

# ORPHEUS | F

## Broad-bandwidth Hybrid Optical Parametric Amplifier

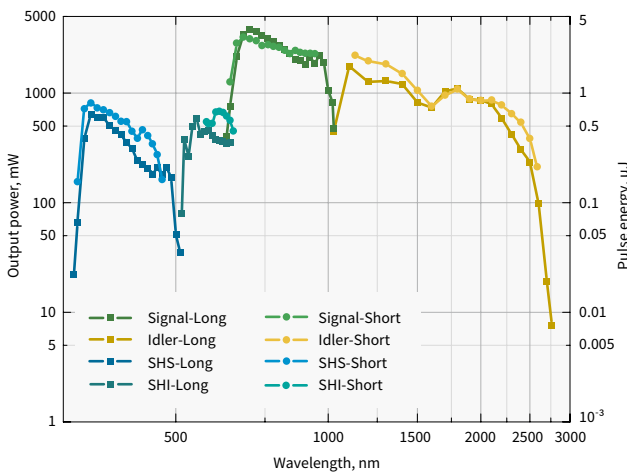
### FEATURES

- Combination of the best collinear and non-collinear OPA features
- 650 – 900 nm & 1200 – 2500 nm tuning range
- Single-shot – 2 MHz repetition rate
- < 100 fs pulse duration
- Adjustable spectral bandwidth
- Optional long pulse mode for gap-free tunability

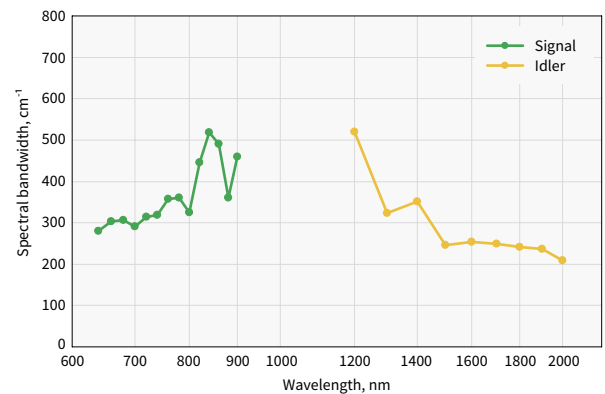


ORPHEUS-F is a hybrid optical parametric amplifier, combining the short pulse duration produced by a non-collinear OPA and the wide wavelength tuning range offered by a collinear OPA. The Signal pulses are tunable in a 650 – 900 nm wavelength range and can be compressed with a simple prism-based setup down to < 60 fs. The Idler pulses are tunable in a 1200 – 2500 nm tuning range and compressed

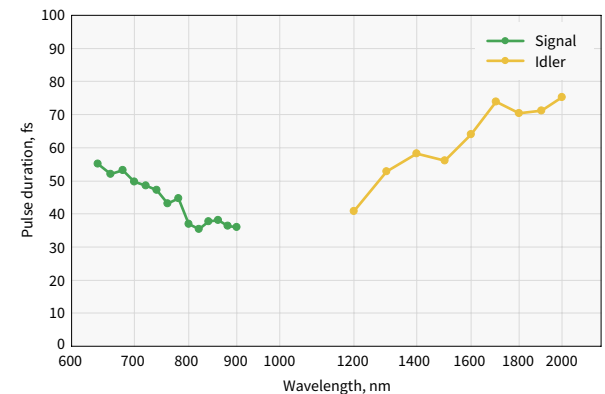
down to 40 – 100 fs. Furthermore, an optional long-pulse mode is available for accessing the 900 – 1200 nm tuning range. Our non-collinear OPA ORPHEUS-N-2H produces broader bandwidths, is compressible down to <20 fs, but has a limited tuning range of 650 – 900 nm, while the standard ORPHEUS provides longer pulses, 200 – 300 fs. Thus, for many applications, ORPHEUS-F is the optimal choice.



Typical tuning curves of **ORPHEUS-F**.  
Pump: 40 W, 40 μJ, 1000 kHz



Typical spectral bandwidth of ORPHEUS-F



Pulse duration after compression of ORPHEUS-F

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

## SPECIFICATIONS

Model	<b>ORPHEUS-F</b>		
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### OUTPUT FROM ORPHEUS-F

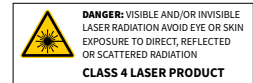
Mode of operation		Short pulse mode	Long pulse mode
Tuning range	Signal	650 – 900 nm	650 – 1010 nm
	Idler	1200 – 2500 nm	1050 – 2500 nm
Integrated 2H (515 nm) generation efficiency		> 35 % <sup>1)</sup>	
Maximum pump power		80 W	
Pump pulse energy		10 – 500 μJ	
Conversion efficiency at peak		> 10% (Signal and Idler combined)	
Pulse duration before compression		< 290 fs	
Spectral bandwidth	650 – 900 nm	200 – 750 cm <sup>-1</sup>	75 – 220 cm <sup>-1</sup>
	800 – 900 nm	< 55 fs	n/a
Pulse duration after compressor	650 – 800 nm	< 70 fs	
	1200 – 2000 nm	< 100 fs	
	Typical: 650 – 900 nm	25 – 70 fs	
Typical: 1200 – 2000 nm	40 – 100 fs		
Compressor transmission	650 – 900 nm	> 65%	n/a
	1200 – 2000 nm	> 80%	
Long-term power stability, 8h <sup>2)</sup>		< 2% @ 800 nm	
Pulse-to-pulse energy stability, 1 min <sup>2)</sup>		< 2% @ 800 nm	

### OPTIONAL WAVELENGTH EXTENSIONS

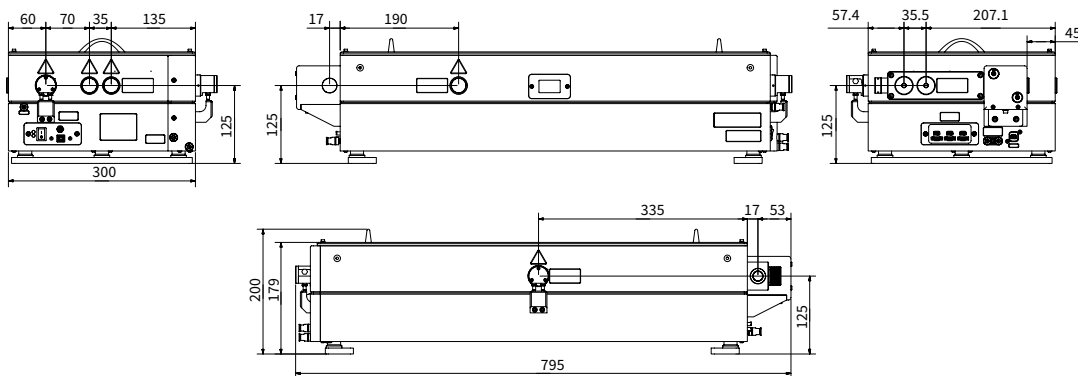
Conversion efficiency at peak	325 – 450 nm (SHS)	> 1%	n/a
	325 – 505 nm (SHS)	n/a	> 1%
	525 – 650 nm (SHI)		> 0.5%
	600 – 650 nm (SHI)	> 0.5%	n/a
	210 – 252 nm (FHS)	n/a	> 0.1%
	263 – 325 nm (FHI)		> 0.1%
	2200 – 4200 nm (DFG1)	Contact sales@lightcon.com	
	4000 – 16000 nm (DFG2)		

<sup>1)</sup> At designated output port.

<sup>2)</sup> Expressed as NRMSD (normalized root mean squared deviation).



## DRAWINGS



ORPHEUS-F drawings