PCI-HC10m 10.1m Herriott Cell

Port City Instruments, LLC
SINGLE-LINE SPECTROSCOPY SOLUTIONS

SPECIFICATIONS	
Optical Pathlength	10.13 m
Cell Volume	0.24 L
Number of passes	34
f-Number	5.2
Entrance Slopes (deg)	2.07
Coupling Hole Diameter	3.3 mm
Max Beam Diameter	3.0 mm
Spot Spacing	4.4 mm
Surface Figure	1/10 wave
Scratch-Dig	20-10
Mirror Coating	Protected Au (HfO_2)
Overall Length	13.4"

General purpose, economical multipass Herriott cell for laboratory and field use. This gas flow cell provides 10.1m of optical absorption pathlength and is well constructed with honed and polished interior walls and high-quality 1/10 wave protected gold mirrors.

Useable over the 1-5 micron wavelength range and the 0.001 to 1.2 Bar pressure range with an easily replaceable 1" diameter coupling window. Cells are electroless nickel plated inside and out for corrosion resistance and a lower "sticking" coefficient for polar gases. A thermostatting kit is also available for operation at stable elevated temperatures (to 75C) with a stability of ±0.1C.

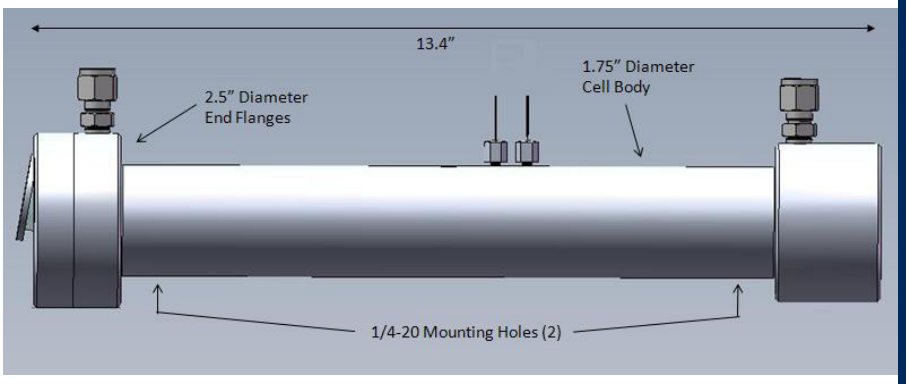
Two 1/4-20 threaded holes on the bottom side of the main tube allow easy mounting to an optical table using standard post mounts. Flow ports are 1/8" NPT and can be supplied with swagelock adapters for 1/4" OD tubing. Two thermistors are mounted near the cell center for monitoring and thermal control. Mirror spacing is adjustable over ±3 mm to accomodate cell thermal expansion and to optimize alignment.

An optional alignment fixture has adjustable 20 mm iris apertures that can be used to aid in defining the correct input beam path, and a visible (red) laser to locate the position of the output spot for detector placement.

Typical Herriott cell spot pattern

Ideal for university research and teaching labs, industrial R&D and product development labs, or as a component in field gas sensors where a long optical absorption path is needed. Materials in contact with the gas are nickel, viton, pyrex, HfO_2 (mirror overcoat) and small amounts of Stycast 2850-ST epoxy.

Various customization options are available including special mirror coatings, alternate materials of construction (e.g. 304 or 316 SS), and additional ports for pressure sensors or special flow configurations. Contact us for pricing and lead times on custom Herriott cells, or alternate designs for longer optical pathlengths or longer wavelengths.



Overall dimensions

PCI-HC10m

Laboratory Herriott Cell

Accessories

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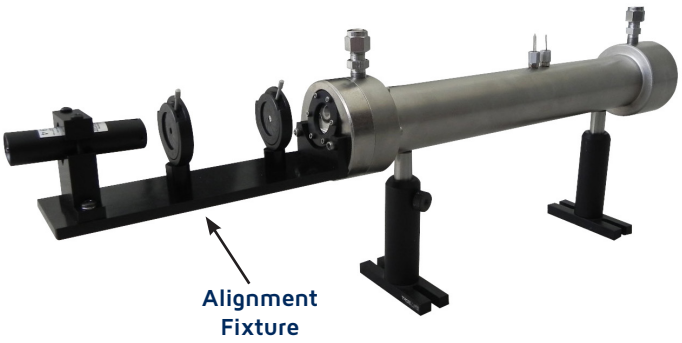
ALIGNMENT FIXTURE

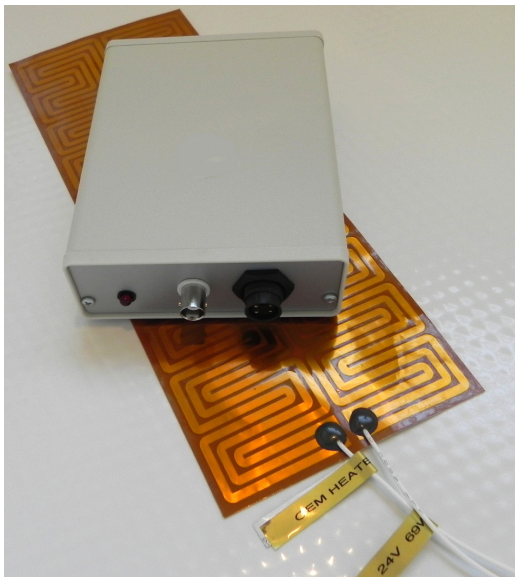
A bolt-on alignment fixture with optional visible (red) laser is available to aid in beam alignment. Two adjustable irises are positioned on a shelf which defines the entry beam angle needed to produce the correct number of passes and a visible output spot. Both the laser and the alignment fixture are easily removed, leaving the alignment shelf mounting holes available for user-made assemblies such as GRIN lens mounts and other laser and detector mounts to couple suitable 1-5 µm lasers to the Herriott cell.



All cells are pre-aligned before shipping. With the far mirror adjustment capability it is possible to further optimize the system to maximize output power and minimize optical fringing for a given laser and detector combination. The alignment fixture is especially useful for students or other researchers with no prior experience using Herriott cells for spectroscopic measurements, and can be supplied with, or without, the visible alignment laser module.

THERMOSTATTING KIT

A matched Kapton® heater and temperature controller unit allow thermal stabilization of the Herriott cell at temperatures up to 75C. Stability is typically ±0.1C after a suitable warmup period. A 24 VDC power supply is supplied with the controller unit that plugs into a standard U.S. wall outlet. Cell thermistors are 10K @ 25C, with two installed near the cell center (one for control, one for monitoring). The Kapton® heating element has an adhesive backing and is sized to cover the majority of the center tube length.



Key Features

- 0.001 to 1.2 Bar pressure range, 1-5 micron wavelength range, up to 75C set point.
- High-quality 1/10 wave optics with ion-deposited HfO_2 protective overcoat.
- Adjustable mirror spacing (±3 mm).
- Honed and polished interior walls, electroless nickel plated.
- Easy mounting to optical tables.

ORDERING INFORMATION

Item	Part No.
10.1 m Herriott Cell	PCI-HC10m
1" x 3mm sapphire window	PCI-HC10m-W
Thermostatting Kit	PCI-HC10m-T
Alignment Fixture (shelf/irises)	PCI-HC10m-A
Laser/Mount for PCI-HC10m-A	PCI-HC10m-L

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