70 fs
Version
AVUS SP
X

200 fs
Version
AVUS

AVUS SP
Short-pulse Optical Parametric Amplifier

Short-pulses for Microscopy & Spectroscopy

- With pulse durations below 70 femtoseconds, AVUS SP (Short Pulse) is available as high-power optical parametric amplifier (OPA) for Yb fiber laser systems.
- AVUS SP generates two independent output beams. The signal output ranges from 650 to 920 nm, and the idler output from 1150 to 2500 nm.
- The powerful short-pulse compression unit provides not only pulse compression but also dispersion compensation, and is therefore ideally suited for Multi-Photon Microscopy as well as Time-Resolved Spectroscopy.

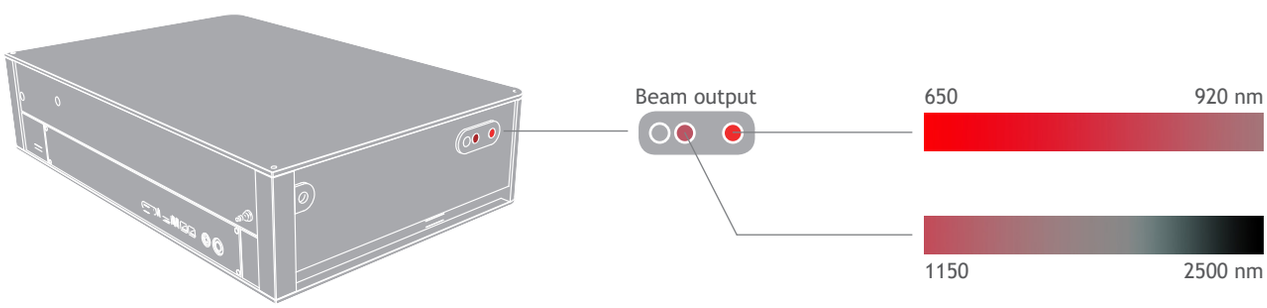
Short-pulses with AVUS SP in combination with Pulse Compression & Dispersion Compensation

- OPA for 1 µm pump laser
- Up to 50 W pumping power
- Pulse durations of 70 fs and below
- Pulse compression & dispersion compensation
- Completely automated and fully computer controlled
- Air-cooling and monolithic case for long-term stability
- 24/7 integrated performance monitoring of both laser system and AVUS
- TCP/IP remote control with standardized command set for easy programming

AVUS SP Optical Parametric Amplifier

Two Wavelength-Ranges - Independently

- APE's AVUS SP provides reliable short femtosecond pulses available in two independent beams: The signal output ranging from 650 ... 920 nm is ideally suited for 2-photon-experiments. The idler output ranging from 1150 ... 2500 nm opens the door for 3-photon-microscopy requiring high peak power.



Two beams independently

Signal beam (650 ... 920 nm) and idler beam (1150 ... 2500 nm) are independently but also simultaneously available.

Pulse Compression & Dispersion Compensation

- Unlimited freedom: AVUS SP is delivered *with* or *without* pulse compression and dispersion compensation. Depending on your requirements, AVUS SP will be commissioned accordingly. Typical requirements may be, for example:

- Longer pulse durations in the range 150 - 200 fs (without pulse compression)
- Short pulse durations in the range of 40 - 70 fs, e.g. pump probe experiments
- Short pulse durations with full control over a larger dispersion range, e.g. for microscope setups

Typical Applications

- Three-photon microscopy
- Two-photon microscopy
- Pump probe spectroscopy
- Time-resolved spectroscopy

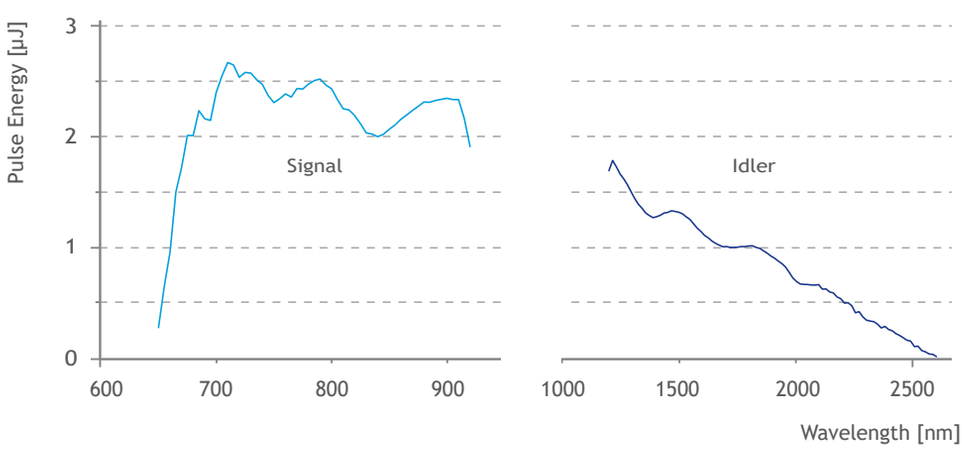
AVUS SP Optical Parametric Amplifier

Pulse Duration Signal & Idler Beam (Compressed)

Pulse width of signal and idler beam, both compressed, measured at 40 µJ pump energy.

— Pulse Duration
— Transform Limit

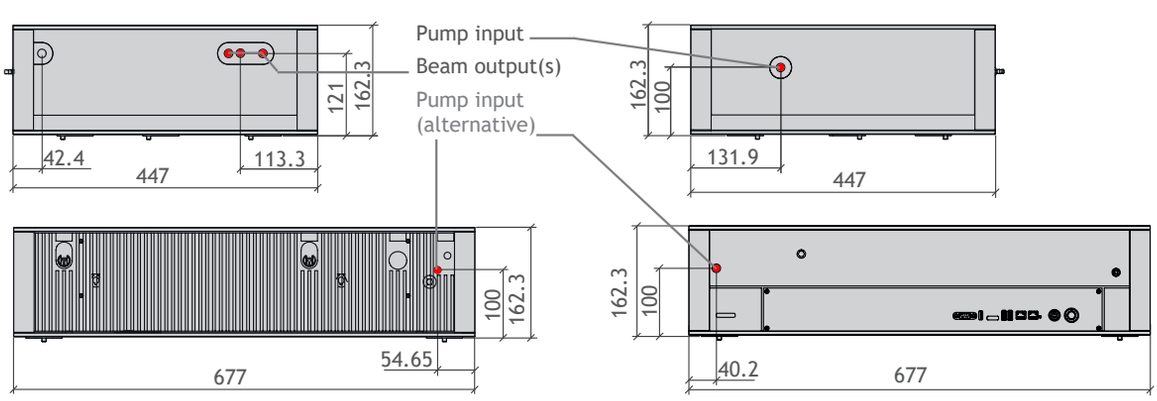
Pulse Energy Signal & Idler Beam



Pulse energy of both signal and idler beam, measured at 40 µJ pump energy.

Dimensions

All Dimensions in mm



AVUS SP Specifications

Pump Laser Parameters

Input Laser Type	fs based laser systems
Input Power | Input Energy	Up to 50 W | 8 ... 200 µJ
Input Center Wavelength	1020 ... 1070 nm
Input Polarization	Any orientation, linear
Repetition Rate	Up to 1 MHz; others on request
Pulse Width	200 ... 400 fs, others on request

Main Specifications

Conversion Efficiency at Peak	10 %, Signal + Idler; measured at 20 W input power
Pulse Width	< 70 fs for Signal beam (~ 200 fs uncompressed)
	< 70 fs for Idler beam (~ 150 fs uncompressed)
Tuning Range	650 ... 920 nm (Signal beam)
	1150 ... 2500 nm (Idler beam)
	Option: 325 ... 460 nm (SHG from Signal beam)
Output Bandwidth	170 ... 300 cm^{-1} (typical)
Polarization	Horizontal
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)
Beam Routing and Separation	Integrated, fully automated
Mechanical Design; Cooling	Monolithic; Air-Cooled
Software, PC, and Automation	Included (Embedded PC)
Remote Control	Possible via TCP/IP (SCPI command set), Windows Remote Desktop

Pulse Compression & Dispersion Compensation

Optionally Available	
Dispersion Range	Different configurations possible; negative or positive pre-compensation possible

Additional Outputs (Option)

Output SHG Signal (UV)	325 ... 460 nm (SHG from Signal beam)
Output SHG Laser	~ 515 nm (or SHG from fundamental wavelength of the laser)
Output Bypass Input Laser	~ 1030 nm (or fundamental wavelength of the laser)

Your local contact:

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