nlir

MEMBER OF THE NYNOMIC GROUP

BUNDLE
SPECTROMETER

- 2.0 - 5.0 µm Bandwidth
- Full Spectrum Readout Rate 1.4 - 130 kHz
- SMA-905 Fiber Connector
- Sensitivity up to 1.6k counts/(ms µW)

Contact us: info@nlir.com +45 7174 7870

THE TECHNOLOGY

READ MIR SPECTRA WITH VIS/NIR SPECTROMETER

NLIR recommends two BUNDLE Spectrometer configurations: Flex with Avantes AvaSpec Varius and Edge with Wasatch Cobra 800 VIS/NIR spectrometers that provide outstanding measurement performance unattainable with traditional MIR systems.

The result? High signal response, excellent resolution, and ultra-fast spectral acquisition. Existing software used with the VIS/NIR spectrometer remains fully compatible with the BUNDLE – NLIR provides a straightforward wavelength translation to complete the integration.

Compare the two BUNDLE Spectrometer options below and get in touch with us for more information.

SPECTROMETER | BUNDLE

Developers in both industry and research use mid-infrared (MIR) spectrometers for non-invasive characterization of gases, liquids and solids as well as characterization of light sources.

NLIR is glad to present unprecedented upconversion technology, which can power VIS/NIR spectrometeres with MIR spectra readout in real time.

By combining NLIR's upconversion solution – the SPEKTRUM Wavelength Converter – with high-end, commercially available VIS/NIR spectrometers in a BUNDLE Spectrometer configuration, powerful mid-infrared analysis becomes both accessible and efficient.

The Wavelength Converter shifts the MIR light to the VIS/NIR range, allowing standard silicon-based spectrometers to detect it. The two devices are simply connected via an optical fiber – no additional components or setup required ■

The Flex BUNDLE Spectrometer consists of NLIR's SPEKTRUM Wavelength Converter and Avantes Avaspec Varius spectrometer.

The Edge BUNDLE Spectrometer consists of NLIR's SPEKTRUM Wavelength Converter and Wasatch Cobra 800 VIS/NIR spectrometer.

THE TECHNOLOGY

DETAILS

BUNDLE Spectrometer	Flex	Edge
Optical Bandwidth	2.0 – 5.0 µm	
Resolution	3 cm^{-1}	2.5 cm^{-1}
Exposure Time	0.009 ms – 40 s	0.0013 – 0.654 ms
Max. Readout Rate	1.4 kHz	130 kHz
Bit Depth	16	12
Sensitivity	8k counts/(ms µW)	1.6k counts/(ms µW)
Dark Noise Std.	60 counts	1 count
Minimum Detectable Power in 100 ms	75 pW/nm	25 pW/nm
Coupled With VIS/NIR Spectrometer	Tailored AvaSpec VARIUS	Tailored Wasatch Cobra 800
Optical Input[1]	SMA-905 Fiber Connector	
Optical Interconnect Fiber	FC/PC 50 µm Na 0.22	
Rec. IR Fiber Core Size	100, 200, 300 µm	
Polarization Detection	Vertical	
Power Consumption	60 – 90 W	
Supply Voltage	19 V	
Maximum Operating Temperature	30 °C	
NLIR's Wavelength Converter Measurements (L × W × H)	306 × 200 × 100 mm	
NLIR's Wavelength Converter Weight	5 kg	

[1] Free-space input available

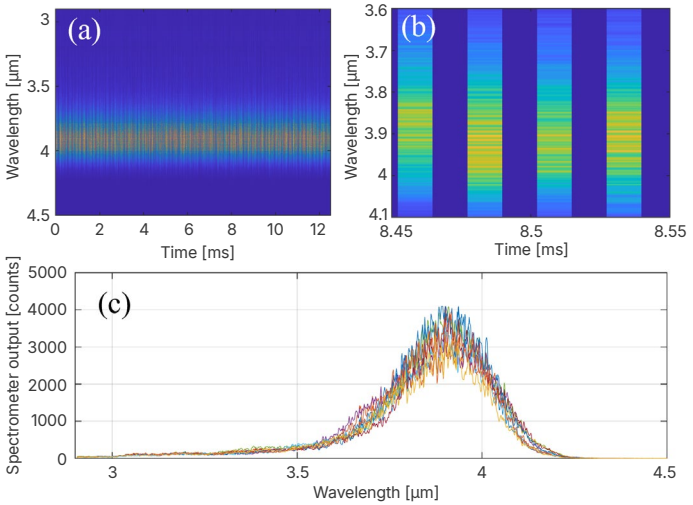
APPLICATION EXAMPLE AND TECH DRAWINGS

40 KHZ SINGLE PULSE MEASUREMENT

Single pulses from a super-continuum light source with a bandwidth of 3.0 µm – 4.2 µm and a repetition rate of 40 kHz of 2 ns pulses were measured with 80 kHz readout rate. In the figure, (a) shows raw data of 12 ms data acquisition, (b) shows a zoom where every other readout is empty as expected from 40 kHz rep-rate and 80 kHz sampling, (c) shows 10 raw consecutive spectra.

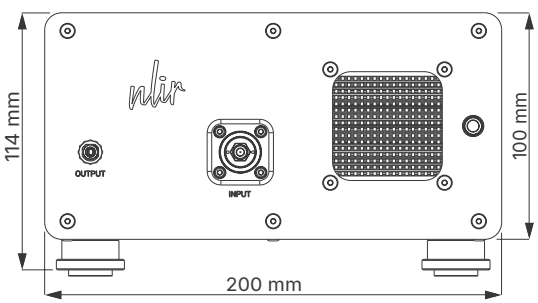
The fluctuations in the spectra are by far dominated by noise from the light source.

Based on this measurement, NLIR'S Edge BUNDLE Spectrometer is capable of characterizing fast modulations of infrared lasers and other dynamic events.

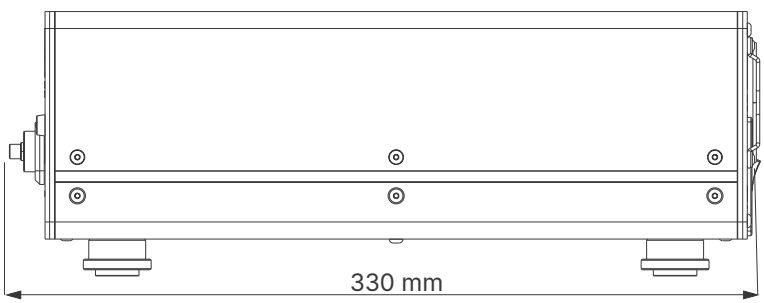


TECH DRAWINGS

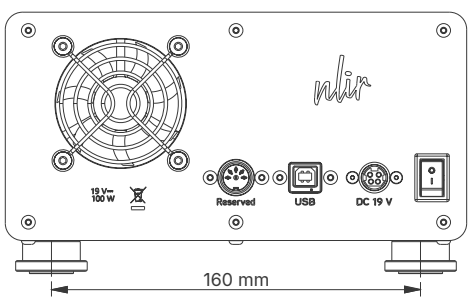
FRONT



SIDE



BACK



DESCRIPTION

The drawings provide detailed dimensions and an overview of the NLIR's SPEKTRUM Wavelength Converter's design.

The front view highlights the input port, output port and ventilation grille.

Note that all measurements are in mm ■