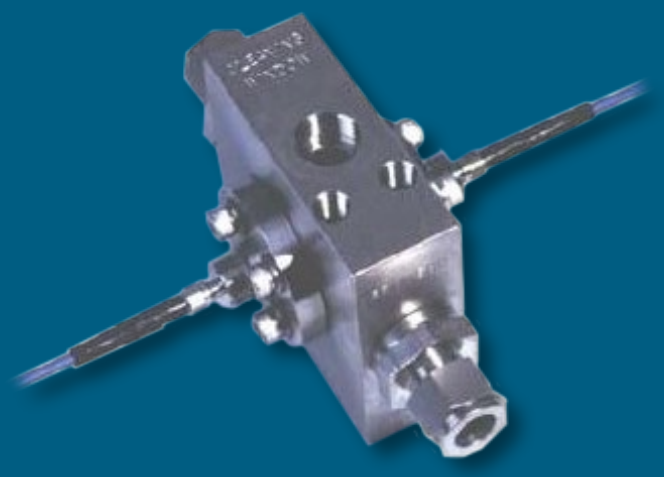
Process Insights™
Premium Insights Into Process

PROCESS INTERFACE

PRODUCT DATASHEET

Heated Multi-Purpose Process Flow Cell (Heated-MPFC™)

with NIR and UV-VIS Analyzers



More signal

Less noise

Lower detection limits

- For process streams including many with acids, bases, or cyanides
- Installations in side streams or sample conditioning systems
- Use where temperature control of sample is desired
- Threaded chamber provided for the circulation of heating or cooling fluids
- Clean out port for easy window cleaning

Heated Multi-Purpose Flow Cell

The GUIDED WAVE Multi-Purpose Flow Cell (MPFC™) is also available in a heated version. The flow cell is drilled to accept a heating or cooling fluid. While the heat exchanged does not significantly impact a rapidly flowing sample, it can be used to maintain the temperature of a preconditioned sample. The Heated Multi-Purpose Flow Cell is used whenever direct insertion probes are not appropriate and the process material does not require the added assurance of our High Safety Flow Cell. While direct insertion probes eliminate sample loops and sample systems and their associated problems, sometimes it is necessary to install sample loops for safety, service, and/or sample conditioning reasons.

A Simple, Serviceable Design

The Heated MPFC 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. The Heated MPFC 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 our 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 Heated Multi-Purpose Flow Cell is designed to withstand corrosive processes. The standard 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 Heated Multi-Purpose 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 Heated Multi-Purpose Flow Cell provides exceptional optical performance. Internal optics result in a collimated light beam for consistently accurate measurements. Typically, peak transmission exceeds 45%. That means more signal, less noise, and lower detection limits for the measurement. The optics on the Heated Multi-Purpose 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 Heated Multi-Purpose Flow Cell is available in five standard pathlengths (1, 2, 5, 10, and 20 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 Heated Multi-Purpose 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 Heated Multi-Purpose 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 Heated Multi-Purpose Flow Cell along with one of our optically matched analyzers and process grade fiber optic cables – *for control you can measure!*

Specifications	
Optical Pathlength:	1; 2; 5; 10; 20 mm
Spectral Range:	UV-VIS (200 – 800 nm); NIR (800- 2100 nm)
Fiber Connector:	SMA 905
Optical Efficiency:	>45% transmission from 800 – 1650 nm (%T)
Temperature Range:	≤300 °C (o-ring material dependent)
Pressure Range:	0 to 500 psi [3450 kPa], (certified version rated to 1000 psi)
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:	3/8 inch tubing (for pathlengths 1-5mm); 1/2 inch tubing (for 10mm pathlength); 1 inch tubing (for 20mm pathlength); 1/8 inch NPT ports for heating or cooling fluid

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.

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