IRsweep

IRis-C

A compact mid-infrared dual-comb spectrometer

Did you hear about the many advantages of dual-comb spectroscopy like high measurement speed, high spectral resolution, and unmatched signal-to-noise ratio? Thanks to the IRis-C this technique can no longer only be used by photonics experts. The IRis-C is a compact, easy to use, affordable mid-infrared dual-comb spectrometer. With a fully integrated electronic and optical design, yet customizable sample interface, it is the right solution for applications ranging from basic research to routine analysis or fully automated process analytics.

The IRis-C is the newest addition to IRsweep's line of quantum cascade laser frequency comb spectrometers. It is designed with the same dual-comb spectroscopy technology as the IRis-F1, providing microsecond time-resolution, high spectral resolution, and high optical brightness in the mid-infrared range. This allows for quick and accurate measurements of mid-infrared spectra, with exchangeable laser modules covering over 60 cm^{-1} with 0.3 cm^{-1} point spacing. The high optical power of the quantum cascade lasers provides an exceptional signal-to-noise ratio, even when used with strongly absorbing samples like aqueous solutions. The pre-aligned reference beam path and internal co-alignment of the two frequency combs ensure good signal quality, while the free-space sample beam makes it easy to couple to any application specific interface.

The IRis-C is a cost-efficient solution for various vibrational spectroscopy tasks, including (bio-)chemical reaction kinetics, protein folding and similarity tests, catalysis studies, and combustion diagnostics. Its compact design and 5-digit price tag make it an ideal choice for projects with tight budgets. The IRis software operates on a separate desktop computer, allowing for easy control of high-speed mid-infrared experiments. For wavelength flexibility, IRsweep offers laser module bundle options. Contact our application specialists at sales@irsweep.com for more information.

APPLICATIONS

- Time-resolved spectroscopy
- Chemical kinetics
- Photocatalysis
- Protein dynamics
- Combustion diagnostics

BENEFITS

- High speed (1 ms - 1 µs)
- High brightness (laser source)
- Exchangeable sources each covering up to 70 cm^{-1}

CONFIGURATIONS

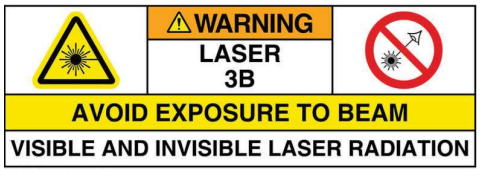
- Modular system with separate source and detection units
- Drive electronics integrated in source unit
- High amplitude sensitivity: both lasers penetrate the sample, leading to maximum absorption sensitivity

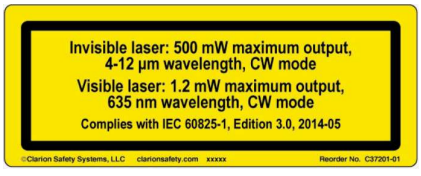
SYSTEM SPECIFICATIONS

Time resolution	1 ms / 10 µs / 1 µs
Signal-to-noise ratio	> 1000 @100 µs integration time
	> 25000 @ 1s integration time
Light source	Exchangeable quantum cascade dual-comb sources
Spectral coverage	Typically 60 cm^{-1} per exchangeable laser source
Center wavelengths	900cm^{-1} - 2300cm^{-1}
Spectral sampling	0.3 cm^{-1}
Optical power	50 mW typical
Graphic user Interface	Transmission and absorbance spectrum display
	Data export in open format
Sample interface	Free-space optical beam
	Coupling to transmission cells, reflection geometry,
	ATR crystals, or optical fibers available upon request
Dimensions	36.3 cm x 26.8 cm x 14.2 cm / 14.3'' x 10.6 x 5.6''
Laser safety class	3B

SAFETY

All statements regarding the safety of operation and technical data only apply when the instrument is operated correctly according to its specifications. The safety of any system incorporating the equipment is the responsibility of the assembler of the system. Inappropriate use of the instrument t may result in permanent eye damage. The instrument falls under the Laser Class given in the General Specifications table that is outlined by the IEC document 60825-1.
Laser Radiation: DO NOT STARE INTO BEAM; CLASS 3B LASER PRODUCT





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

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