

IRcell – long path in a compact design

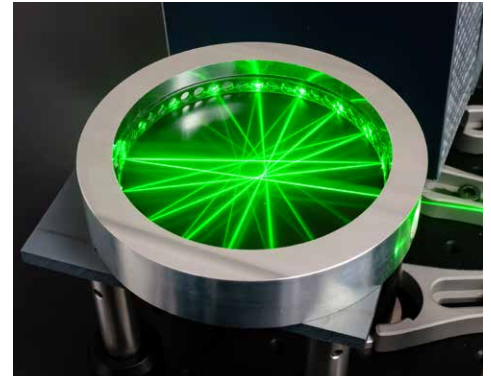
Tired of bulky cells and slow gas exchange?

Do you want to increase your measurement sensitivity for absorption spectroscopy? You can now achieve this without having to use large cells that occupy a lot of space. Besides physical size, internal volume is another limitation, since it limits gas exchange time. Many low-volume gas cells used in research are home-built. However, building your own cell has risks: Fringe performance and leak rate may be poor.

Presenting the IRcell - compact, robust multipass cell

The cylindrical IRcell multi-pass cell combines a long optical path in a small detection volume with robust optical alignment. Thanks to the single-piece, single-material construction, the IRcell is especially invariant to thermal expansion and resistant to vibrations. It is adjustment-free.

A quasi 2-dimensional beam pattern achieves a small internal volume of only 38 ml at a path length of several meters.



APPLICATIONS

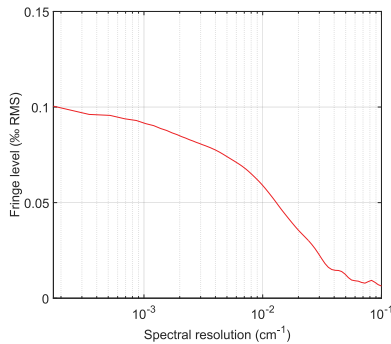
- *Laser absorption spectroscopy in the NIR, mid-IR*
- *Trace gas sensing in industrial, medical, environmental applications*
- *Industrial process control*
- *Safety and security screening*
- *Compact spectroscopic instrumentation*
- *Applications that require low sample volumes*



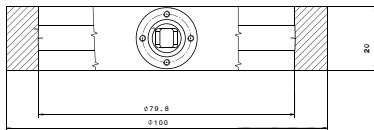
BENEFITS

- *Small volume (38 ml)*
- *Low fringes (<0.2% rms)*
- *Rugged design*
- *Increased sensitivity compared to other low-volume cells*

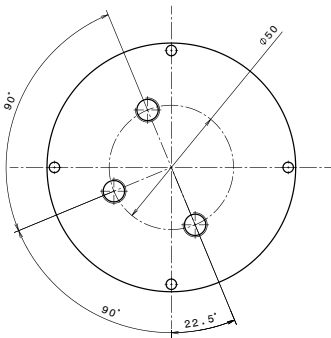
Typical fringe level as function of resolution



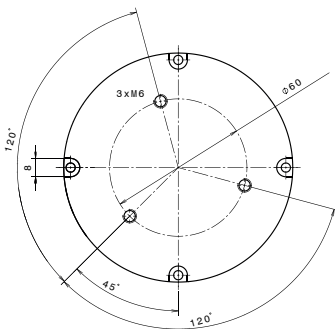
Side view



Top view with gas fittings



Bottom view with threaded holes for mounting



All measures in mm unless stated otherwise.

SYSTEM SPECIFICATIONS

Optical path length	349 cm / 137"
Input-output beam angle	28 degree horizontal
	3 degree vertical
Beam alignment tolerance	±0.002 degree horizontal
	±0.1 degree vertical
Ideal numerical aperture (NA)	0.027
Input hole diameter	4 mm / 0.157"
Fringe level	< 2.0 x 10 ⁻⁴ rms@ λ=4.3 μm
Wavelength range	NIR / mid-IR / THz
Gas volume	38 ml
Gas fittings	Swagelok 6 mm or 1/4" or
	Whitworth G 1/8"
Absolute pressure range	0-1 bar / 0-750 torr
Leak rate	< 1 x 10 ⁻⁷ bar x l/s
Mirror surface	Gold
O-Ring material	NBR
Absorption mask material	Teflon, others on request
Window material options	BaF ₂ , CaF ₂ , Al ₂ O ₃ , N-BK7,
	others on request
Dimensions	10 cm diameter, 3.3 cm height
	(excluding gas connectors)
Mounting	3 x M6

WHAT OUR CUSTOMERS SAY

„We are very happy with the IRcell performance, as we achieve the expected sensitivity gain and can measure on small sample volumes. I recommend this product.“

Dr. Florian Schmidt, Umeå University, Sweden




Do you have special needs that our current IRcell might not address? Let us know so we can work together to find a solution for you.

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