for consistently accurate measurements. Typically, the longer the path length the lower the transmission. Where the Axial Flow Cell is concerned, its peak transmission exceeds 30% which is considerably higher than the competition. That means more signal, less noise, and lower detection limits for the measurement. The optics on the Axial 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 Axial Flow Cell is available in four standard pathlengths (30, 50, 75, and 100 mm), 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 to 500 psi [3450 kPa]

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 Axial 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 Axial 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 Axial Flow Cell along with one of our optically matched analyzers and process grade fiber optic cables – *for control you can measure!*

Specifications

Optical Pathlength:	30; 50; 75; 100 mm
Spectral Range:	UV-VIS (200 – 800 nm); NIR (800- 2100 nm)
Fiber Connector:	SMA 905
Optical Efficiency:	$\geq 30\%$ transmission from 800 to 1650 nm for pathlengths ≤ 50 mm (%T)
Temperature Range:	≤ 300 °C (o-ring material dependent)
Pressure Range:	0 to 500 psi [3450 kPa]
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:	Nominal 1/4 inch tube connection (Swagelok fittings standard)

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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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REVOLUTIONIZING MEASUREMENT

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