

TUNE WAVELENGTH CONVERTER

- 2.3 - 4.2 μm Input
- Instant Conversion From MIR to VIS/NIR
- 727 - 849 nm Output
- High Conversion Efficiency



THE TECHNOLOGY

WAVELENGTH CONVERTER | TUNE

The NLIR wavelength converters convert mid-infrared light into visible/near-infrared light.

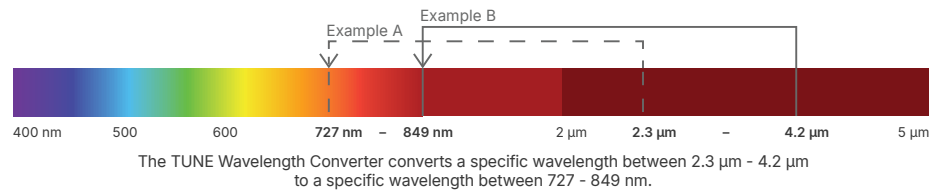
NLIR's TUNE Wavelength Converter efficiently converts a narrow spectral band within the 2.3 - 4.2 μm range directly to 727 - 849 nm with a high conversion efficiency up to 10 %. The center wavelength can be precisely tuned, allowing selection of the exact wavelength for conversion.

The device ensures minimal thermal noise interference, as ambient infrared radiation is not converted and remains undetected. This technology enables the use of standard silicon-based detectors for mid-infrared light measurements.

Depending on the application

and measurement requirements, various VIS/NIR detectors such as spectrometers, APDs, PMTs, or SPADs can be used to analyse the spectral or temporal content of the converted mid-infrared light.

For increased convenience, the device is fiber-coupled at both the input and output ports ■



DETAILS



NLIR's TUNE Wavelength Converter with detector.



NLIR's TUNE Wavelength Converter input and output.

TUNE Wavelength Converter

Optical Bandwidth Input	2.3 – 2.8 μm	2.7 – 4.2 μm
Optical Bandwidth Output	727 – 771 nm	763 – 849 nm
Conversion Bandwidth	20 – 25 nm	25 – 300 nm
Conversion Efficiency ¹	3 %	
Output Noise ²	20 pW	
Optical Input	SMA-905 Fiber Connector	
Optical Output	FC/PC Fiber Connector	
Rec. IR Fiber Core Size	100, 200, 300 μm	
Polarization Sensitivity	Vertical	
Power Consumption	60 – 90 W	
Supply Voltage	19 V	
Operating Temperature	18 – 30 °C	
Measurements (L × W × H)	306 × 200 × 100 mm	
Weight	5 kg	
Mounting	4 × 1" Posts	
Tuning Speed	< 1 s	
Control Interface	USB-B	

¹ Fiber-fiber conversion efficiency measured with a 100 μm core size 0.2 NA InF₃ input fiber or a 50 μm core size 0.22 NA input fiber. With optional free-space input, the conversion efficiency can be 10 % with optimally aligned input

² Depending on wavelength

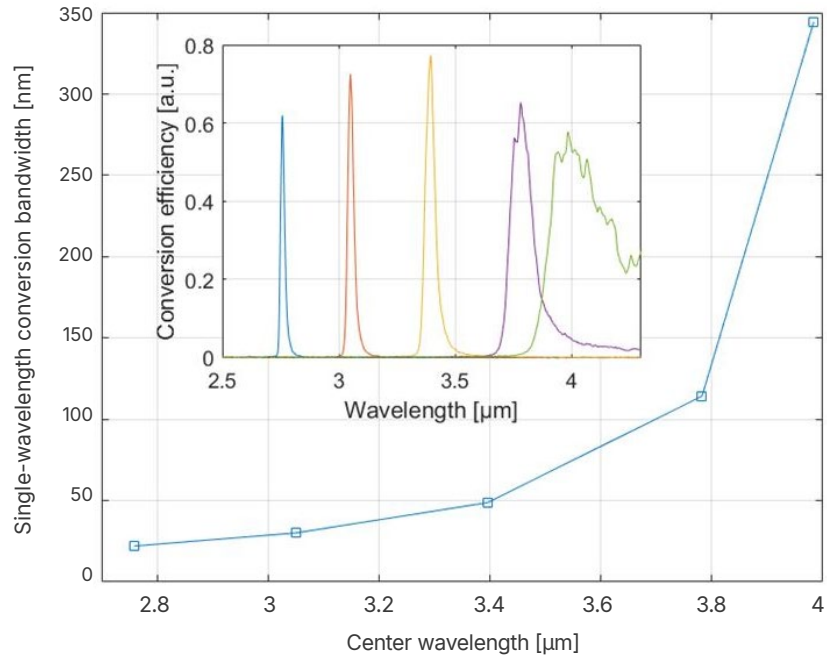
THE TECHNOLOGY AND TECH DRAWINGS

WAVELENGTH TUNING PROPERTIES

When tuning the wavelength conversion band, both the center wavelength and the bandwidth of the conversion change.

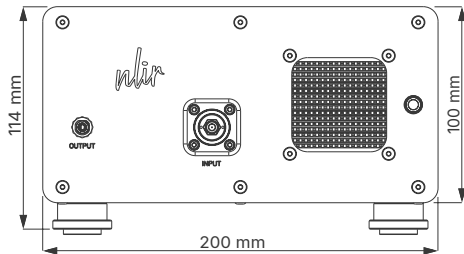
As shown in the figure, when setting shorter wavelengths near 2.7 μm to convert, the conversion bandwidth is approximately 25 nm. Conversely, when tuned to the longest wavelengths around 4.0 μm , the bandwidth expands to approximately 300 nm.

The inset displays actual measurements of the conversion efficiency at different tuning settings.

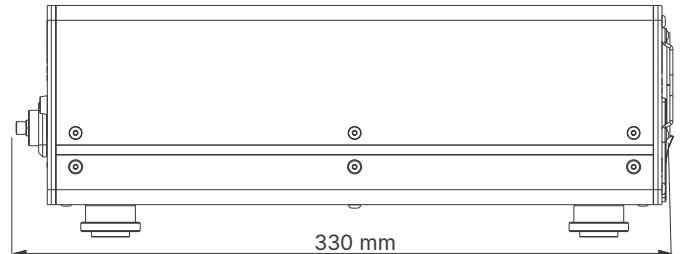


TECH DRAWINGS

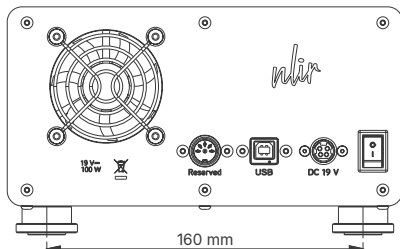
FRONT



SIDE



BACK



DESCRIPTION

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

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

Note that all measurements are in mm ■