

# ORPHEUS-IV

## Non-Collinear Optical Parametric Amplifier



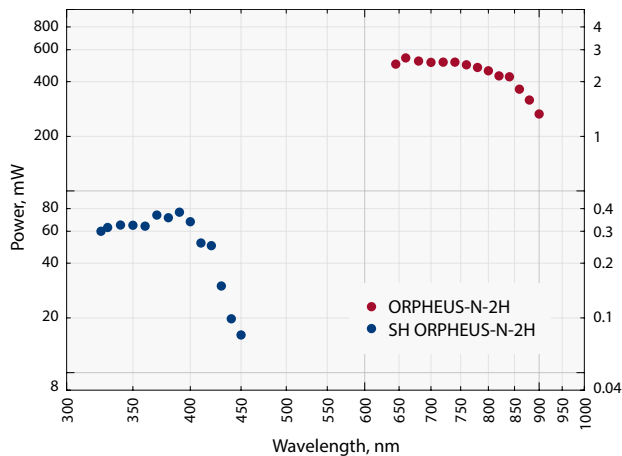
### FEATURES

- < 30 fs pulse duration
- Integrated prism compressor
- Adjustable bandwidth and pulse duration
- Single pulse – 1 MHz repetition rate
- Computer controlled

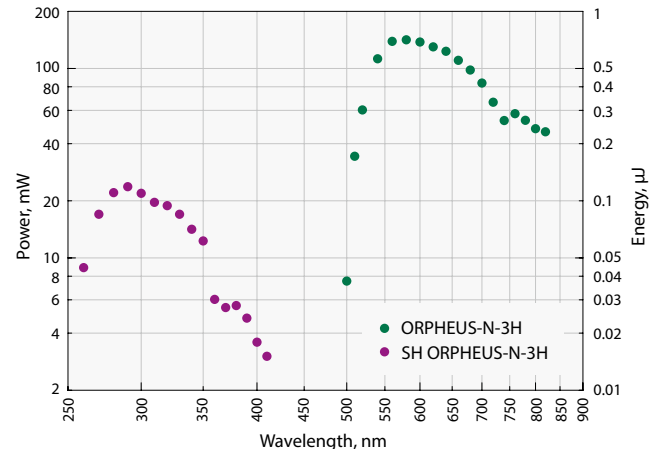
ORPHEUS-N is a non-collinear optical parametric amplifier (NOPA) pumped by the PHAROS laser system. Depending on the ORPHEUS-N model, it has a built in second or third harmonic generator producing 515 nm or 343 nm pump. ORPHEUS-N with second harmonic pump (ORPHEUS-N-2H) delivers pulses of less than 30 fs in 700–850 nm range with average power of more than 0.5 W at 700 nm<sup>1)</sup>. ORPHEUS-N with third harmonic pump (ORPHEUS-N-3H) delivers pulses of less than 30 fs in 530–670 nm range with average power of more than 0.2 W at 550 nm\*. ORPHEUS-N works at repetition

rates of up to 1 MHz. The device is equipped with computer controlled stepping motor stages, allowing automatic tuning of the output wavelength. An optional signal's second harmonic generator is also available, extending the tuning range down to 250–450 nm. Featuring a state of the art built in pulse compressor ORPHEUS-N is an invaluable instrument for time-resolved spectroscopy. More than two ORPHEUS-N systems can be pumped with a single PHAROS laser providing several pump and/or probe channels with independent wavelength tuning.

<sup>1)</sup> When pumped with 6 W @ 1030 nm, 200 kHz.

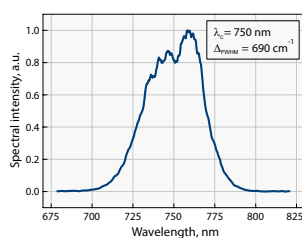


Typical tuning curve of ORPHEUS-N-2H  
Pump: 6 W, 30 μJ, 200 kHz

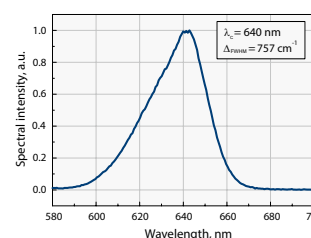
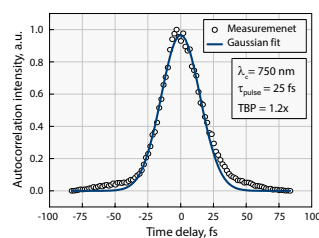


Typical tuning curve of ORPHEUS-N-3H  
Pump: 6 W, 30 μJ, 200 kHz

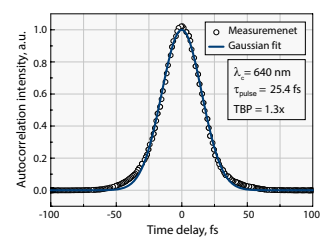
For custom tuning curve value visit <http://toolbox.lightcon.com/tools/tuningcurves/>



Typical output of ORPHEUS-N-2H



Typical output of ORPHEUS-N-3H

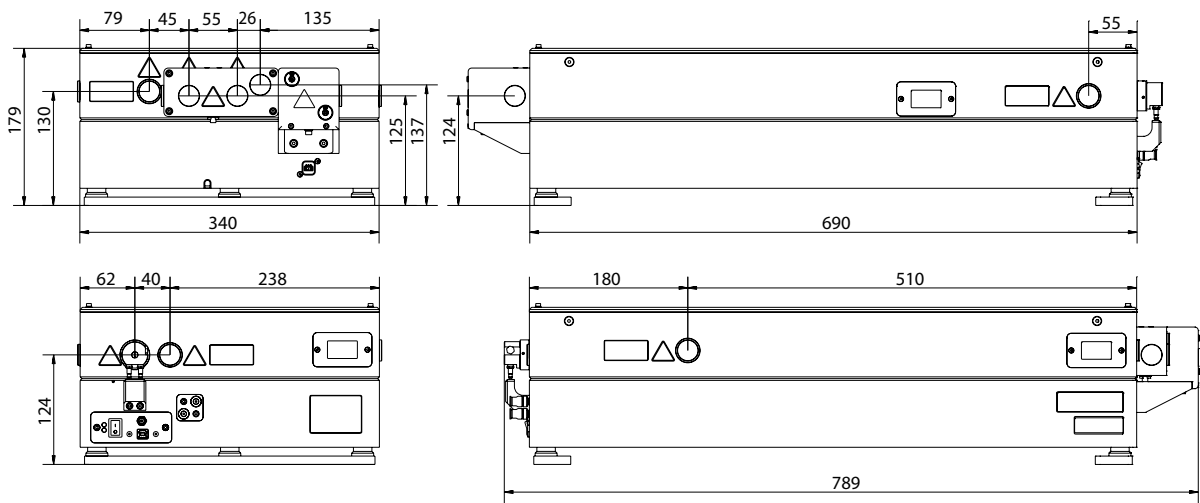


**SPECIFICATIONS**

Product name		<i><b>ORPHEUS-N-2H</b></i>	<i><b>ORPHEUS-N-3H</b></i>			
OUTPUT FROM ORPHEUS-N						
Tuning range	Signal	650 – 900 nm		520 – 900 nm		
	Idler	—		—		
Integrated second (third) harmonic generation efficiency	At designated output port using PIM	> 35 % (515 nm)		> 25 % (343 nm)		
Pump power (maximum)		8 W		8 W		
Conversion efficiency at peak	Signal	10 – 200 μJ		12 – 200 μJ		
		700 nm	800 nm	580 nm	700 nm	800 nm
		> 7 %	> 5 %	> 1.3 %	> 0.7 %	> 0.3 %
Pulse duration after compressor	530 – 670 nm	—		< 30 fs		
	670 – 900 nm	—		< 80 fs		
	700 – 850 nm	< 30 fs		—		
Long term power stability	8 hours	< 2 % @ 800 nm		< 2 % @ 800 nm		
Pulse energy stability	1 min	< 2 % @ 800 nm		< 2 % @ 800 nm		

**OUTPUT FROM WAVELENGTH EXTENSIONS**

At peak	325 – 450 nm (SH of Signal)	> 10 % (of Signal)	—		
	260 – 450 nm (SH of Signal)	—	> 10 % (of Signal)		



ORPHEUS-N outline drawings



ORPHEUS-N setup example