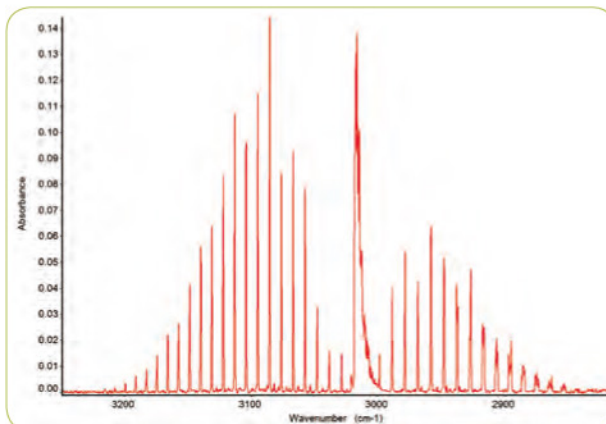


Long-Path Gas Cells – For Measurement of Low Concentration Vapor Components



C-H stretch spectral region for methane gas.

The anodized aluminum base includes spectrometer-specific baseplate allowing placement of the accessory in the FTIR sample compartment. As a standard feature, the optical base is fully purgeable allowing for the elimination of atmospheric water vapor and CO₂ interference in the spectrum.

FEATURES

- Long-Path gas cells for measurements of vapor species to ppb levels
- Fixed and variable pathlength versions
- Heated versions available up to 200 °C
- Standard fully purgeable optics
- Fits most FTIR spectrometers

PIKE Technologies offers several Long-Path Gas Cells for analysis of trace components in gas samples – typical concentrations may range from the ppm to ppb levels. The Long-Path Cells feature a folded path design providing an extended pathlength within a compact dimension. The FTIR beam enters the cell through an IR transparent window and reflects a number of times between the accessory mirrors before exiting to the detector. The number of reflections is determined by the optical configuration of the cell and may be selected as a permanently aligned version or a user-adjustable version (variable-path cell). Typical applications include air pollution studies, gas purity determinations, monitoring of industrial processes, exhaust gas analysis and many others.

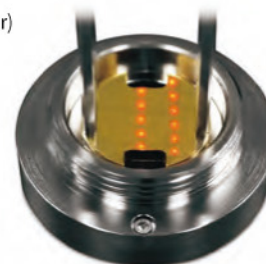
All Long-Path Gas Cells are manufactured by PIKE Technologies. The fixed and variable long-path body assemblies are nickel-coated aluminum, stainless steel or heavy-wall borosilicate glass. Gas cells may be operated under vacuum or pressure. The top of the cell is enclosed by the valve assembly with stainless steel Swagelok® valves with barb fittings. Tube compression fittings are available upon request.

For optimal performance the mirrors have been diamond turned and coated with the highest quality gold for maximum reflectivity and inertness. The accessory mirrors are mounted permanently with mechanical mirror mounts to eliminate out-gassing chemicals that may occur when using epoxies to secure the mirrors. Windows are easily replaceable and a variety of window materials are available.



Variable-Path Gas Cell

The construction and main components of the variable-path gas cells are identical with those described above, with an exception of the internal mirror assembly. The cell has an adjustable mirror located at the top of the enclosure (position controlled with a micrometer) and one stationary mirror. Adjustments to the mirror position allow selection of different pathlengths supported by the cell. The variable-path gas cell has an integrated laser that enables the determination of the pathlength by counting the number of laser reflections on the bottom mirror.



Laser reflections shown on the bottom mirror of the variable-path gas cell for pathlength determination.

LONG-PATH GAS CELL SPECIFICATIONS

| | 2.4 m Fixed | 5.0 m Fixed | 10.0 m Fixed | 20.0 m Fixed | 30.0 m Fixed | 1-16 m Variable |
|-----------------------|----------------|----------------|-----------------|-----------------|-----------------|--------------------|
| Base Path (mm) | 100 | 157 | 250 | 500 | 625 | 333 |
| Body Material | Metal | Metal | Glass or Metal | Glass or Metal | Glass | Glass |
| Optics Coatings | Gold | Gold | Gold | Gold | Gold | Gold |
| Window Material | KBr | KBr | KBr | KBr | KBr | KBr |
| Window Dimension (mm) | 37.5 x 4 | 25 x 4 | 25 x 4 | 25 x 4 | 25 x 4 | 25 x 4 |
| # Window | 1 | 2 | 2 | 2 | 2 | 2 |
| Cell Volume (L) | 0.1 | 0.5 | 2.2 | 7.2 | 12.8 | 3.5 |

HEATED LONG-PATH GAS CELL SPECIFICATIONS

| | |
|------------------------|---|
| Temperature Range | Ambient to 200 °C |
| Accuracy | +/- 0.5% of set point 115 or 230 VAC |
| Sensor Type | RTD |
| Temperature Controller | Touch-panel display with USB interface. PIKE TempPRO software (sold separately) for PC control with unlimited ramps and automated data collection. |
| Digital Display | +/- 0.1 °C |
| Input | 115 or 230 V, specify |
| Output | 115 or 230 VAC/10A 2400W maximum depending on pathlength |

Note: Other line s may require an additional transformer.

Some gas measurement applications require temperature control for higher precision or to prevent condensation of specific components. PIKE Technologies offers heated versions of our fixed- and variable-path gas cells up to 200 °C. For temperature accuracy, the temperature sensor has been embedded inside the gas cell as opposed to mounted on the exterior of the cell.

Contact PIKE Technologies on how to upgrade an existing cell to the heated version. Custom pathlengths, cell materials and heated transfer line are available. Contact us for special orders.



2.4 m



5-m Heated Gas Cell

ORDERING INFORMATION

LONG-PATH GAS CELLS

| PART NUMBER | DESCRIPTION |
|-------------|--------------------------------|
| 163-12XX | 2.4 m Metal Gas Cell |
| 163-13XX | 2.4 m Stainless Steel Gas Cell |
| 163-15XX | 5 m Metal Gas Cell |
| 163-14XX | 5 m Stainless Steel Gas Cell |
| 163-10XX | 10 m Metal Gas Cell |
| 163-17XX | 10 m Stainless Steel Gas Cell |
| 163-11XX | 10 m Glass Gas Cell |
| 163-16XX | 1–16v m Glass Gas Cell |
| 163-18XX | 20 m Stainless Steel Gas Cell |
| 163-20XX | 20 m Glass Gas Cell |
| 163-30XX | 30 m Glass Gas Cell |

Notes: Replace **XX** with your spectrometer's Instrument Code listed on page 164. Metal Gas Cell bodies are made of nickel-plated aluminum. Long-Path Gas Cells include KBr window(s) and Swagelok™ valves with barb fittings. Compression fittings are available upon request; specify size. Additional window materials can be ordered from the table in the next column.

REPLACEMENT PARTS

| PART NUMBER | DESCRIPTION |
|-------------|--|
| 076-2710 | Long-Path Gas Cell Temperature Control Module, 115 VAC |
| 076-2720 | Long-Path Gas Cell Temperature Control Module, 230 VAC |
| 007-0207 | PIKE TempPRO Software |
| 163-1009 | Pathlength Verification Tool, 2.4 m and 5 m |
| 163-100910 | Pathlength Verification Tool, 10 m and 20 m |
| 163-1001 | Viton Gas Cell Window O-Ring, 5, 10, 20, 16v m (4 ea.) |
| 163-1208 | Perfluoroelastomer O-Ring Kit, 2.4 m |
| 163-1506 | Perfluoroelastomer O-Ring Kit, 5 m |
| 163-1007 | Perfluoroelastomer O-Ring Kit, 10 m |
| 163-2006 | Perfluoroelastomer O-Ring Kit, 20 m |

Note: Please call PIKE Technologies for replacement O-rings or other parts not listed here.

HEATED LONG-PATH GAS CELLS

| PART NUMBER | DESCRIPTION |
|-------------|---|
| 163-42XX | 2.4 m Heated Metal Gas Cell, 115 V |
| 163-42XX-30 | 2.4 m Heated Metal Gas Cell, 230 V |
| 163-35XX | 2.4 Heated Stainless Steel Gas Cell, 115 V |
| 163-35XX-30 | 2.4 Heated Stainless Steel Gas Cell, 230 V |
| 163-45XX | 5 m Heated Metal Gas Cell, 115 V |
| 163-45XX-30 | 5 m Heated Metal Gas Cell, 230 V |
| 163-31XX | 5 m Heated Stainless Steel Gas Cell, 115 V |
| 163-31XX-30 | 5 m Heated Stainless Steel Gas Cell, 230 V |
| 163-40XX | 10 m Heated Metal Gas Cell, 115 V |
| 163-40XX-30 | 10 m Heated Metal Gas Cell, 230 V |
| 163-32XX | 10 m Heated Stainless Steel Gas Cell, 115 V |
| 163-32XX-30 | 10 m Heated Stainless Steel Gas Cell, 230 V |
| 163-41XX | 10 m Heated Glass Gas Cell, 115 V |
| 163-41XX-30 | 10 m Heated Glass Gas Cell, 230 V |
| 163-46XX | 1–16v Heated Glass Gas Cell, 115 V |
| 163-46XX-30 | 1–16v Heated Glass Gas Cell, 230 V |
| 163-43XX | 20 m Heated Glass Gas Cell, 115 V |
| 163-43XX-30 | 20 m Heated Glass Gas Cell, 230 V |
| 163-33XX | 20 m Heated Stainless Steel Gas Cell, 115 V |
| 163-33XX-30 | 20 m Heated Stainless Steel Gas Cell, 230 V |

Notes: Replace **XX** with your spectrometer's Instrument Code listed on page 164. Metal Gas Cell bodies are made of nickel-plated aluminum. Heated Long-Path Gas Cells include KBr window(s) and Swagelok™ valves with barb fittings. Compression fittings are available upon request; specify size. Additional window materials can be ordered from the table below. Heated Long-Path Gas Cells include a digital temperature controller and heating jacket. If PC control is desired, PIKE TempPRO software (sold separately) can be used for graphical setup and automated data collection for thermal experiments. TempPRO is compatible with most FTIR spectrometers. Heated Long-Path Gas Cells may be heated to 200 °C.

REPLACEMENT WINDOWS

| PART NUMBER | | DESCRIPTION |
|-------------|-------------|---------------------------------------|
| 25 x 4 mm | 37.5 x 4 mm | |
| 160-1217 | 160-1281 | BaF ₂ |
| 160-1211 | 160-1287 | CaF ₂ |
| 160-1133 | 160-1288 | KBr |
| 160-1178 | 160-1289 | KCl |
| 160-1127 | ----- | KRS-5 |
| 160-1124 | 160-1290 | NaCl |
| 160-1114 | 160-1291 | ZnSe |
| 160-1110 | 160-1286 | ZnSe, Anti-Reflective Coating 1-Side |
| 160-1109 | ----- | ZnSe, Anti-Reflective Coating 2-Sides |

