

Wavelength Calibrator Carbon Monoxide Gas Cell ¹³CO

Gas cells are precision filters whose absorption wavelengths depend on specific molecular energy level transitions. Carbon-13 Monoxide molecular absorption lines have been identified by national standards bodies as a primary wavelength reference in the L band from 1595nm to 1630nm.

Our NIST-traceable ¹³CO cells ship in a standard 500 Torr, 80cm path multi-pass fiber-coupled configuration with FCAPC-connectorized SMF28e fiber. Custom configurations are available with changes to pressure, concentration, and connector style including a photodetector output.

The cells are hard-sealed for long life and feature advanced optical design for very low level of interference artifacts.

The cells are filled with an isotopically pure ¹³CO (to within 99%).

We do many custom gas cells so please contact us with your specific requirements or questions.



Specifications¹

Wavelength Range	1595nm – 1630nm
Wavelength Accuracy	≤ 0.3pm (expanded uncertainty)
Line Depth ² @ R7 (1603 nm)	0.9 dB
Line Width ³	23 pm typical
Temperature Dependence	<0.01 pm/°C
Custom Pressures	Please inquire
Cell Transmission	>45%; fiber to fiber
Spectral Ripple (P-P)	<0.1dB any 2 nm span
Cell Lifetime	> 10 years
Operating Temperature	0°C to 70°C
Storage Temperature	-40°C to +85°C
Connector Type	FCAPC, SCAPC, FCPC, SCPC, none, PD (photodetector)

Photodetector:

Net Responsivity	>0.5 A/W
Capacitance (OV)	4 pF typical
Shunt Resistance	>5 MΩ

1. 25 °C; Specifications subject to change without notice.
2. See table next page
3. Increasing/decreasing pressure will increase/decrease linewidth

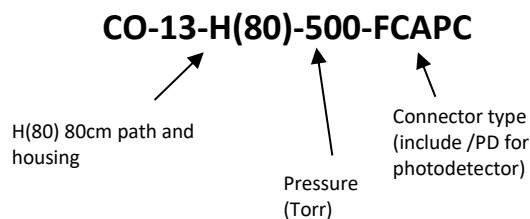
Features

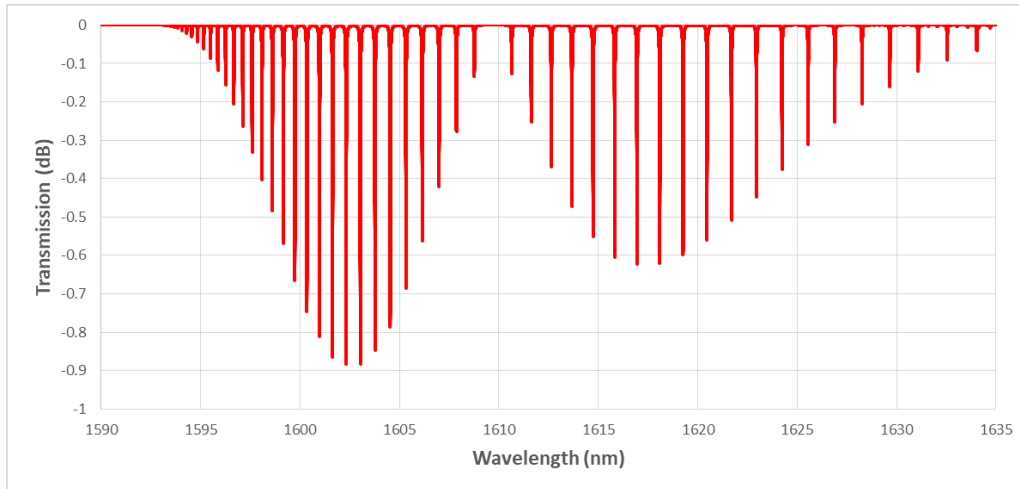
- Hermetic seal, >10 year life
- Wedged windows and coated optics for minimum interference artifacts
- Folded optics for compact design
- Custom pressures and options available
- Low cost
- L-band wavelength coverage

Applications

- Tunable laser calibration
- OSA or tunable filter calibration
- Wavelength/frequency stabilization
- Chemical detection systems

Ordering Information (example)





Sample transmission spectrum

R Branch	Wavelength (nm)	P Branch	Wavelength (nm)
21	1595.3759(3)	1	1610.6589(3)
20	1595.7541(2)	2	1611.6385(3)
19	1596.1582(2)	3	1612.6449(2)
18	1596.5883(3)	4	1613.6779(2)
17	1597.0442(3)	5	1614.7378(2)
16	1597.526(3)	6	1615.8245(3)
15	1598.0338(2)	7	1616.9381(2)
14	1598.5675(2)	8	1618.0786(2)
13	1599.1273(2)	9	1619.2462(2)
12	1599.713(2)	10	1620.4408(2)
11	1600.3248(1)	11	1621.6629(2)
10	1600.9626(2)	12	1622.912(2)
9	1601.6264(1)	13	1624.1886(2)
8	1602.3164(1)	14	1625.4928(2)
7	1603.0324(2)	15	1626.8245(2)
6	1603.7746(2)	16	1628.1838(3)
5	1604.563(2)	17	1629.591(2)
4	1605.3376(2)	18	1630.986(2)
3	1606.1585(2)	19	1632.4289(3)
2	1607.0056(2)		
1	1607.8792(3)		
0	1608.7792(3)		

500 Torr ¹³CO NIST Center Wavelengths

Values as stated by NIST and adjusted for pressure with +/- 25 Torr uncertainty. Expanded (2 sigma) uncertainties are stated in parenthesis and apply to least significant digits.

NIST Traceability

The resulting absorption spectra exhibited by Wavelength References ¹³CO Cells are determined by fundamental molecular energy level transitions that have been well characterized by standards bodies such as NIST. As such, the presence of ¹³CO at a specified pressure guarantees repeatable absorption spectra characteristics. Our pressure uncertainty of +/-5% falls within NIST's stated uncertainty of +/-20%. We can therefore state with assurance that our cells are NIST-traceable.

H(80): 80cm Package

