

### **AVUS** Optical Parametric Amplifier

### High Power fs OPA

- AVUS is the very latest Optical Parametric Amplifier (OPA) providing widely tunable high-energy pulses. It is ideal for use with 1 µm femtosecond lasers and opens doors for up to 50 W pump power.
- The user-friendly and maintenance-free unit is air-cooled and constructed with a monolithic case design for long-term thermal stability, even at maximum pump power.
- The fully-automated and alignment-free unit covers a wide wavelength range, while the integrated tuning and automatic wavelength separation of the AVUS maintain the same beam position and direction for all wavelengths.



- OPA for 1 µm pump laser
- 50 W maximum pumping power
- Air-cooling and monolithic case for long-term temperature stability
- Tunable from 210 nm ... 11 μm (UV, VIS, IR)
- Completely automated and fully computer controlled
- Long-life operation with sealed inner case to protect sensitive components
- TCP/IP remote control with standardized command set for easy programming
- 24/7 integrated performance monitoring of both laser system and AVUS
- $\hfill\square$  Optional bypass for SHG beam (green) and pump beam



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### **Application Examples**

- Nonlinear microscopy
- Femtosecond pump probe spectroscopy
- Time-resolved spectroscopy and Photoluminescence (TR3, TRPES, TRPL)
- Photoelectron-photoion coincidence spectrometry (PEPICO)
- Coherent anti-Stokes Raman Spectroscopy (CARS)
- Two-dimensional infrared spectroscopy (2D-IR)
- Terahertz emission studies

#### User-Friendly by Software and Hardware Design

No need for external beam routing or separation: the integrated tuning and automatic wavelength separation of the AVUS maintain the same beam position and direction for all wavelengths.



#### Beam Output

The same beam position and direction for all wavelengths is maintained by the software and hardware features of the AVUS.

### Pulse Energy vs. Wavelength



Typical pulse energy vs. wavelength, including UV/VIS and IR extension (pumped with 40  $\mu$ J pump laser at 1 MHz repetition rate)



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### **AVUS Output Spectra**



# Pulse Duration and Transform Limits



Typical output spectra and corresponding bandwidths (pumped with 40 µJ pump laser at 1 MHz repetition rate)

Typical pulse widths (assuming sech<sup>2</sup> pulse shape) and their corresponding transform limits of AVUS including extensions (pumped with 40 µJ pump laser at 1 MHz repetition rate)

### Dimensions





## **AVUS** Specifications

Pump Laser Parameters	
Input Laser Type	fs based laser systems
Input Power	Up to 50 W
Input Energy	8 200 µJ
Input Center Wavelength	1020 1070 nm
Input Polarization	Any orientation, linear
Repetition Rate	Up to 1 MHz
Pulse Width	200 400 fs, others on request
Main Specifications	
Conversion Efficiency at Peak	12 %, Signal + Idler; measured at 35 W input power
Time Bandwidth Product	< 1
Pulse Width	Typically 200 fs, others on request
Output Bandwidth	70 120 cm <sup>-1</sup> (typical)
Polarization	AVUS incl. UV/VIS extension: horizontal; IR extension: vertical
Performance Monitoring	Integrated 24/7 monitoring and data logging of both pump laser and OPA condition (e.g. beam position / pointing, repetition rate, pulse energy)
Wavelength Calibration	Factory calibrated, ± 2 nm at 650 - 950 nm
Beam Routing and Separation	Integrated, fully automated
Mechanical Design	Monolithic
Cooling	Air-Cooled
Software, PC, and Automation	Included (Embedded PC)
Remote Control	Possible via TCP/IP (SCPI command set), Windows Remote Desktop

#### **Tuning Range**

Base Unit	630 1020 nm, 1040 2600 nm
UV / VIS Extension (optional)	210 255 nm, 260 510 nm, 520 630 nm
IR Extension (optional)	Up to 11 µm

#### **Dimensions and Power**

Dimensions	$677 \mbox{ mm} \ x \ 163 \mbox{ mm} \ x \ 447 \mbox{ mm}$ (See drawings for details; Dimensions may vary depending on options)
Power	100 240 V, 50 60 Hz, max. 100 W

Your local contact:

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