



Optical Parametric Converter MidA 3-4

ALPHALAS GmbH offers a class of tandem optical parametric generator (OPO) and optical parametric amplifier (OPA) that can customize the mid-IR tunable wavelength range. The customization area for single ps- and ns-pulses OPO/OPA, at 500-1000 Hz is between 2.5 and 4.5 micrometers. We offer a pair of nonlinear crystals that can cover this entire spectral idler range.

Model MidA 3-4 is one of the most efficient optical parametric converters for high pulsed energy (>1mJ) at kHz repetition rate within peaks of water and lipid absorption around 3 000 nm and 3 400 nm respectively.

Technical Specifications

Input requirements for OPO/OPA pumping	
• pumping wavelength range, nm	1030 to 1064 nm
• pump pulse energy, mJ	1-5 mJ – for OPO channel 5 - 30 mJ for OPA channel
• pump pulse durations, ns	0.5 – 2 ns
• pump pulse polarization	linear
• pump pulse repetition rates, Hz	500 – 1000 Hz
• pump pulse beam quality factor	$M^2 < 10$

Output Characteristic OPO/OPA	
OPO: Idler tuning range, nm * *temperature tuning between 3.0 to 3.4 μm by changing the temperature * stabilization of the temperature of the non-linear crystal, accuracy	2900 nm - 4000 nm $\leq \pm 0.5 \text{ }^\circ\text{C}$
OPO: Signal tuning range, nm at 1064 nm pump	1680 nm – 1449 nm
OPO Idler output energy, mJ for the spectral range from 3.0 μm to 3.45 μm RMS deviation of output energy, *** %	$\geq 0.5 \text{ mJ}$; $\leq 2.0\%$; at 500 Hz
OPO Idler pulse duration, ns	$\leq 1 \text{ ns}$
Signal output energy	$\geq 1 \text{ mJ}$
Beam Quality factor	$M^2 < 30$
OPA: Idler tuning range, nm *temperature tuning between 3.0 to 3.4 μm by changing the temperature of the nonlinear crystal * stabilization of the temperature of the non-linear crystal, accuracy	2900 nm - 4000 nm 3000 nm to 3400 nm temperature tuning range $\leq \pm 0.5 \text{ }^\circ\text{C}$
OPA : Signal tuning range, nm	1680 nm – 1449 nm
OPA Idler output energy, mJ RMS deviation of output energy ***, %	$\geq 3.5 \text{ mJ}$; for the spectral range from 3.0 μm to 3.45 μm $\leq 2\%$; at 500Hz



OPA Idler pulse duration, ns	≤1.7 ns
*** Long-term stability of the output optical characteristics in continuous operation over 168 hours: full preservation of the generation spectral range for the entire period as a deviation from the rms value of the output power equal to or less than 2%.	
Includes : <ul style="list-style-type: none"> Complete set of power and connecting cables for operation of the equipment in a laboratory environment. 	
Power supply: standard single-phase electrical distribution network voltage of 230 V/ 50 Hz.	
Environment Compatible with standard laboratory working environment with operating temperature range: 25 +1/-3 °C, temperature stability: +/- 2 degree (for 30 min measurement interval), and relative humidity <70%, non-condensing	

Optical Parametric Oscillator	
Pump efficiency	Idler beam quality
Optical Parametric Amplifier	
Pump efficiency	Idler beam quality