40m long optical path gas absorption cell

Product Description

Idealphotonics' 40-meter long optical path gas absorption cell adopts an all-fiber structure design. The fiber input and fiber output units are used for spectral analysis and detection of various gases. The optical structure of the gas absorption cell adopts an independent technically approved design, with excellent optical stability, auxiliary and high-stability optical packaging structure, mainly composed of gas cavity, reflector, standard fiber connector, gas inlet and outlet, shockproof seat, etc. The unique suspended optical path design has excellent vibration and temperature stability, can work stably in a variety of complex environments, and is very

suitable for online real-time detection of various gases. The system has low noise and can be used for trace gas analysis.

Product features

The air chamber structure is ultra-stable and has strong vibration resistance、Small size, compact structure, easy to carry、 40-meter long optical path、Input and output are coupled with standard single-mode optical fiber

Part Number

MP-OGC-1317-40-FF

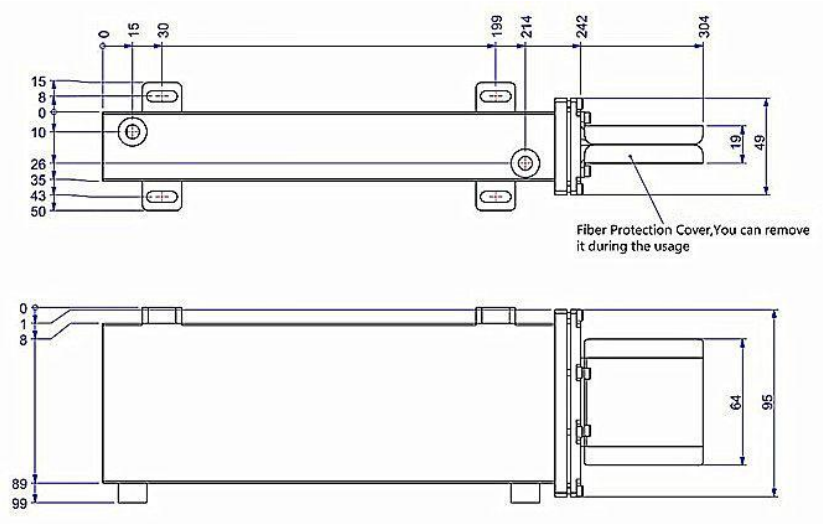
Application area

Monitoring tasks in industrial environments 、 Infrared absorption spectroscopy in scientific research、 Industrial online monitoring

Core parameters

Operating Wavelength	Effective Optical Path	Connector
1300-1700nm	40m	FC/APC

Dimension Drawing



General Parameters

Parameter

Technology parameter	Unit	Indication
Operating wavelength	nm	1300~1700
Effective optical path	m	40
Fiber characteristics	/	Conical bending insensitive
Connector	/	FC/APC
Material	/	SUS304
Coated lens	/	HR dielectric film
Gas inlet and outlet holes	/	NPT1/8
Insertion loss	/	＜3dB@1550nm
Reverse breakdown pressure	/	＜0.35MPa
Weight	/	1.7Kg
Dimensions	/	89x304x49mm
Capacity	/	450ml
Operating power	/	1W

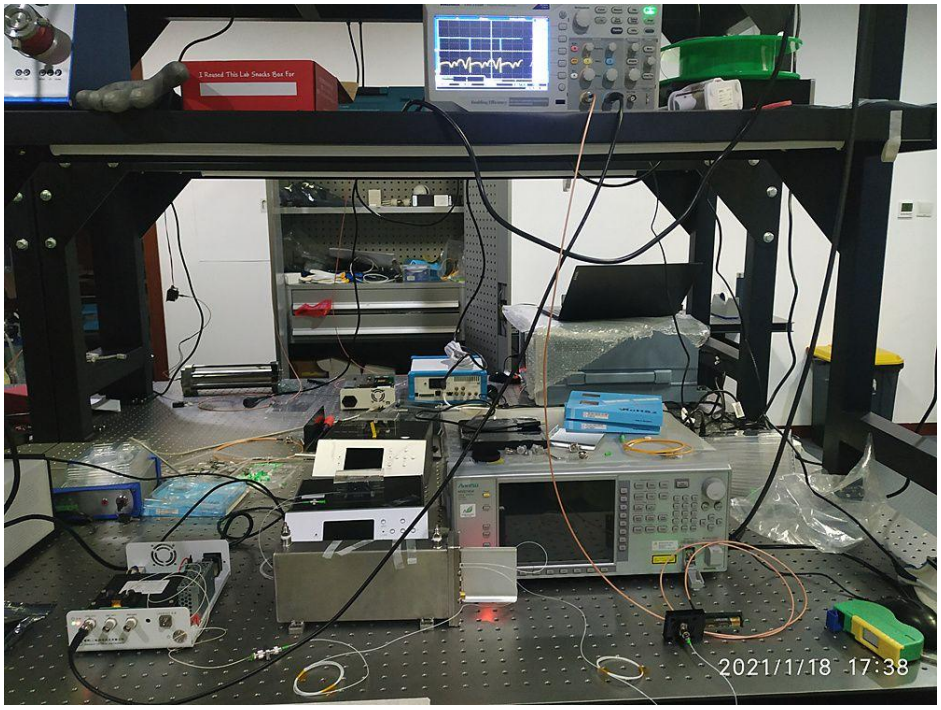
Nominal Characteristics and Tolerances of Tapered Bend-Insensitive Fiber

Parameter	Indication
Cut-off wavelength	920nm
Maximum attenuation	2.1dB/km
Cladding diameter	125um
Coating diameter	250um
Core-cladding concentricity	⩽0.5um
Mode field diameter	9.5um
1Turnx15mm Diameter@1550nm	＜0.5dB
1Turnx15mm Diameter@1625nm	＜1.0dB
1Turnx20mm Diameter@1550nm	＜0.1dB
1Turnx20mm Diameter@1625nm	＜0.2dB
1Turnx30mm Diameter@1550nm	＜0.03dB
1Turnx30mm Diameter@1625nm	＜0.1dB

Absolute Maximum Parameters

Parameter	Unit	Min.	Typical	Max.
Air chamber temperature	℃	-20	25	+ 85
Axial tension	N	-	-	5N
Lateral tension	N	-	-	2.5N
Fiber bending radius	mm	16		
Operating temperature	℃	-40		+85

Laboratory testing



Steps:

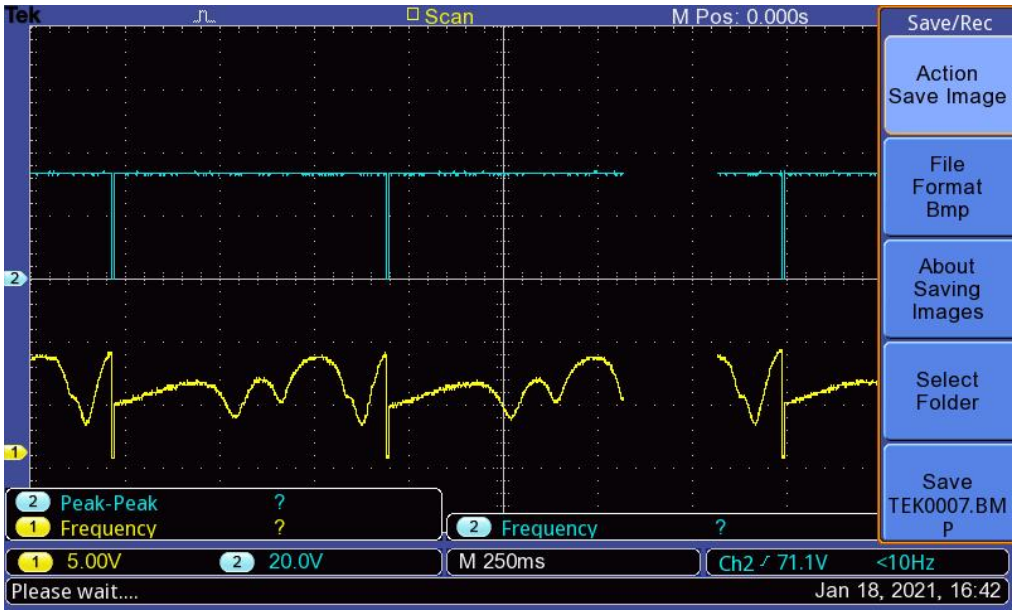
1. Install a 1392nm laser, and connect the laser output fiber to one end of the 40-meter long optical path gas chamber

2. Connect the other end of the 40-meter gas chamber to the detector

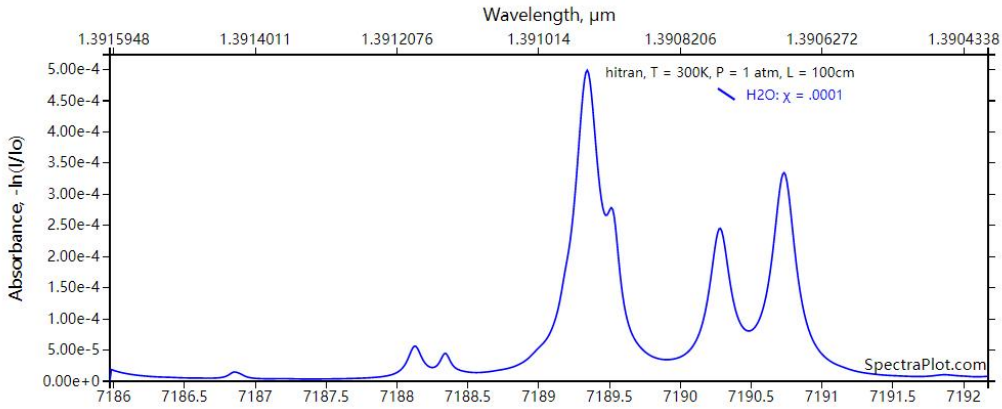
3. Use a BNC to SMA cable to connect the detector and the oscilloscope

4. Turn on the laser, adjust the current and temperature, and view the direct absorption of water molecules on the oscilloscope Test results and analysis verification:

We adjusted the current and temperature of the laser to make the laser wavelength sweep across the absorption peak of water molecules at around 1392nm. The measured direct absorption spectrum is shown in the figure below:



In order to verify that it is the absorption of water molecules, we queried the parameters of the Hritral database as follows:



We can see that the absorption peak in the database corresponds exactly to the absorption peak measured on the oscilloscope, which also verifies that the absorption spectrum on our oscilloscope is the absorption of water molecules.

Ordering Information

MP-OGC-1317-40-FF

Optical path: 40:40 meters

Material: S3:SUS304

Gas port diameter: AR6:6mm

Fiber optic and connector: FSA:SMF-28E, FC/APC