

## Gas Process Flow Cell

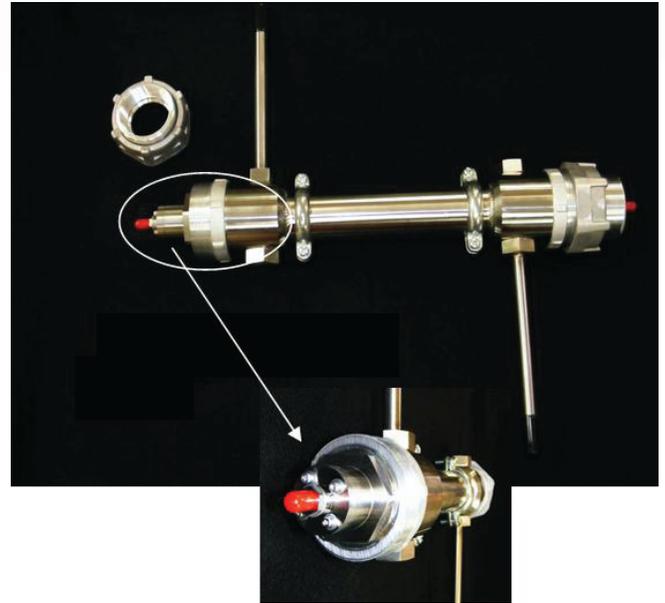
For measuring gases online by spectroscopy, a longer path is usually necessary because of the low density of gaseous streams. A longer cell, while being very effective, is also more difficult to design. For example, transmission probes for gas measurements must be aligned over a greater distance and 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. Available in a variety of alloys and matched with several elastomeric o-ring types, our Gas Flow Cell gives the engineer choices to insure successful measurements with the minimum amount of risk and downtime. Our Gas Flow Cell meets or beats most standards for use found in chemical plants, refineries, food and food supplement processing facilities, semiconductor or electrical component fabrication shops, and pharmaceutical manufacturing plants.

### Better Optical Efficiency For UV-VIS and NIR Measurements

Descriptively speaking, most true transmission Gas Cells may be viewed in symmetrical halves. Each half comprises both optical and mechanical parts integrally assembled to transmit and receive a focused beam of light that has traversed the sampled stream. The major issues with any kind of transmission flow cell involve establishing and maintaining the optical alignment of the two halves and ensuring that the pathlength is constant and reproducible. When these two issues are resolved well, the result is better optical efficiency. And better optical efficiency leads to significant long term advantages – more accurate analysis, more robust calibrations, and greatest analyzer uptime.

### Gas Probe Features

- Cleanout ports at each window.
- Reproducible pathlength permits servicing in the field.
- Rugged design translates to longer service life.
- 25mm diameter optics minimizes divergence losses and vignetting.
- High optical throughput for low noise spectroscopy.



### Wide Operating Range

Because of its versatility and ruggedness, the Guided Wave Gas Flow Cell is the leading option for online spectral analysis in phosgene, HCl, and hydrocarbon gas service. The sturdy design guarantees years of continuous use at high temperatures and pressures. An option to include 6mm thickness windows increases the maximum operating pressure to 1000 psig. While the standard 316L stainless steel material of construction inhibits corrosion due to the elements, a material upgrade to Hastelloy C-276 offers superior resistance to erosion that can be caused by harsh chemicals.

### Sealed for Safety

Perhaps the most crucial aspect of any online probe design is the sealing approach. Since most gas streams will be under pressure and the composition is often hazardous, leaks are most undesirable. Additionally, moisture infiltration from the external environment adversely affects performance too. Guided Wave implements a multiple o-ring seal that effectively addresses both issues. See illustration below.

### Compatible with Most Fiber Optic Based Analyzers

The sample interface is perhaps the most crucial component of any fiber optic based analyzer system. The Gas Cell, as well as other Guided Wave probes, are designed to minimize the signal loss and level spectral noise due to vibration and stray light making it a smart choice to enhance the overall performance of any analyzer system. For optimal performance, the probe must be "optically matched" with the spectrometer and with the optical fiber that transmits the spectral data. The Gas Cell is matched to Guided Wave's analyzers and fiber to achieve the highest possible performance.

# Gas Process Flow Cell

Specifications	
Pathlength (centimeters)	25; 50; 75; 100 (other lengths available on request)
Physical Probe Lengths (centimeters)	Pathlength plus ~24.53 cm
Spectral Range	UV (200 – 550 nm); Vis (380 – 850 nm); Vis-NIR (380 – 2100 nm)
Optics	Fused Silica, BK7 (Vis-NIR)
Connector Type	SMA 905
Process Connection	Nominal ½ inch tube connection. Swagelok fittings standard.
Optical Efficiency (%T)	≥35% transmission from 800 to 1650 nm for pathlengths ≤50 cm ≥30% transmission from 800 to 1650 nm for pathlengths >50 cm ≥25% transmission from 200 to 500 nm for pathlengths ≤50 cm Deep UV version ≥20% transmission from 200 to 500 nm for pathlengths >50 cm Deep UV version
Temperature Range	-20 °C to 170 °C* or limited by o-ring material whichever is lower. Use ratings as published in o-ring manufactures or in design handbooks. * - Higher temperature use is possible. Call factory
Pressure Range	2 mm Sapphire Window Version Rated: 0 to 500 psig; design proof tested to 750 psig min. 6 mm Sapphire Window Version Rated: 0 to 1000 psig; design proof tested to 1500 psig min 6 mm Fused Silica Window Version Rated: 0 - 500 psig
Body Material	316L stainless steel standard; Hastelloy C-276, Titanium, and Carpenter 20 available on request
Window Material	Sapphire (Standard 2mm thickness; optional 6mm) 230 -2100 nm Fused Silica (Deep UV) 200- 2100 nm
Window Seal	Polymer o-ring material options include: Kalrez® compounds [#’s 6375, 4079, 2035, LF1050], Viton, EPDM

