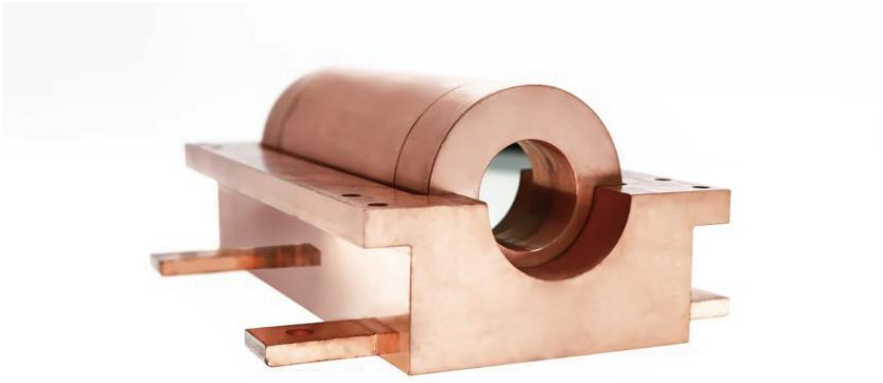
Fabry-Perot (F-P) interferometer



Description

Fabry-Pérot interferometer is a multi-beam interferometer composed of two parallel glass plates, in which the opposite inner surfaces of two glass plates have high reflectivity. When two glass plates are separated and fixed by a hollow spacer with a fixed length, it is also called Fabry-Perot etalon or simply referred to as etalon.

F-P etalon is a high-resolution spectroscopic instrument because of its high reflectivity and narrow oblique interference fringes such as multiple beams. It can be used for high-resolution spectroscopy and studying spectral lines with very close wavelengths, such as isotope spectra of elements, hyperfine structure of spectra, slight frequency shift during light scattering, Doppler shift of spectral lines caused by atomic movement, and internal structure and shape of spectral lines. It can also be used as a high-resolution optical filter to construct a precise wavemeter. In laser system, it is often used for intracavity narrow spectrum or single mode operation of laser system. It can be used as bandwidth control and tuner device in broadband picosecond laser to analyze and detect spectral components (longitudinal mode and transverse mode) in laser.

Features

- Suitable for near infrared and mid infrared.
- Good parallelism.
- End surface flatness is high.
- Good surface quality.

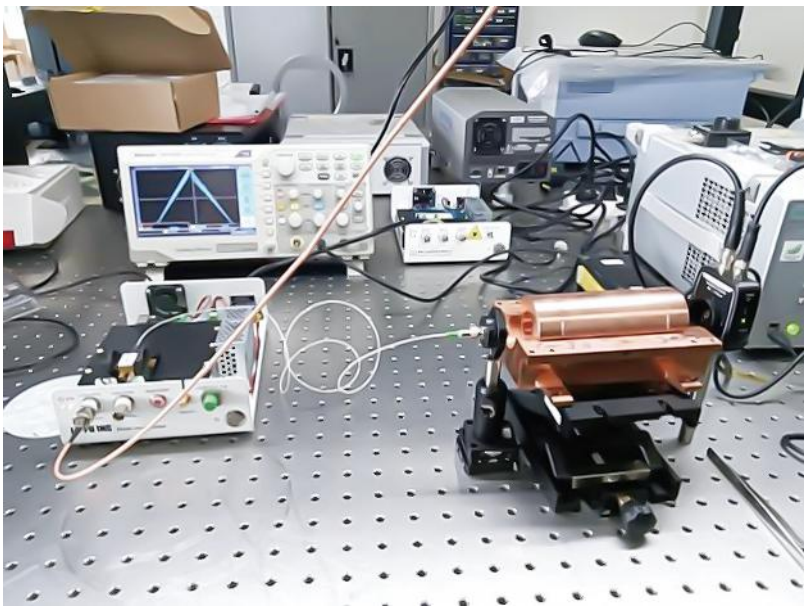
Application

- Wavelength locker
- Wavelength division multiplexing telecommunication network
- Handheld Spectrum Analyzer
- Fiber Bragg Grating Sensing System
- Tunable filter laser
- Tunable filter

Key Parameter

Technical Parameter	Technical Indicators
Spectral Response	NIR 1.3-2.0um, MIR 2.5-14um.
Diameter	25.4mm+/-0.05mm
Clear Aperture	22.9mm
Length	100mm+/-0.2mm
Parallelism	5-10 arc sec
End Flatness	MIR 1/4 lambda; NIR1/10 lambda.
Surface Quality	MIR 80-50; NIR 60-40.
Tube	copper

Experiment Test



Test Steps:

1. Install 1532nm laser, connect power supply and USB cable.
2. The laser output is connected to the optical fiber collimator.
3. Connect the signal generator to the low frequency modulation port driven by the laser with BNC-to-BNC line.
4. Connect the detector to the channel 2 port of oscilloscope with BNC-to-BNC line.
5. Turn on the laser and the signal generator (triangular wave modulation, frequency 1KHZ, voltage amplitude 500mW).
6. The light emitted by the laser hits the photosensitive surface of the detector through the etalon, and the modulation waveform is viewed on the oscilloscope by adjusting the angle of the etalon.

Test Results