Laser Frequency Conversion Device

AVUS Optical Parametric Amplifier

The variable wavelength laser can be obtained by optical parametric amplifiers (OPA). The AVUS OPA provides a wide range of adjustable high energy pulses. It can use 1μm femtosecond laser up to 50 W as pump source. The device uses an air-cooled, integral housing design, which gives users a better maintenance-free experience and provides long-term thermal stability even at maximum pump power.

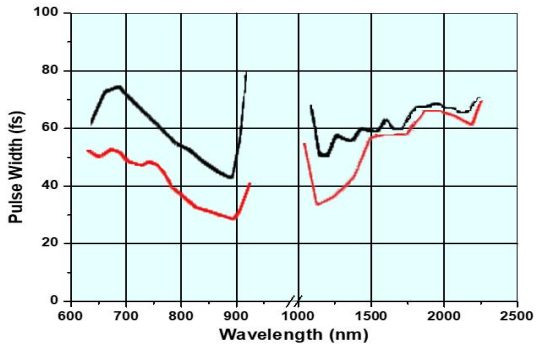
Main features:

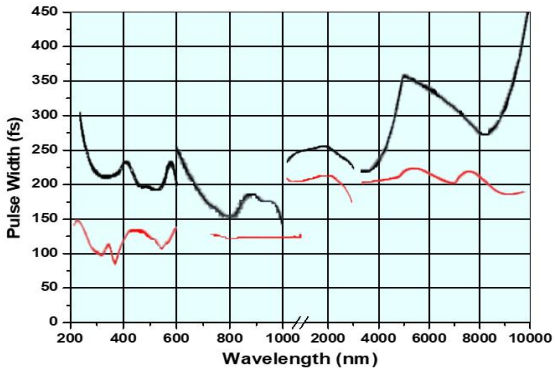
- Provide two versions: < 200 fs and < 70 fs
- Built-in sealed shell design with a longer service life
- Air cooling and integral housing design to ensure long-term temperature stability
- Fully automated and computer controlled
- For 1 μm pumped laser (OPA)
- Maximum pump power 50 W
- TCP/IP remote control with standardized command set for easy programming
- 24/7 integrated performance monitoring

Typical applications:

- Femtosecond pumped probe spectroscopy
- Photoelectron synchronous spectroscopy (PEPICO)
- Time-resolved spectroscopy and photoluminescence (TR3, TRPES, TRPL)
- Nonlinear microscope
- Coherent Anti-Stokes Raman Spectroscopy (CARS)
- Two-dimensional infrared spectroscopy (2D-IR)
- Study on terahertz radiation

AVUS SP |70 fs	AVUS |200 fs
Full-automatic and alignment-free devices provide pulses of less than 70 fs pulse width. Because the short pulse compression device provides sufficient dispersion control, AVUS SP is very suitable for the field of multi-photon microscopy.	Full-automatic and alignment-free devices cover a wide range of wavelengths, including options from ultraviolet to infrared. The integrated tuning and automatic wavelength separation of AVUS make the beam position and direction remain the same at all wavelengths.
♦ For 1 μm pumped laser (OPA) ♦ Maximum pump power 50 W ♦ Pulse duration 70 fs or less ♦ Tunable from 650 nm to 2.5 μm ♦ Air cooling and integral housing design to ensure long-term temperature stability	♦ For 1 μm pumped laser (OPA) ♦ Maximum pump power 50 W ♦ Pulse duration about 200 fs ♦ Tunable from210 nm to11 μm ♦ Air cooling and integral housing design to ensure long-term temperature stability





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Technical Parameters

Parameters	AVUS	AVUS SP
Pulse width	Typically 200 fs	Typically 40 – 70 fs
Main output port configuration	Single output port for signal and idle light	two independent output ports for signal and idle light
Peak conversion efficiency	12%, signal+idler; measured at 35 W input power	10%, signal+idler; measured at 20 W input power
Output bandwidth	70 … 120 cm-1 (typical)	170 … 300 cm^{-1} (typical)
Polarization	AVUS incl. UV/VIS extension: horizontal; IR extension: vertical	Horizontal
Time bandwidth	< 1	-
Mechanical Design	integration	integration
Software, PC and Automation	contain (Embedded PC)	contain (Embedded PC)
Possibly via TCP/IP (SCPI instruction set), Windows remote desktop	Possibly via TCP/IP (SCPI instruction set), Windows remote desktop	Possibly via TCP/IP (SCPI instruction set), Windows remote desktop
Output tuning range	Base hive: 630 ~ 1020 nm (signal light), 1040~260 0nm (idle light) UV / VIS extension (optional): 210~255 nm + 260~510 nm + 520~630 nmIR extension (optional): up to 11 µm pump light bypass output (optional): 1030 nm (or pump laser wavelength)SHG Pump: 515 nm (or half the pump laser wavelength)	Base hive: 650 ... 920 nm (signal light), 1150 ... 2500 nm (idle light) pump light bypass output (optional): 1030 nm (or pump laser wavelength)SHG Pump: 515 nm (or half the pump laser wavelength)
performance monitoring	integrated 24/7 monitoring and data logging of the pump laser and OPA conditions (e.g. beam position/pointing, repetition rate, pulse energy)	integrated 24/7 monitoring and data logging of the pump laser and OPA conditions (e.g. beam position/pointing, repetition rate, pulse energy)
Pump Laser Parameters	**AVUS**	**AVUS SP**
Enter laser type	fs system with center wavelength between 1020 nm and 1070 nm	fs system with center wavelength between 1020 nm and 1070 nm
Input power	Up to 50 W	Up to 50 W
Input energy	8 … 200 µJ	8 … 200 µJ
Input polarization state	line deviation in any direction	line deviation in any direction
Input refrequency	Up to 2 MHz	Up to 2 MHz
Input pulse width	200 … 400 fs, others on request	200 … 400 fs, others on request