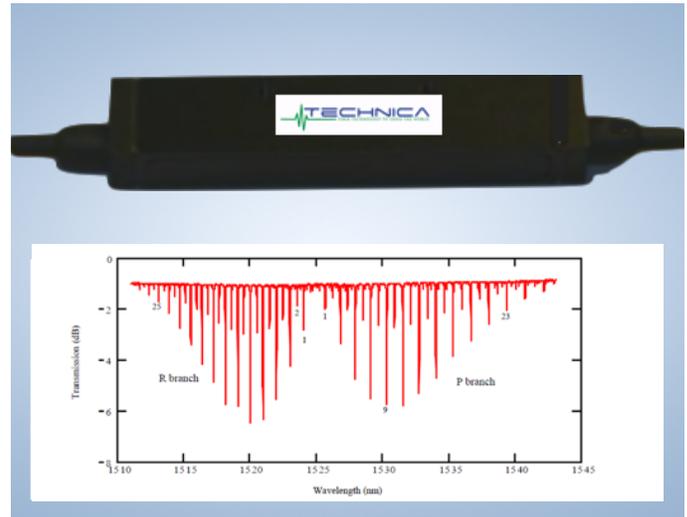


Description

The TWR20 is a Single-Mode Fiber (SM) based Packaged Acetylene Gas Cell ($^{12}\text{C}_2\text{H}_2$) for use as NIST traceable absolute wavelength reference in the calibration of Optical Spectrum Analyzers, Tunable Lasers, Tunable Filters, Chemical Analysis Systems, and Optical Sensing Systems.

Hermetically sealed for long operation life and with coated lenses and wedged windows to virtually eliminate influences from the ambient environment. Ready for direct connection via standard optical connectors or by splicing. The TWR20 Gas Cell is easy to handle and installation is fast and intuitive. Immune to lightning and electromagnetic interference (EMI).

Widely used in optical test and monitoring instruments, the TWR20 is well fit for telecom systems, for medical and pharmaceutical applications, and for optical sensing applications in security, robotics, civil & geotechnical engineering, oil & gas, aerospace, railways, roadways, performance gear, marine vessels & racing yachts, wind turbines and structures, pipelines, nuclear facilities, industrial processes, and for research laboratories worldwide.



Key Features

NIST traceability. The TWR20 Gas Cell absorption spectrum is determined by fundamental molecular energy level transitions that have been well characterized by standards bodies such as NIST. The presence of $^{12}\text{C}_2\text{H}_2$ at the specified pressure of 200 Torr guarantees repeat absorption spectra characteristics. The TWR20 pressure uncertainty of +/-10% is well within the NIST's stated uncertainty requirement of +/-20% and therefore the TWR20 Gas Cell is assured to be NIST traceable.

Easy to Install. The TWR20 device package is tapped for two M3 screws at 25.4mm center-to-center distance, off the center axis of the gas cell, that can be used for direct installation in optical cassettes or on opto-electronic boards. The gas cell's rectangular package is 88mm x 14.2mm x 11.7mm (L x W x H).

Optical connectorization available. With FC/APC, FC/UPC, LC/APC, LC/UPC, SC/APC, SC/UPC, LSA-DIN/APC, E2000, and other optical interfaces, or unconnectorized with standard one meter single mode fiber pigtailed.

Low cost and field proven. For demanding projects that require both low cost and stable operation for the long-term. Extensively used in the field as absolute wavelength calibration artifacts within optical instruments and as stand-alone absolute wavelength reference devices.

TWR95 Calibration Box Available: Sensibly priced and consists of one TWR20 C2H2 Gas Cell, one TWR30 25GHz Athermal Fabry-Perot Etalon, and one TWR60 1550nm CW Athermal Fiber Bragg Grating (FBG). The TWR95 is designed to internally accommodate additional optical components of interest if needed. Ideal for quality control, calibration labs, metrology, and education.

Parameter	Specifications
Wavelength Range	1510nm to 1540nm
Wavelength Accuracy	< +/- 0.3pm
Absorption Line Depth (P9)	8dB
Linewidth (FWHM, Log, P9)	20pm
Temperature Dependence	<0.01pm/°C
Gas Pressure	200Torr
Transmission (Fiber-to-Fiber)	>50%
Spectral Ripple (P-P)	<0.1dB
Operating Temperature	-20°C to +80°C
Storage Temperature	-40°C to +100°C
Shock Resistance (all axes)	>100g
Pigtail Bend Radius	>17mm
Optical Connector	FC/APC, LC/APC, SC/APC, or custom, or none
Dimensions	30mm cell path length, 48mm total device length no booths, 88mm w strain relief booths
Lifetime	>10Years

Applications include Commercial Test and Monitoring Instruments and Metrology

Technica undertakes a rigorous development process before products release. The company is also firmly committed to continuous improvements after release to insure performance to the highest standards, hence, specifications are subject to update without notice.

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R Branch	Wavelength (nm)	P Branch	Wavelength (nm)
27	1512.4536(13)	1	1525.7602(6)
26	1512.82404(3)	2	1526.31433(3)
25	1513.20081(3)	3	1526.87468(13)
24	1513.58401(3)	4	1527.44147(13)
23	1513.97338(3)	5	1528.01465(13)
22	1514.36905(3)	6	1528.59423(13)
21	1514.77102(3)	7	1529.18023(3)
20	1515.17929(3)	8	1529.77263(3)
19	1515.59389(3)	9	1530.37143(3)
18	1516.01476(3)	10	1530.9766(13)
17	1516.44193(13)	11	1531.58823(3)
16	1516.8753(3)	12	1532.20633(3)
15	1517.31507(3)	13	1532.83078(13)
14	1517.76114(3)	14	1533.46169(13)
13	1518.21361(3)	15	1534.09903(3)
12	1518.67228(3)	16	1534.74283(3)
11	1519.13731(13)	17	1535.39313(3)
10	1519.60875(3)	18	1536.04986(6)
9	1520.08642(3)	19	1536.71296(3)
8	1520.57039(3)	20	1537.38259(3)
7	1521.06073(13)	21	1538.05869(3)
6	1521.55753(3)	22	1538.74132(3)
5	1522.06057(3)	23	1539.43037(13)
4	1522.56994(3)	24	1540.12592(13)
3	1523.08571(3)	25	1540.82795(13)
2	1523.60788(3)	26	1541.53647(3)
1	1524.13624(13)	27	1542.2514(3)

200 Torr ¹²C₂H₂ NIST Center Wavelengths

Values as stated by NIST. Expanded (2 sigma) uncertainties are stated in parenthesis and apply to least significant digits.

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