

# WHITE DWARF

OPCPA 5W powered by Coherent



## ACCELERATE YOUR RESEARCH

The **White Dwarf** OPCA powered by Coherent is a high-performance femtosecond laser fully integrated in a compact housing. Our latest version offers wavelength tunability and a dual output option for pump-probe spectroscopy making it the most flexible non-colinear OPA on the market.

### AVERAGE POWER

5 W

### WAVELENGTH OPTIONS

650 nm ————— 2000 nm

### PULSE DURATION

10 fs ————— 50 fs

### PUMPED BY

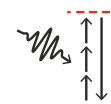
Coherent Monaco ————— 60 W

### REPETITION RATE

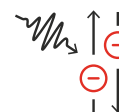
750 kHz ————— 10 MHz



- in-vivo brain imaging



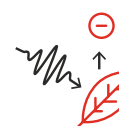
- Multiphoton absorption imaging



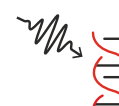
- Spin dynamics
- Superconductivity



- Deep optical imaging of tissue



- Carrier dynamics of solid materials
- Photosynthesis



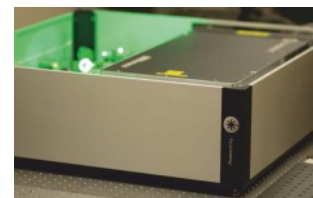
- Optogenetics

# PRODUCT SPECIFICATIONS

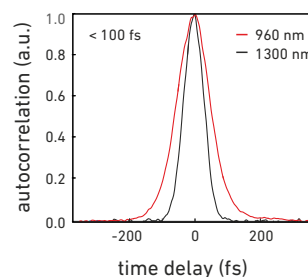
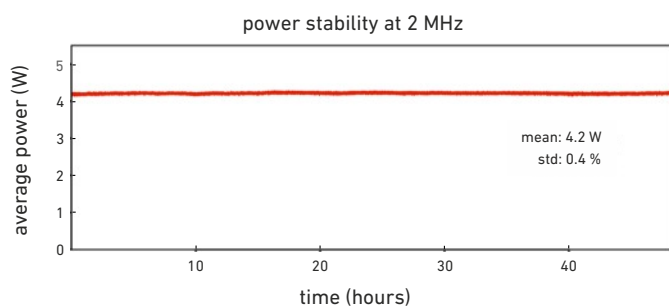
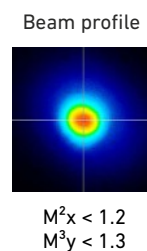
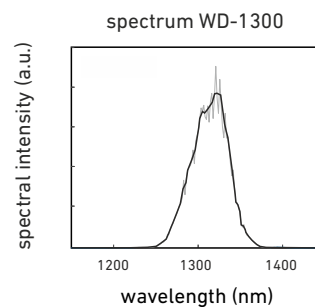
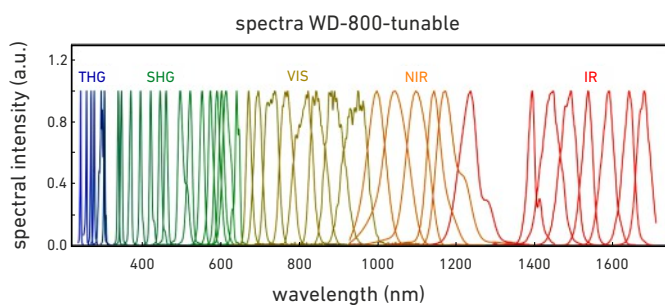
	for multi-photon microscopy		for ultrafast material science		for few-cycle pulses
	WD-1300	WD-1300-dual	WD-800-tunable-dual	WD-800	WD-2000
Central wavelength	1300 nm	Two synchronized outputs: 960 and 1300 nm, or 1300 and 1700 nm		Two synchronized outputs: I: 650 - 2000 nm II: 650 - 960 nm	
Pulse duration (FWHM)	< 50 fs	< 50 fs	I: < 100 fs II: < 30 fs	< 9 fs	< 30 fs
Average power	> 4 W	> 2 W each output	> 2 W each output	> 5 W	> 5 W
Pulse energy	> 4 $\mu$ J	> 2 $\mu$ J each output	> 2 $\mu$ J each output	> 5 $\mu$ J	> 5 $\mu$ J
Repetition rate	single-shot to 10 MHz	single-shot to 10 MHz	single-shot to 4 MHz	single-shot to 10 MHz	single-shot to 10 MHz
Beam quality M2	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Power stability (12 hrs)	< 1 %	< 1 %	< 1 %	< 1 %	< 1 %
Dimensions	80 cm x 80 cm	80 cm x 120 cm	80 cm x 120 cm	80 cm x 80 cm	80 cm x 120 cm
SHG, THG or mid-IR	on request				
Pump laser incl.	Coherent Monaco 60 W	Coherent Monaco 60 W	Coherent Monaco 60 W	Coherent Monaco 60 W	Coherent Monaco 60 W
CEP stability				on request	on request

## HIGHLIGHTS

The **White Dwarf** OPCPA powered by Coherent has its pump laser already on board to enter the next level of stability. We integrate the Coherent Monaco industrial femtosecond laser on a small footprint with state-of-the-art White Dwarf OPCPA technology to bring industrial performance to scientific output parameters. The White Dwarf OPCPA can be equipped as dual output system to offer pump-probe capabilities for ultrafast material science or as fixed wavelength version for high-volume 3D bio-imaging.



## PERFORMANCE EXAMPLES



Measurement data are examples. Specifications are subject to change without notice. Copyright 2020 Class 5 Photonics GmbH

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# WHITE DWARF HE OPCPA 30W



## ACCELERATE YOUR RESEARCH

The *White Dwarf HE* OPCPA is a compact, tunable femtosecond laser system satisfying the most discerning scientists in a variety of disciplines. It offers shortest pulse duration, high temporal contrast and optionally CEP stability for demanding applications. A dual output option is available for pump-probe spectroscopy.

### AVERAGE POWER

5 W ————— 30 W

### WAVELENGTH OPTIONS

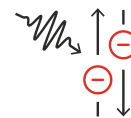
800 nm ————— 3000 nm

### PULSE DURATION

9 fs ————— 50 fs

### REPETITION RATES

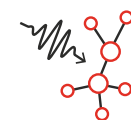
10 kHz ————— 1 MHz



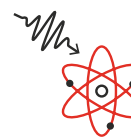
- Spin dynamics
- Superconductivity



- Carrier dynamics of solid materials
- Photosynthesis



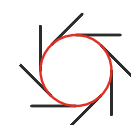
- Cluster and gasphase dynamics



- Attosecond dynamics in solids and gases



- Strong-field physics
- Relativistic plasma physics



- Particle accelerators



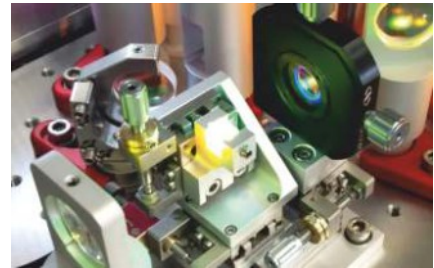
- Laser user facilities

# PRODUCT SPECIFICATIONS

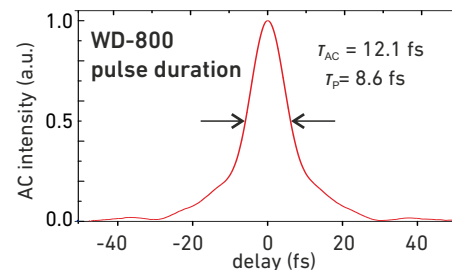
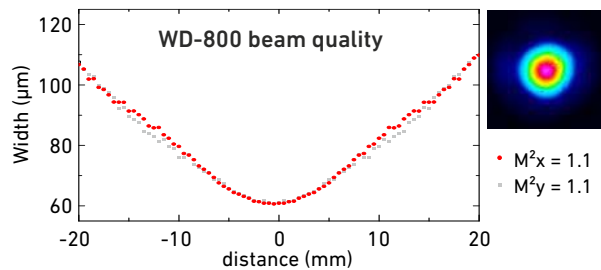
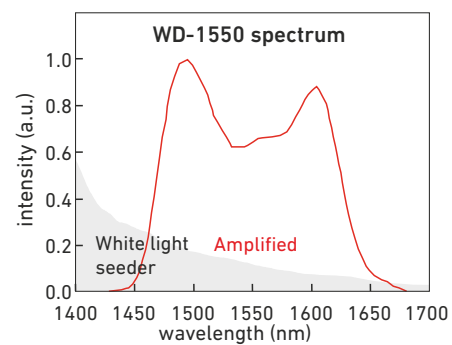
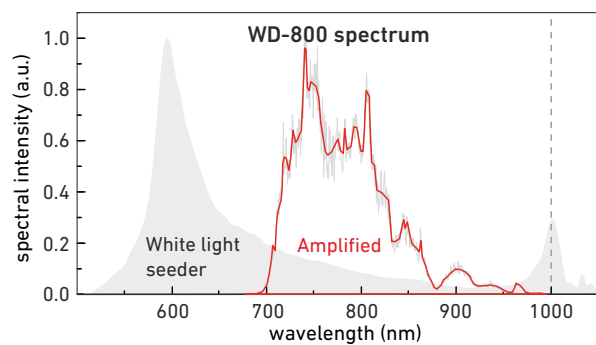
	WD-HE-800-tunable	WD-HE-800	WD-HE-1550	WD-HE-2000	WD-HE-3000
Central wavelength	700 - 950nm	800 nm	1550 nm	2000 nm	3000 nm
Tunability optional	700 - 2000 nm	700 - 950 nm	1400 - 1700 nm	2000 - 2400 nm	2600 - 3500 nm
Pulse duration (FWHM)	< 30 fs	< 9 fs	< 35 fs	< 30 fs	< 50 fs
Average power	5 - 30 W	5 - 30 W	5 - 30 W	5 - 30 W	4 - 20 W
Pulse energy	> 40 - 300 $\mu$ J	> 40 - 300 $\mu$ J	> 40 - 300 $\mu$ J	> 40 - 300 $\mu$ J	> 40 - 200 $\mu$ J
Repetition rate	10 kHz - 1 MHz	10 kHz - 1 MHz	10 kHz - 1 MHz	10 kHz - 1 MHz	10 kHz - 1 MHz
CEP stability		on request	on request	on request	on request
SHG, THG, HHG or mid-IR	on request	on request	on request	on request	on request
Dual output	on request	on request	on request	on request	on request
Pump laser	50 - 300 W	50 - 300 W	50 - 300 W	50 - 300 W	50 - 300 W

## HIGHLIGHTS

The **White Dwarf HE** OPCPA is an ultrafast, high-power optical parametric chirped pulse amplifier. It comes as a complete system at different power levels, pumped by an industrial Yb:fiber or Yb:YAG laser with up to 300 W, making it robust, reliable and easy-to-use. The different wavelength versions covering the near- to mid-infrared range open a wide field of applications. All versions can be combined to dual output pump-probe systems with different pulse properties in pump and probe output and intrinsic synchronization.



## PERFORMANCE EXAMPLES



Measurement data are examples. Specifications are subject to change without notice.  
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# SUPERNOVA

## OPCPA 100W



## DISCOVER NEW FRONTIERS

The *Supernova* OPCPA is the most powerful tunable femtosecond laser on the market.

Our award-winning flagship product is designed for the ultimate demanding applications offering extreme power, ultrashort pulses, dual output versions and optional CEP stability.

### AVERAGE POWER

20 W ————— 100 W

### WAVELENGTH OPTIONS

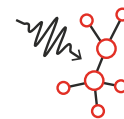
800 nm ————— 3000 nm

### PULSE DURATION

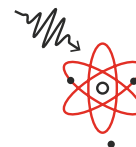
9 fs ————— 50 fs

### REPETITION RATES

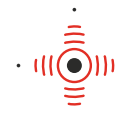
20 kHz ————— 100 kHz



- Cluster and gasphase dynamics



- Attosecond dynamics in solids and gases



- Inspection in EUV lithography



- Strong-field physics
- Relativistic plasma physics



- Free-electron lasers



- Particle accelerators



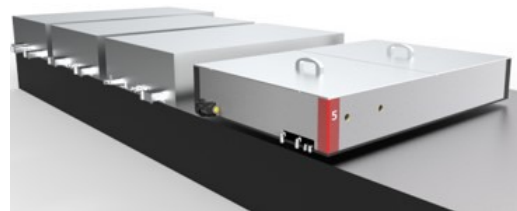
- Laser user facilities

# PRODUCT SPECIFICATIONS

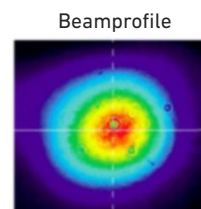
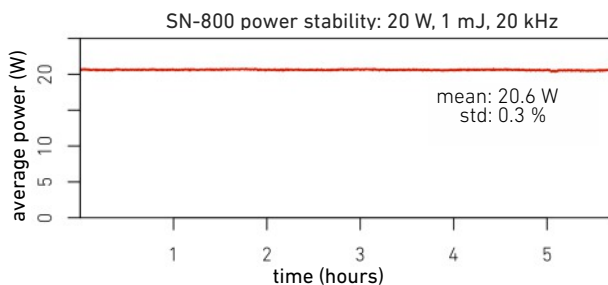
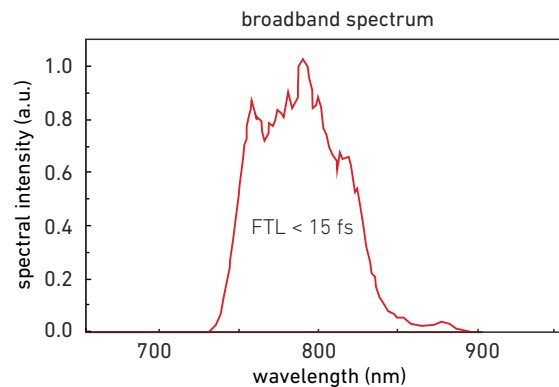
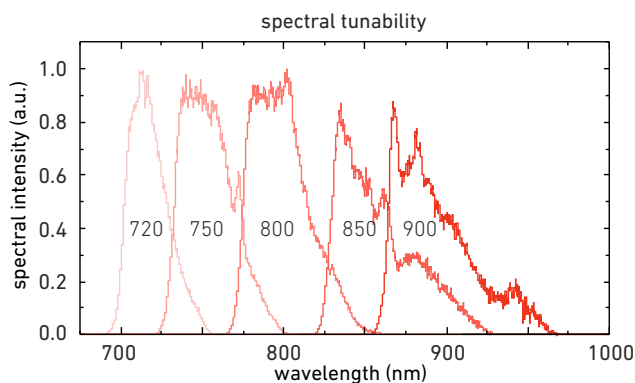
	SN-800	SN-1550	SN-2200	SN-3000
Central wavelength	800nm	1550 nm	2200 nm	3000 nm
Pulse duration (FWHM)	< 9 fs	< 35 fs	< 30 fs	< 50 fs
Average power	> 20 - 100 W	> 20 - 100 W	> 20 - 100 W	> 20 - 100 W
Pulse energy	> 1 mJ	> 1 mJ	> 1 mJ	> 1 mJ
Repetition rate	20 - 100 kHz	20 - 100 kHz	20 - 100 kHz	20 - 100 kHz
CEP stability	on request	on request	on request	on request
HHG extension	on request	on request	on request	on request
Pump laser	300 W - 1 kW	300 W - 1 kW	300 W - 1 kW	300 W - 1 kW
Supernova HE at 1 kHz	on request	on request	on request	on request

## HIGHLIGHTS

The **Supernova** OPCPA is our award-winning flagship product with extremely short pulse durations and a high temporal contrast. Wavelength flexibility, options for multiple outputs and CEP stability allow tailoring it to custom multi-color experiments at highest average power and unprecedented stability over days. This allows leading scientists to push research to new limits. The product is also available as high energy version (HE) with multi-millijoule pulse energies, pumped by Yb:YAG thin-disk lasers.



## PERFORMANCE EXAMPLES



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