



LASER SYSTEMS

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Innovating
Today
Empowering
Tomorrow



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“

Wavelight Technologies has been developing and manufacturing advanced laser and spectral systems for various industrial, medical, and scientific applications. With a focus on precision and innovation, the company handles the full cycle of operations — from applied research and product development to production, quality control, and international distribution. Our products are successfully used in more than 30 countries worldwide.

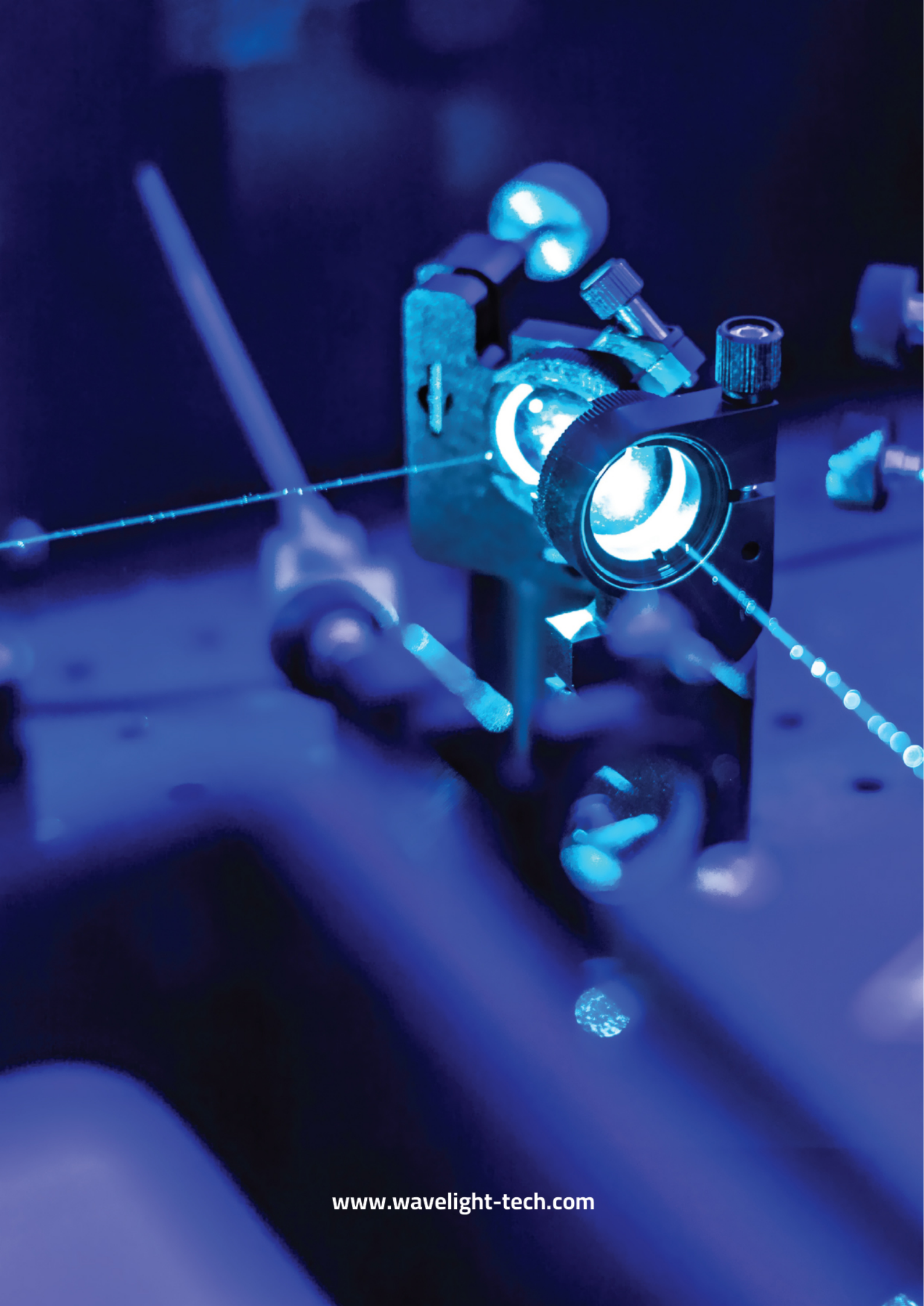
As a trusted provider in the photonics industry, we offer a wide range of technologies, including industrial lasers for aerospace marking systems, medical lasers for clinical use, and scientific-grade lasers and spectral instruments for advanced research fields such as physics, nanotechnology, and biomedicine.

Why we ensure top-level performance:

- Deep expertise in laser and spectral technologies
- Diverse product portfolio serving multiple industries
- In-house research, design, and precision manufacturing
- Certified quality system (ISO 9001, ISO 13485)
- Stable and flexible OEM capabilities

If you are seeking tailored solutions, our specialists will work closely with you to identify your technical needs and deliver laser systems designed to meet your exact application and performance requirements.

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NANOSECOND LASERS

This section introduces a range of compact, lamp-pumped nanosecond pulsed lasers — from ultra-compact models ideal for OEM integration, to high-power systems that offer a unique combination of specifications capable of addressing the most demanding scientific and technological challenges.

Additionally, we offer an extensive selection of pulsed DPSS (Diode-Pumped Solid-State) lasers ranging from miniature chip-based designs to compact systems capable of generating high-power ultraviolet radiation. These lasers span a broad spectrum, from high-repetition-rate kHz models to systems delivering output energies in the hundreds of millijoules.

Each system is engineered to serve as a versatile tool, equally suited for advanced scientific research and robust industrial applications.

| Models Guide | | | | | |
|--------------|-----------------------------|-----------------|-------------------|--|------|
| Model | Pulse energy/ average power | Repetition rate | Pulsewidth (FWHM) | Features | Page |
| WN100 | 10 W @ 1064 nm | up to 100 kHz | 6 ns | Compact kHz air-cooled laser | 7 |
| WN200 | 180 mJ @ 1064nm | up to 20 kHz | 16 ns | Compact Nd:YAG laser | 9 |
| WN300 | 500 mJ @ 1064nm | up to 30 kHz | 8 – 12 ns | Compact high pulse energy Nd: YAG laser | 11 |
| WN600 | 1400 mJ @ 1064nm | up to 10 kHz | 8 – 12 ns | High pulse energy Nd:YAG laser | |
| WN400 | 200 mJ @ 1064nm | up to 100 kHz | 12 ns | 100 Hz high pulse energy Nd:YAG laser | 13 |
| WN500 | 150 mJ @ 1064 nm | up to 20 kHz | 8 ns | Nd:YAG high pulse energy air-cooled laser with harmonic generators | 15 |

For other parameters of the devices see their particular specifications.



COMPACT AIR-COOLED KHZ DPSS LASERS WN100 SERIES



“Diode-pumped lasers of the WN100 series have a number of unique design features ensuring their failure-free and stable operation in a wide range of environmental conditions. Unpretentiousness to operating conditions and excellent beam quality will satisfy both scientists performing fine scientific experiments and industrial sector users.”

TEM00 beam and excellent long-term stability are ensured by the original optical scheme and built-in power meter with the feed-back system. It allows the WN100 series lasers to perform both fine material processing operations and high accuracy scientific measurements. The WN100 series lasers ideally suit for integration into any specialised equipment. This feature is conditioned by small footprint and completely “dry” laser head design based on the Peltier cooling technology. 24/7 operation mode with prolonged service intervals is ensured both by high reliability of the cavity optics and the mechanically rugged dustproof laser head design. Intracavity harmonics generation reduces the radiation density inside non-linear crystals which makes their operation infinitely long.

The specified laser parameters are provided at reduced pump diodes current prolonging their lifetime. As a result, the WN100 series lasers demonstrate long-term and failure-free operation in the toughest operating conditions. Routine service even in the workshop facilities is possible now due to the pump scheme which integrates the laser diode into the power supply. As a result, the replacement of the laser diode is easy, fast, and without access to the optical cavity of the laser head. Besides, almost all optical components and consumables can be replaced by trained staff at the Customer's site avoiding costly shipments and equipment downtime. Laser heads and power supplies are interchangeable which also considerably simplifies service and reduces its cost.

Features

- Output power 10 W @ 1064 nm
- TEM00 , $M2 \leq 1,2$
- Continuous 24/7 operation mode
- Fully air cooled
- Built-in harmonic generators
- Interchangeable laser heads and power supplies

Application

- Repair of PCB and LCD
- Micromachining of semiconductors
- Micromachining and marking of metal, glass and plastics
- Particle image velocimetry (PIV)
- Nonlinear spectroscopy
- Nonlinear optics
- Remote sensing



Specifications

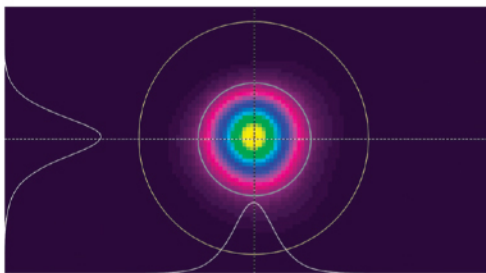
| Model | WN 110 | WN 120 | WN 130 |
|------------------------------|------------------------------|-----------|-----------|
| Wavelength, nm | 1064 | 532 | 355 |
| Average power 1), W | 10 | 7 | 3 |
| Pulse repetition rate, kHz | 1-100 | 1-100 | 1-100 |
| Pulsewidth (FWHM), ns | ≤ 17 | ≤ 25 | ≤ 16 |
| Beam diameter, mm | 1,2 | 1,1 | 0,8 |
| Power stability (Std Dev), % | $< 1,5$ | $< 1,5$ | $< 1,5$ |
| Divergence, mrad | $< 2,5$ | < 2 | < 2 |
| Beam quality | $TEM_{100,M^2} < 1,2$ | | |
| Cooling | air | | |
| Electrical service | 100...240 V, 50/60 Hz, 500 W | | |
| Dimensions, mm: | | | |
| Laser Head (LxWxH) | 290 x 155 x 105 | | |
| Power Supply (HxWxD) | 460 x 330 x 135 | | |

Specifications are subject to change without notice.

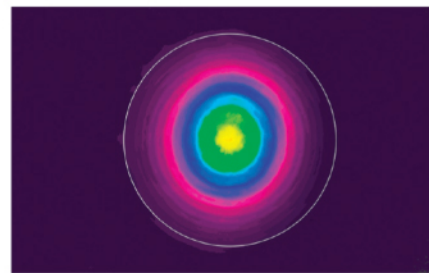
¹⁾Specified at 30 kHz. It is possible to supply lasers with a higher average power.

Options

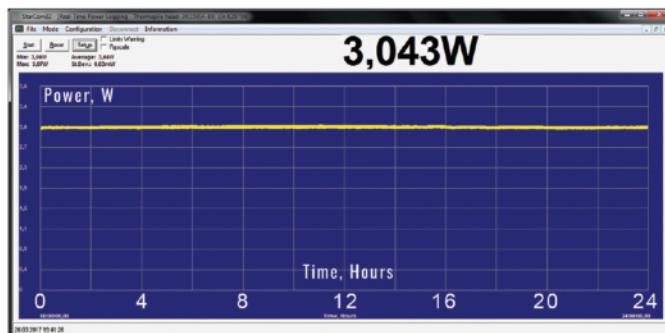
- Laser beam expander
- Red aimer
- Laser attenuators



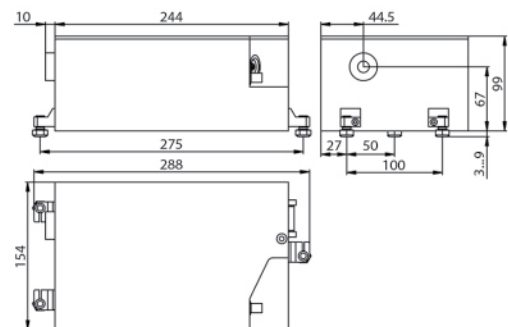
The WN100 laser typical far-field beam profile



The WN100 laser typical far-field beam profile



The WN100 laser typical output power stability chart
(measurement duration: 24 hours)



The WN100 laser head outline drawing

COMPACT ND:YAG LASER WITH EXCELLENT BEAM QUALITY WN200



The WN200 combines excellent beam quality and increased reliability in a simple and compact design. These features have been quickly and highly estimated by the users – more than 200 such lasers operate day-to-day in the industrial and scientific sectors.



You will be able to concentrate on your work and forget about unpleasant down-time and waiting for service thanks to the industrial design of the WN200. This laser, specially developed to fit rough industrial operating conditions, perfectly suits for longterm no-failure operation. You will be sure in precision of your experiments due to the excellent laser beam quality and long-term stability of output parameters ensured by the original optical design of the cavity and fine thermal stabilisation of all the critical laser components.

Your day-to-day convenience in operating this laser will be ensured by such features as built-in harmonic generators, PC control over the laser parameters, easiness of flashlamp replacement, closed-loop water-to-air cooling, powering from an ordinary wall mains, small foot-print and others. You will minimise the expenses on routine service as the WN200 flashlamp lifetime is more than 60 million pulses which considerably reduces service intervals as well as your expenses on ownership of this excellent device.

☰ Features

- Laser pulse energy of 180 mJ
- Pulse repetition rate up to 20 Hz
- Homogeneous flat-top beam profile
- Built-in harmonic generators
- Compact and rugged design

🔍 Application

- OPO, Ti:Sapphire and dye lasers pumping
- Laser spectroscopy
- Nonlinear optics
- Plasma physics and LIBS systems
- Marking and material processing



Specifications

| Model | WN 200 | |
|--|------------------------------------|-----------------------------|
| Pulse repetition rate, Hz | 10 | 20 |
| Pulse energy, mJ at 1064 nm at 532 nm at 355 nm at 266 nm at 213 nm ¹⁾ | 180 100 60 35 10 | 180 100 50 35 8 |
| Pulsewidth (FWHM) ²⁾ , ns | 6-8 | |
| Beam diameter ²⁾ , mm | 5 | |
| Divergence ²⁾ , mrad | ≤ 1,5 | ≤ 2,0 |
| Pulse energy stability (Std Dev) ²⁾ , % | < 1,5 | |
| Jitter ³⁾ , ns | < 1 | |
| Cooling | water-air | |
| Electrical service | 200...240 V, 50/60 Hz, ≤ 800 W | |
| Dimensions, mm: Laser Head (LxWxH) Power Supply (HxWxD) | 480 x 165 x 140 670 x 330 x 620 | |

* Specifications are subject to change without notice.

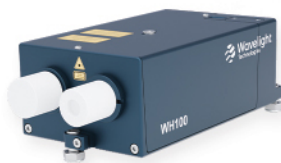
1) With external WT 100 unit.

2) Specified at 1064 nm.

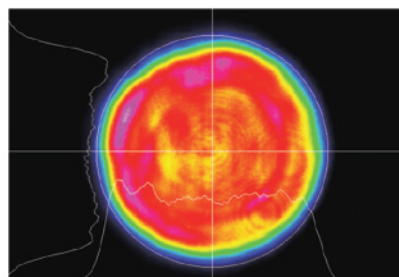
3) With respect to Q-switch external pulse.

Options

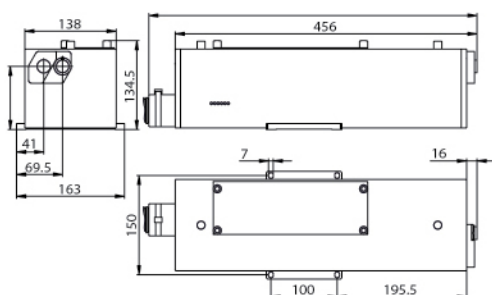
- External attenuators
- TEM00 mode



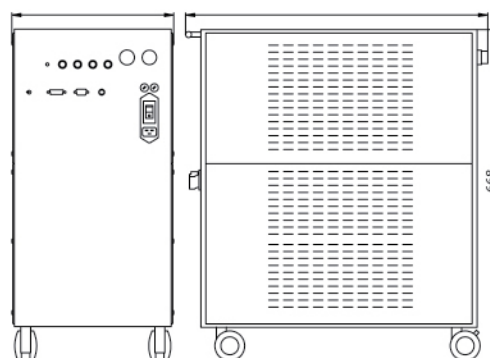
External harmonic generator units WH100 series



WN200 laser typical near field beam profile



WN200 laser head outline drawing



WN200 laser power supply outline drawing

COMPACT HIGH PULSE ENERGY ND:YAG LASERS WN300, WN600



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More than 700 lasers built on the basis of the WN300 & WN600 platform successfully operate not only in scientific centres all over the world but also at the US and European aerospace industry enterprises being the best recommendation for this device.

”

Time-proven original ring cavity design developed by our engineers ensures excellent beam quality with output energy up to 0,5 J without using unstable telescopic cavities and Gaussian mirrors. Supplementing the laser with a simple and reliable amplifying stage allows to provide high quality 1,5 J output. High laser pulse energy in combination with the excellent beam quality and spatial beam profile stability arranged in a compact design are a distinctive feature of these models giving them an obvious advantage over “classmates”.

Short warm-up time and excellent long-term output radiation stability are ensured by fine thermal stabilisation of all the critical laser components. The WN300 & WN600 cavity fixed inside the laser head housing on special floating support allows you to operate the laser at an increased vibration level and to promptly move/mount it without additional alignments. By supplementing these first-class lasers with various non-linear modules wavelight you will be able to obtain high-power laser radiation in a wide spectral region from 0,2 to 20 μm .

≡ Features

- Laser pulse energy up to 1,5 J
- Pulse repetition rate up to 30 Hz
- Homogeneous flat-top beam profile
- Built-in harmonic generators
- Compact and rugged design

🔍 Application

- OPO, Ti:Sapphire and dye lasers pumping
- Laser spectroscopy
- Nonlinear optics
- Plasma physics and LIBS systems
- Marking and material processing
- LIDAR



Specifications

| Model | WN 300A | | | WN 300B | | WN 600A | | WN 600B | |
|--|--------------------------------|-----|-----|---------|-----|--------------------------------|------|---------|------|
| Pulse repetition rate, Hz | 10 | 20 | 30 | 5 | 10 | 5 | 10 | 5 | 10 |
| Pulse energy, mJ | | | | | | | | | |
| at 1064 nm | 350 | 350 | 280 | 500 | 500 | 1000 | 1000 | 1400 | 1400 |
| at 532 nm | 190 | 190 | 140 | 280 | 280 | 600 | 600 | 800 | 800 |
| at 355 nm | 100 | 100 | 60 | 130 | 130 | 300 | 300 | 420 | 420 |
| at 266 nm | 60 | 40 | 25 | 85 | 70 | 200 | 180 | 210 | 190 |
| at 213 nm ¹⁾ | 18 | 15 | 8 | 25 | 20 | 45 | 40 | 45 | 40 |
| Beam diameter ²⁾ , mm | < 6 | | | < 8 | | < 10 | | < 11 | |
| Pulsewidth (FWHM) ²⁾ , ns | 8-12 | | | | | | | | |
| Divergence ²⁾ , mrad | ≤ 1,5 | | | | | | | | |
| Pulse energy stability (Std Dev) ²⁾ , % | ≤ 1 | | | | | | | | |
| Jitter ³⁾ , ns | ≤ 1 | | | | | | | | |
| Cooling | water-air | | | | | | | | |
| Electrical service | 200...240 V, 50/60 Hz, <1000 W | | | | | 200...240 V, 50/60 Hz, <1200 W | | | |
| Dimensions, mm: | | | | | | | | | |
| Laser Head (LxWxH) | 615 x 180 x 120 | | | | | 665 x 220 x 125 | | | |
| Power Supply (HxWxD) | 670 x 330 x 620 | | | | | 695 x 367 x 700 | | | |

* Specifications are subject to change without notice.

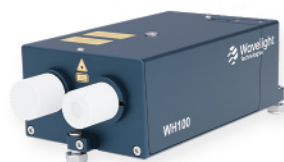
1) With external LG100 unit.

2) Specified at 1064 nm.

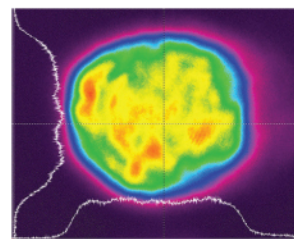
3) With respect to Q-switch external pulse.

Options

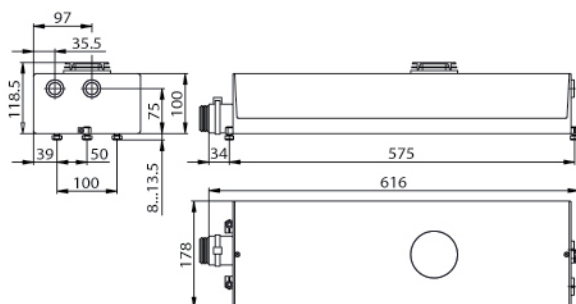
- External attenuators
- TEM00 mode
- WN 300 or WN600 lasers can be supplemented with the VIS / UV harmonic generator units



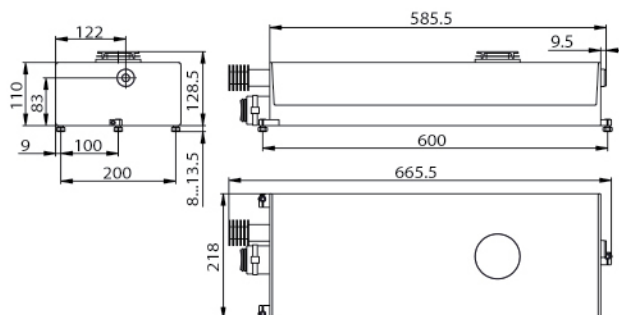
External harmonic generator units WH100 series
for pulsed Nd:YAG lasers



WN600 laser typical near field beam profile



WN300 laser head outline drawing



WN600 laser head outline drawing

100 HZ HIGH PULSE ENERGY ND:YAG LASER

WN400



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The WN400 laser demonstrates an unattainable for most of the models combination of high pulse energy, high pulse repetition rate and perfect beam quality.

”

The specific feature of the WN400 is that the active elements of the generator and amplifier are installed in one pump chamber and are pumped by a single flashlamp. The generator is based on the time-proven ring cavity design ensuring excellent beam quality while the classical single-pass amplifier is supplemented with the optics compensating thermo-optical aberrations. The optical design applied ensures almost ideal flat-top laser beam profile. Particularly, such a profile providing homogeneous exposure over the whole laser beam field is much-in-demand for most of applications starting from ablation and finishing with optical pumping.

Innovative and thoroughly verified optical configuration of the WN400 laser is arranged in one compact vibration- and dustproof housing which ideally suits for the roughest operating conditions. Technical solutions developed specially for this laser provide not only excellent combination of output parameters in a costeffective design but also minimise your expenses on servicing this first-class device. Low maintenance costs are ensured by utilisation of one flashlamp with an increased (more than 100 million pulses) lifetime as well as its easy and quick replacement without access to the laser head optical cavity.

Features

- 200 mJ output at 100 Hz
- Homogeneous flat-top beam profile
- Built-in harmonic generators
- Flashlamp lifetime of > 10⁸ pulses
- Dustproof & compact design

Application

- OPO, Ti:Sapphire and dye lasers pumping
- Marking and materials processing
- Plasma physics and LIBS systems
- Laser spectroscopy
- Nonlinear optics
- Laser ablation
- LIDAR



Specifications

| Model | WN 400 |
|--|------------------------------------|
| Max pulse repetition rate ¹⁾ , Hz | 100 |
| Pulse energy, mJ at 1064 nm at 532 nm at 355 nm at 266 nm at 213 nm ²⁾ | 200 100 50 15 5 |
| Pulsewidth (FWHM) ³⁾ , ns | 12 |
| Beam diameter ³⁾ , mm | < 5 |
| Divergence ³⁾ , mrad | ≤ 2 |
| Pulse energy stability (Std Dev) ³⁾ , % | ≤ 1,5 |
| Jitter ⁴⁾ , ns | ≤ 4 |
| Cooling | water-air |
| Electrical service | 200...240 V, 50/60 Hz, ≤ 1200 W |
| Dimensions, mm: Laser Head (LxWxH) Power Supply (HxWxD) | 715 x 180 x 125 670 x 330 x 620 |

* Specifications are subject to change without notice.

1) You can choose any PRR from 1 Hz to 100 Hz when placing an order. All the parameters are specified for 100 Hz.

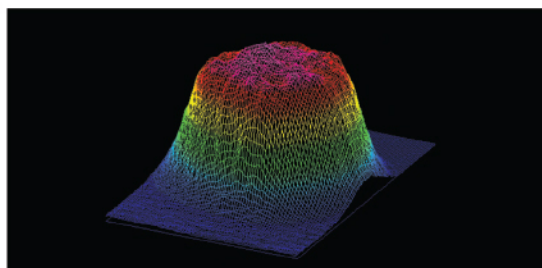
2) With external LG100 unit.

3) Specified at 1064 nm.

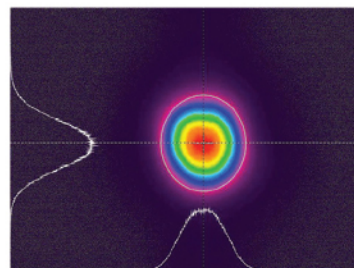
4) With respect to Q-switch external pulse.

Options

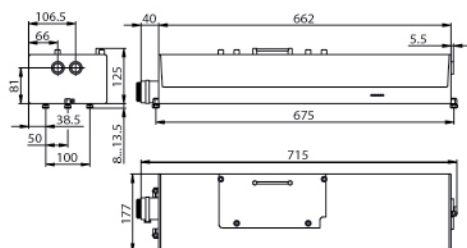
- 2 External attenuators
- TEM00 mode



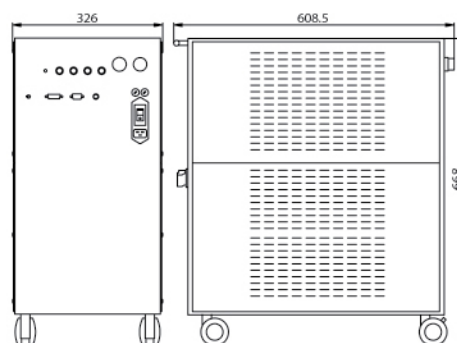
WN400 laser typical near field beam profile



WN400 laser typical far field beam profile

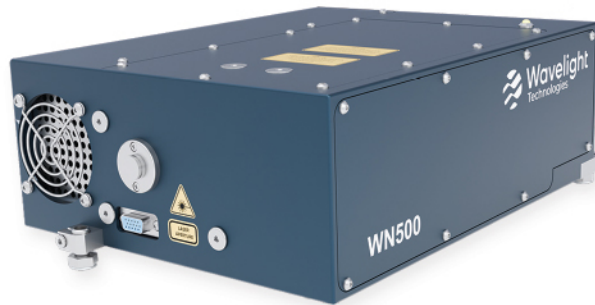


WN400 laser head outline drawing



WN400 laser power supply outline drawing

HIGH PULSE ENERGY AIR-COOLED DPSS ND:YAG LASER WN500



Wavelight Technologies Presents a new model of completely air-cooled pulsed diode-pumped Nd:YAG laser.

Despite its compact size, the WN500 delivers 150 mJ at 1064 nm in nanosecond pulses at repetition rates up to 20 Hz. The dustproof and mechanically rigid housing design of the laser head guarantees high stability of laser radiation characteristics and reliable operation of the laser. The use of diode bars with an extremely long lifetime (more than 10⁹ pulses), excellent long-term output stability make the WN500 laser an ideal tool for scientific, industrial and medical applications.

The use of diode pumping significantly decrease weight and foot-print of the laser, increases the reliability of its operation and eliminates the need for regular maintenance, typical for flashlamp-pumped lasers. The possibility of operation in the VIS and UV spectral range thanks to optionally available harmonic generators will expand your opportunities. Compact laser design and complete air cooling not only simplify application of this device as a stand-alone unit, but also allow to integrate it into any equipment.

Features

- Pulse energy up to 150 mJ at 20 Hz
- Air cooling
- Smooth flat-top beam profile
- Modular harmonic generators
- 24/7 operation
- Diode lifetime over 1 billion pulses

Application

- OPO and Ti:Sapphire laser pumping
- Dye laser pumping
- Material processing
- Plasma research and LIBS
- Spectroscopy
- Nonlinear optics
- LIDAR



Specifications

| Model | WN500 |
|--|---|
| Pulse repetition rate 1), Hz | 20 |
| Pulse energy, mJ at 1064 nm at 532 nm at 355 nm at 266 nm at 213 nm 2) | 150 90 50 30 5 |
| Pulsewidth (FWHM) 3), ns | 6-9 |
| Beam diameter, mm | < 5 |
| Divergence 3), mm | ≤ 1,5 |
| Pulse energy stability (Std Dev) 3), % | ± 1 |
| Jitter 4), ns | < 1 |
| Cooling | air |
| Electrical service | 100...240 V, 50/60 Hz, ≤ 500 W |
| Dimensions, mm: Laser Head (LxWxH) without harmonic generator Laser Head (LxWxH) with harmonic generator Power Supply (HxWxD) | 300 x 225 x 110 375 x 225 x 110 405 x 350 x 150 |

* Specifications are subject to change without notice.

1) You can choose any PRR from 1 Hz to 20 Hz when placing an order. All the parameters are specified for 20 Hz.

2) With external WH 100 unit.

3) Specified at 1064 nm.

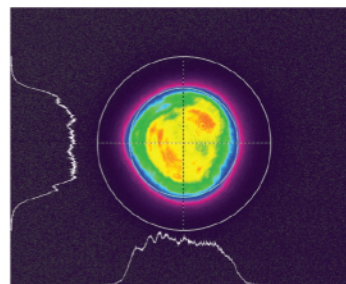
4) With respect to Q-switch external pulse.

Options

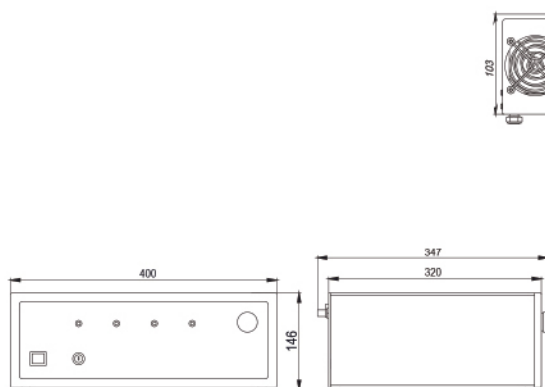
- TEM00 mode
- External attenuators



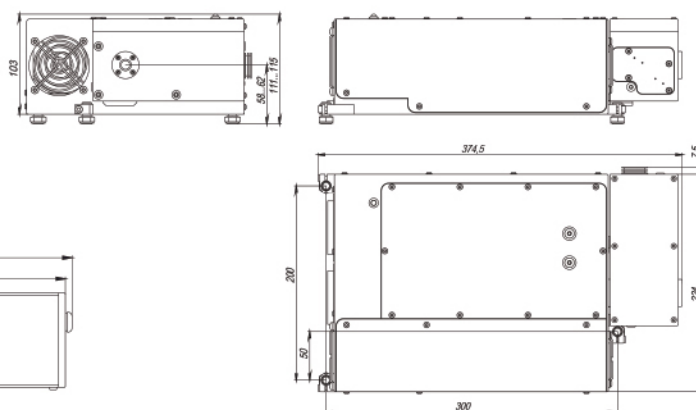
WN500 power supply



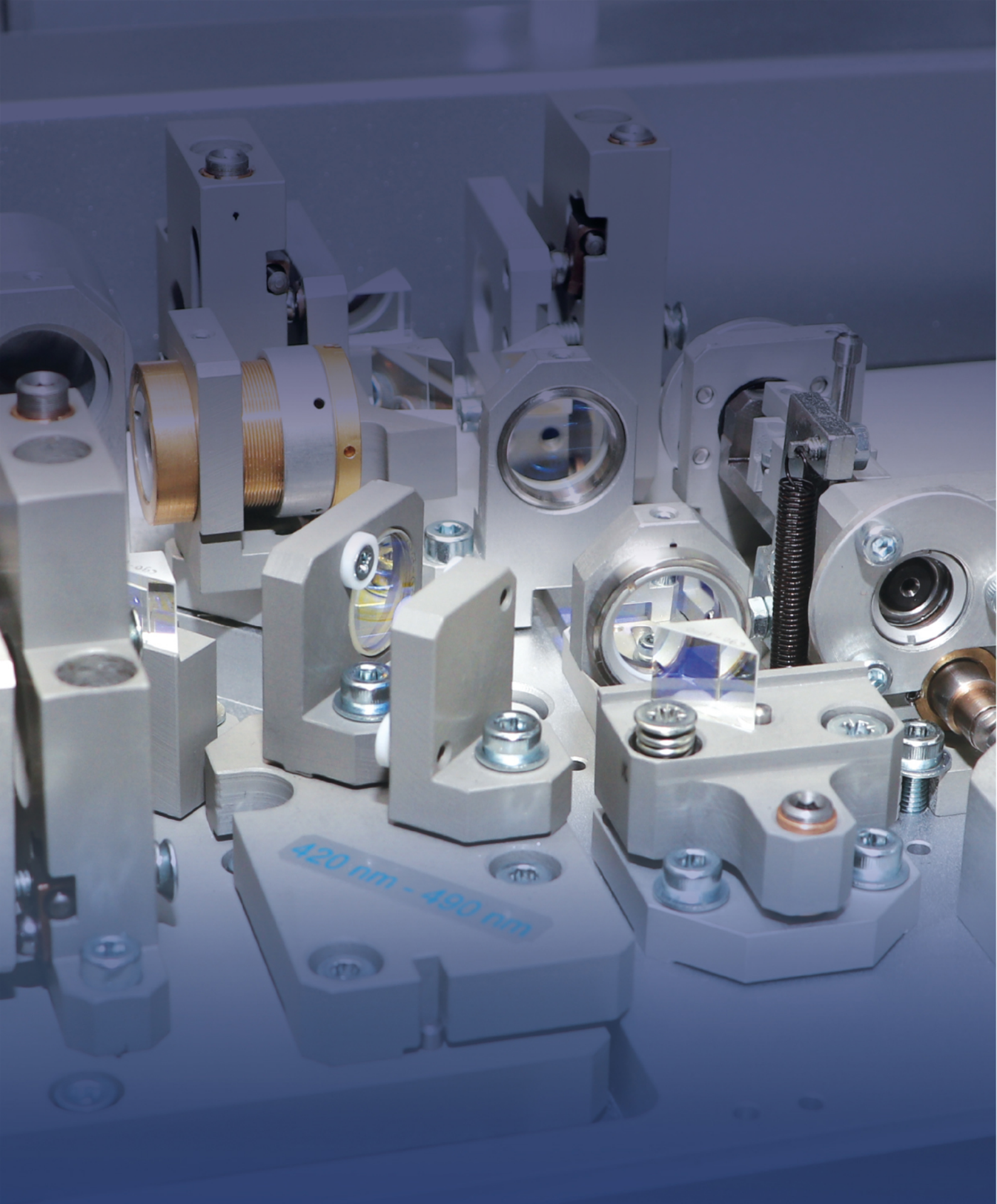
WN500 laser typical near-field beam profile at 1064 nm



WN500 laser power supply outline drawing



WN500 laser head outline drawing



TUNABLE LASERS

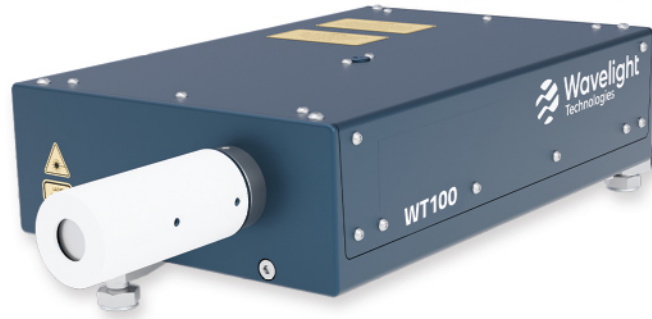
This group of Wavelight Technologies products comprises compact nanosecond sources providing tunable laser radiation in a wide spectral range from the UV to IR. Since 2020 of development of tunable lasers and cooperation with the leading manufacturers of the latest active mediums and nonlinear crystals allowed us to create a family of models with unique combination of parameters. Widest tuning ranges, high conversion efficiencies and high spectral brightness of output radiation. Stable output parameters and excellent beam quality. Upon your choice we offer both modular systems and those integrated into a single housing. Such options as wavelength tuning automation, built-in spectrometers and free choice of customised optics and supplementary devices make these lasers very attractive for various applications.

| Models Guide | | | | |
|--------------|---------------------------|-----------------------------|---------------------------|------|
| Model | Tuning range | Pulse energy | Features | Page |
| WT100 | 410-2500 nm | up to 100 mJ | OPO based on BBO crystals | 19 |
| WT110 | 410-2500 nm 210-420 nm | up to 70 mJ up to 10 mJ | Low divergence OPO | 19 |
| WT120 | 680-2500 nm 340-680 nm | up to 150 mJ up to 25 mJ | Low divergence OPO | 19 |

For other parameters of the OPOs see their particular specifications



HIGH PULSE ENERGY OPO WT100 SERIES



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The optical scheme of the WT100 OPO utilises a pair of synchronously turning BBO crystals and a special cavity configuration increasing amplification of the generated radiation. Thanks to these features the WT100 OPO demonstrate maximum efficiencies even for the models providing low divergence and narrow linewidth.

”

Thanks to the high conversion efficiency all the specified parameters are realised at relatively low pump radiation intensities which guarantees long-term failure-free operation of all the WT100 models and minimises expenses on their routine maintenance. The WT100 OPO ideally suit for applications requiring high pulsed energy in the VIS and NIR spectral range. In case of necessity, the spectral operating range can be easily expanded to the UV with the help of an external second harmonic generator model WH300. This standard module allows to provide continuously tunable radiation within the range from 210 to 680 nm.

For your convenience the WT100 OPO can be supplied together with the WN series pump lasers the parameters of which are specially optimised for such applications. The pump laser and the OPO are rigidly fixed relative to each other which ensures mobility of the laser system while preserving its modularity. Upon your request the OPO can be supplemented with a compact spectrometer or wavelength meter to control the current output wavelength and to simplify automation of your measurements. PC control, compact footprint and modular design of the WT100 OPO allow to easily integrate them into any complexes or systems especially into systems with space constraints.

≡ Features

- Tuning range of 410...2500 nm
- UV harmonics up to 210 nm
- Output pulse energy up to 150 mJ
- Low divergence < 2 mrad
- Small footprint

🔍 Application

- Nonlinear spectroscopy
- Nonlinear optics
- Optoacoustics
- LIDAR
- LIBS
- Raman spectroscopy
- Time-resolved spectroscopy



Specifications

| Model | | WT 100 | WT 110 | WT 120 |
|---------------------------|--------------------|------------------------|----------------|-------------|
| Tuning range, nm | Signal | 410...680 | 410...710 | 680...1064 |
| | Idler | 730...2500 | 710...2500 | 1064...2500 |
| | Second harmonic 1) | – | 210...420 | 340...680 |
| Output energy 2), mJ | Signal | 100 | 70 | 150 |
| | Idler | 50 | 30 | 70 |
| | Second harmonic 1) | – | 10 | 25 |
| Divergence 3), mrad | | < 10 | < 2 | < 2 |
| Linewidth -1 4), cm | | 10...200 | 4...6 | 6...8 |
| Dimensions (LxWxH), mm: | | 303 x 206 x 75 | 343 x 206 x 75 | |
| Pump laser requirements | | | | |
| Pump wavelength, nm | | 355 | 355 | 532 |
| Max pump pulse energy, mJ | | 350 | 350 | 500 |
| Pulsewidth (FWHM), ns | | 4...12 | | |
| Beam quality | | MM, without “hot” spot | | |
| Divergence, mrad | | < 1,5 | | |

* Specifications are subject to change without notice.

1) With external WH 300 unit.

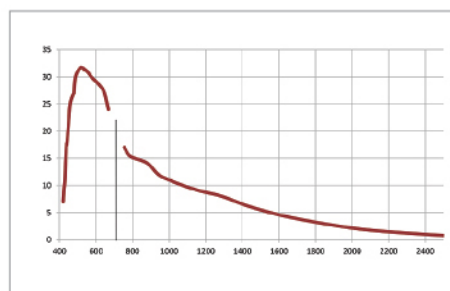
2) At tuning curve maximum when pumped by 350 mJ @ 355 nm and 500 mJ @ 532 nm.

3) For signal wave.

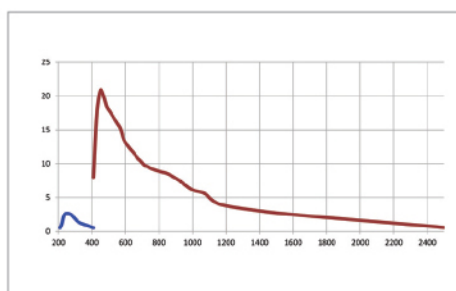
4) Depends on output wavelength.

Options

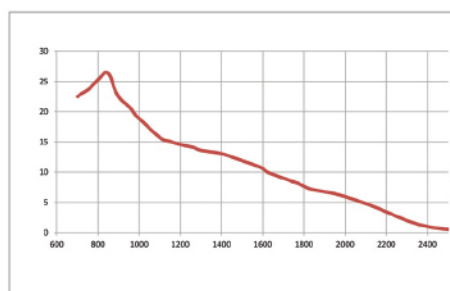
- External wavelength meter
- Optical fiber coupling
- PC control



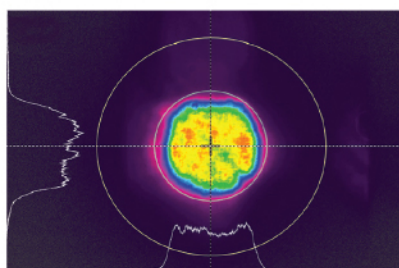
The WT100 typical efficiency curve



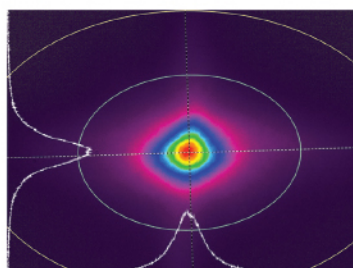
The WT100 typical efficiency curve



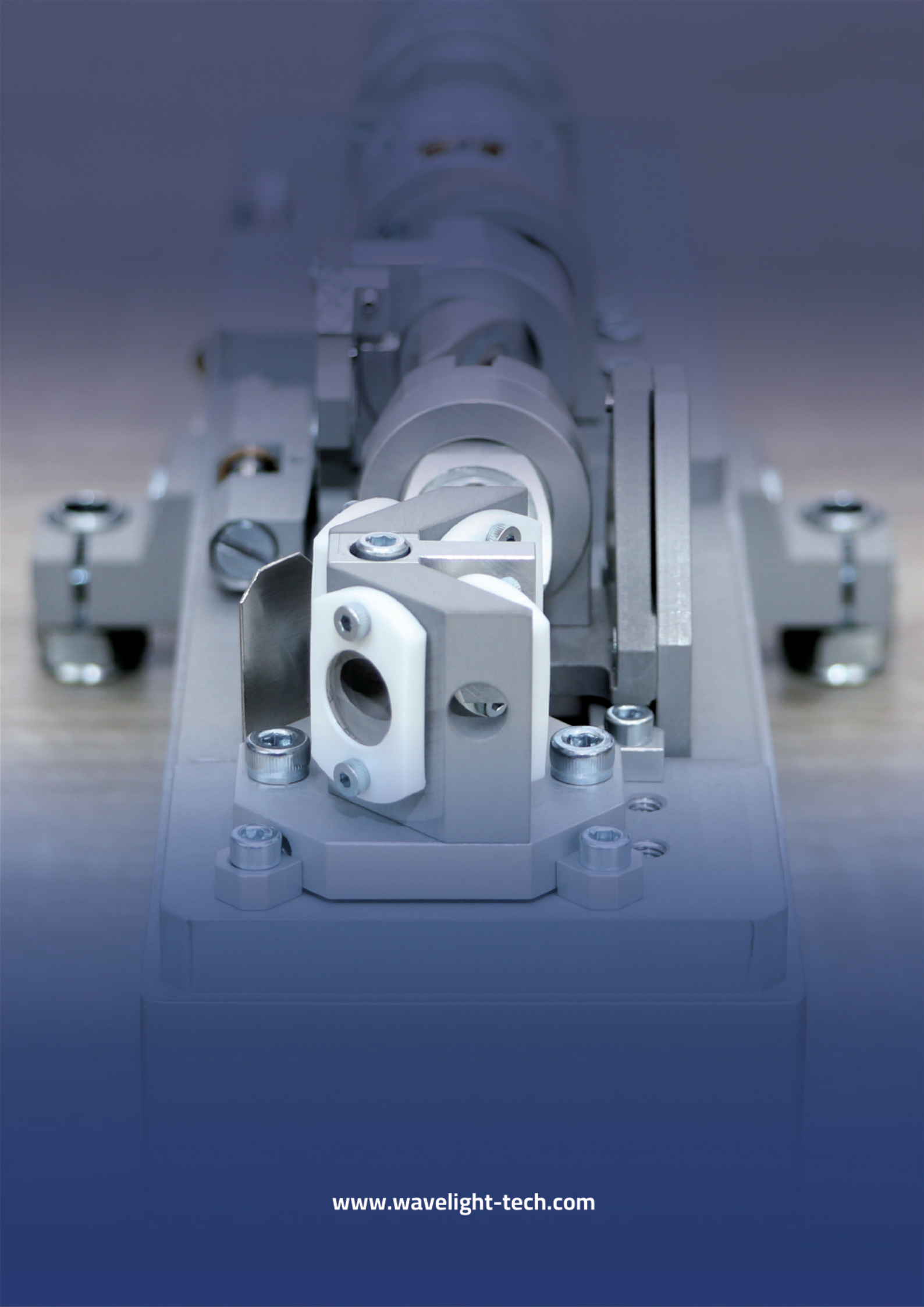
The WT100 typical efficiency curve



The WT100 typical near-field beam profile



The WT100 typical far-field beam profile



ULTRASHORT PULSE PICOSECOND LASERS

For Ultrafast spectroscopy and other advanced applications requiring minimal pulsewidth, Wavelight Technologies offers a range of picosecond lasers. These lasers generate radiation across the IR, VIS, and UV spectral ranges.

By adopting a diode-pumping architecture, these high-tech lasers achieve significantly enhanced performance and reliability. As a result, they are not only ideal for cutting-edge scientific research but also highly suitable for seamless integration into complex measurement and industrial systems.

| Models Guide | | | | | |
|--------------|-------------------|----------------|-----------------|--|------|
| Model | Pulsewidth (FWHM) | Max output | Repetition rate | Features | Page |
| WP100 | 410-2500 nm | up to 100 mJ | 80 MHz | PICOSECOND DPSS LASER | 25 |
| WP500 | ≤ 30 ps | 1 mJ @ 1064 nm | 1 kHz | Powerful picosecond laser with regenerative amplifier for micromachining | 27 |

For other parameters of the lasers see their particular specifications.



PICOSECOND DPSS LASER WP100



Wavelight Technologies presents the powerful DPSS laser with picosecond pulsewidth. The high peak and average power and excellent long-term stability of the radiation parameters of this laser make it an ideal tool for a wide range of tasks from scientific research to material processing.

The WP100 of picosecond laser has an original optical scheme with longitudinal pumping and uses advanced SESAM® technology to implement mode synchronization. The use of such solutions ensures high quality and stability of laser radiation parameters. The WP100 laser can be easily integrated into any specialized equipment or complex measuring systems due to their compact size and air cooling. The design of the WP100 laser allows it to be used not only in a clean room, but also in laboratories that do not have special Air purification systems.

All the critical elements of the laser are housed inside thermally stabilized and dustproof enclosures, which allows you to work with the laser 24/7 (around the clock) without carrying out any service maintenance work. In the standard configuration of the WP100 the laser is supplied without built-in harmonic generators. However, if you wish, it can be equipped with harmonic generators that will provide highly efficient conversion of radiation into the VIS and UV regions of the spectrum, thus expanding the possibilities of your research in the field of nonlinear optics and laser spectroscopy.

Features

- Diode-pumped
- Sealed housing
- Air cooled
- Compact design
- Low maintenance cost

Application

- Ultrafast spectroscopy
- Nonlinear spectroscopy
- OPO pumping
- Remote laser sensing
- Micromachining



Specifications

| Model | WP100 |
|--|---|
| Average power @ 1064 nm @ 532 nm 1) | ≥ 6 $\geq 2,4$ |
| Pulse repetition rate, MHz | 80 ± 5 |
| Pulsewidth (FWHM), ps | < 30 |
| Beam quality | $TEM_{00} \quad M^2 < 1,5$ |
| Beam diameter, mm | $1 \pm 0,1$ |
| Cooling | water-air |
| Electrical service | 100...240 V, 50/60 Hz, ≤ 600 W |
| Dimensions, mm: Laser Head (LxWxH) Power Supply (HxWxD) Second Harmonic Generator (LxWxH) | 384 x 183 x 124 410 x 420 x 170 280 x 170 x 124 |

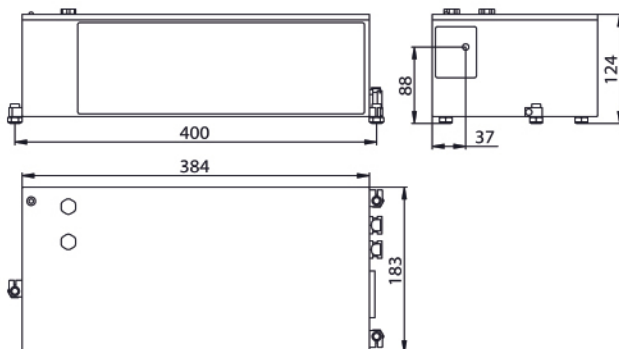
* Specifications are subject to change without notice.
1) With external second harmonic generator WH 500.

Options

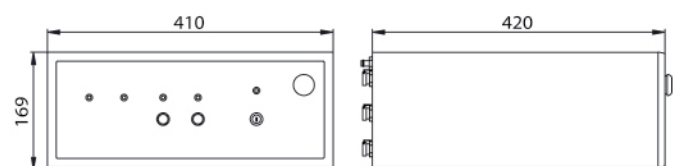
- External harmonic generators
- External attenuators
- Pulse selector (frequency divider)



WP series power supply



The WP100 laser head outline drawing



The WP100 power supply outline drawing



PICOSECOND LASER WITH REGENERATIVE AMPLIFIER WP500 SERIES



WP500 are picosecond lasers combining high energy with short pulsewidth and operating at a pulse repetition rate of 1 kHz.

The WP500 design is optimized for both scientific and industrial applications. The compact, thermostabilized and hermetically sealed design allows the WP500 lasers to be integrated both into various research facilities and into industrial systems or conveyor lines.

Picosecond lasers model WP500 also have a number of additional options, which expand the possibilities of its application.

Features

- Extended operating temperature range
- Built-in harmonic generators
- Pulse energy control system
- Adjustable PRR

Application

- LCD and PCB repair and restoration
- Micromachining
- Marking of metals, glass and plastics
- PIV
- Nonlinear spectroscopy
- Nonlinear optics
- Remote sensing



Specifications

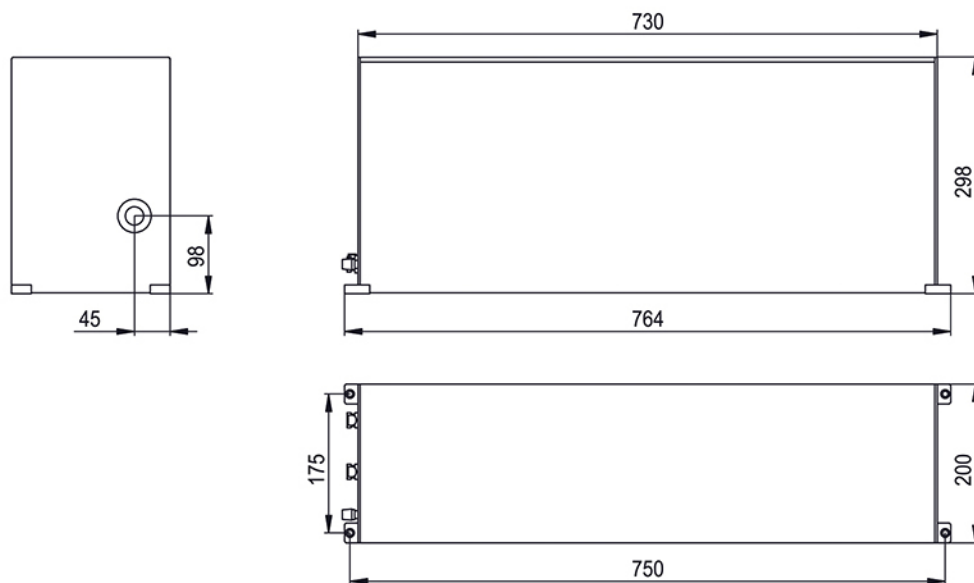
| Wavelegth, nm | 510, 520, 530, 540 |
|---|---|
| Pulse energy, mJ at 1064 nm at 532 nm at 355 nm at 266 nm | > 1,0 > 0,5 > 0,4 > 0,2 |
| Pulsewidth (FWHM) ¹⁾ , ps | < 30 |
| Pulse energy stability (Std Dev) ¹⁾ , % | ± 0,5 |
| Beam diameter at the laser output ¹⁾ , mm | 3 |
| Polarization | Linear (>100:1) |
| Maximum pulse repetition rate, kHz | 1 |
| PRR adjustment | PRR reduction by multiples of integers "Burst" mode Single pulse generation |
| Beam pointing stability ¹⁾ , μrad | ≤ 30 |
| Divergence ¹⁾ , mrad | ≤ 1 |
| Beam quality ¹⁾ , mrad | ≤ 1,3 |
| Dimensions (LxWxH), mm: Laser Head Power Supply | 1050 x 460 x 250 2U 19" rack |
| Electrical service | 100-240 V, single-phase, 50/60 Hz |

* Specifications are subject to change without notice.

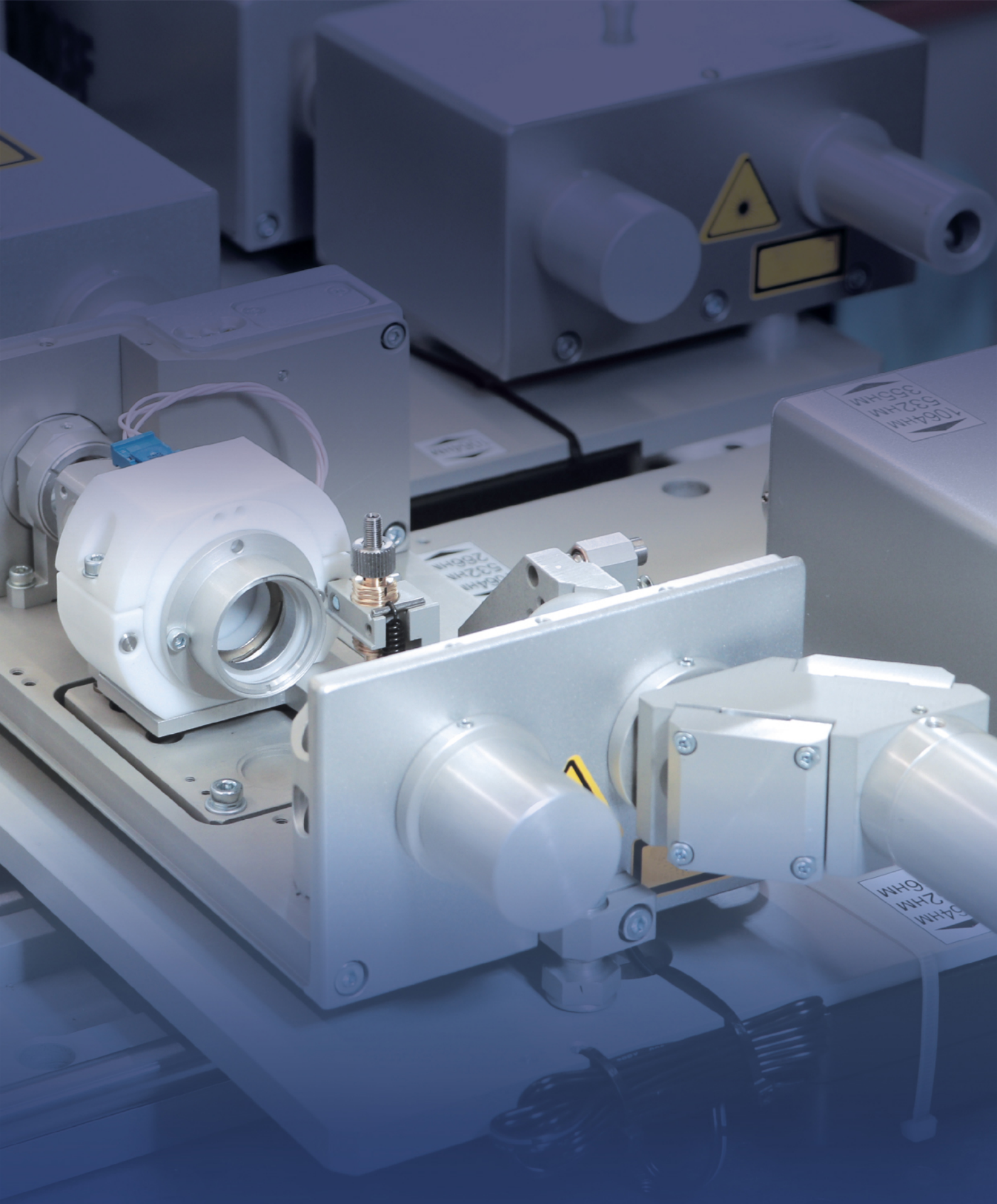
1) With external second harmonic generator WH 500.

Options

- Built-in harmonic generators
- Built-in attenuators



WP500 laser head outline drawing



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ULTRASHORT PULSE FEMTOSECOND LASERS

For Ultrafast spectroscopy and other advanced applications requiring minimal pulsewidth, Wavelight Technologies offers a range of femtosecond lasers. These lasers generate radiation across the IR, VIS, and UV spectral ranges.

By adopting a diode-pumping architecture, these high-tech lasers achieve significantly enhanced performance and reliability. As a result, they are not only ideal for cutting-edge scientific research but also highly suitable for seamless integration into complex measurement and industrial systems.

| Models Guide | | | | | |
|--------------|-------------------|---------------|-----------------|---------------------------|------|
| Model | Pulsewidth (FWHM) | Max output | Repetition rate | Features | Page |
| WF105 | < 150 fs | 5 W @ 1030 nm | 70 MHz | Compact femtosecond laser | 31 |
| WF107 | < 200 fs | 7 W @ 1030 nm | 70 MHz | Compact femtosecond laser | 31 |

For other parameters of the lasers see their particular specifications.



COMPACT FEMTOSECOND LASERS

WF100 SERIES



WF100 is a series of solid-state femtosecond lasers with high average and pulse power and excellent long-term stability of output radiation parameters.

The active medium in WF100 lasers is pumped using commercially available and reliable laser diodes, which distinguishes them from the complex and expensive pumping circuits used in traditional Ti:Sapphire femtosecond systems. This is why the WF100 series lasers fully combine the compactness and reliability of fiber systems with the advantages of solid-state lasers. The design of the WF100 series lasers guarantees their longterm and stable operation and virtually eliminates the need for service maintenance. The laser operates on the plug and play principle and can be operated by a user not experienced working with laser equipment. Unpretentiousness of the WF100 series lasers is conditioned by the rigid dustproof design with thermal stabilisation of all the critical cavity components.

These design features, as well as the service interval of more than 10,000 hours, can be appreciated by industrial users. Excellent beam quality will satisfy the most demanding requirements of scientists performing fine experiments. And the SESAM® technology used in lasers automatically ensures the implementation of mode synchronization with ideal long-term stability of radiation parameters, which guarantees you the accuracy of your experiments. If you need to use the laser you already have in your laboratory for applications requiring VIS or UV femtosecond radiation, it can be supplemented with the SHG, THG or FHG.

Features

- Air cooled
- Compact dustproof design
- Pulsewidth (FWHM) down to 120 fs
- Long-term stability of radiation parameters
- Second, third and fourth harmonic generators

Application

- Ultrafast spectroscopy
- Nonlinear spectroscopy
- Harmonics generation
- Nonlinear optics
- Micromachining



Specifications

| Model | WF105 | WF107 |
|---|---|----------|
| Wavelength ¹⁾ , nm | 1030 ± 5 | 1030 ± 5 |
| Average power ²⁾ , W | ≥ 5 | ≥ 7 |
| Pulse energy, nJ | ≥ 70 | ≥ 100 |
| Pulse repetition rate, MHz | 70 ± 5 | |
| Pulsewidth (FWHM) ²⁾ , fs | ≤ 150 | ≤ 200 |
| Spectral width (FWHM), nm | ≥ 8 | ≥ 7 |
| Beam quality | TEM ₀₀ ^M ² ≤ 1,2 | |
| Power stability (Std Dev) ³⁾ , % | ± 0,5 | |
| Cooling | water-air | |
| Electrical service | 100-240 V, 50 Hz, ≤ 600 W | |
| Dimensions, mm: | | |
| Laser Head (LxWxH) | 400 x 200 x 110 | |
| Power Supply (HxWxD) | 410 x 420 x 170 | |

* Specifications are subject to change without notice.

1) It is possible to supply a laser with an external second, third or fourth harmonic generator.

2) The required power and pulsewidth are specified when ordering.

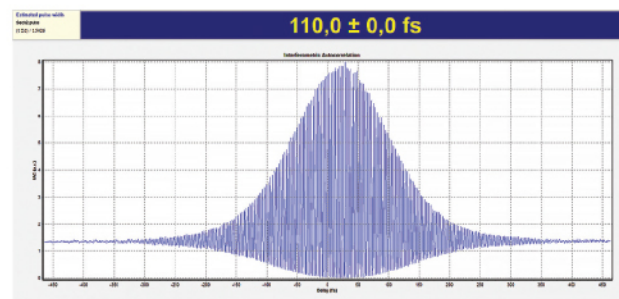
3) Within 12 hours after 30 min warm-up under stable environmental conditions.

Options

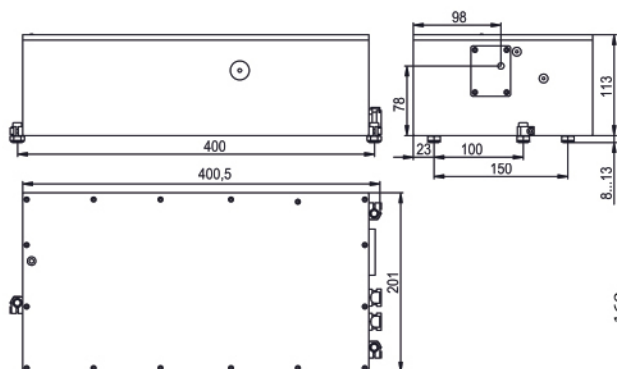
- External harmonic generators
- External attenuators
- Pulse selector (frequency divider)



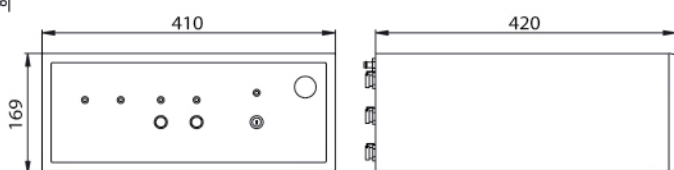
WF series power supply



The WF100 laser autocorrelation curve with pulsewidth (FWHM) of 110 fs

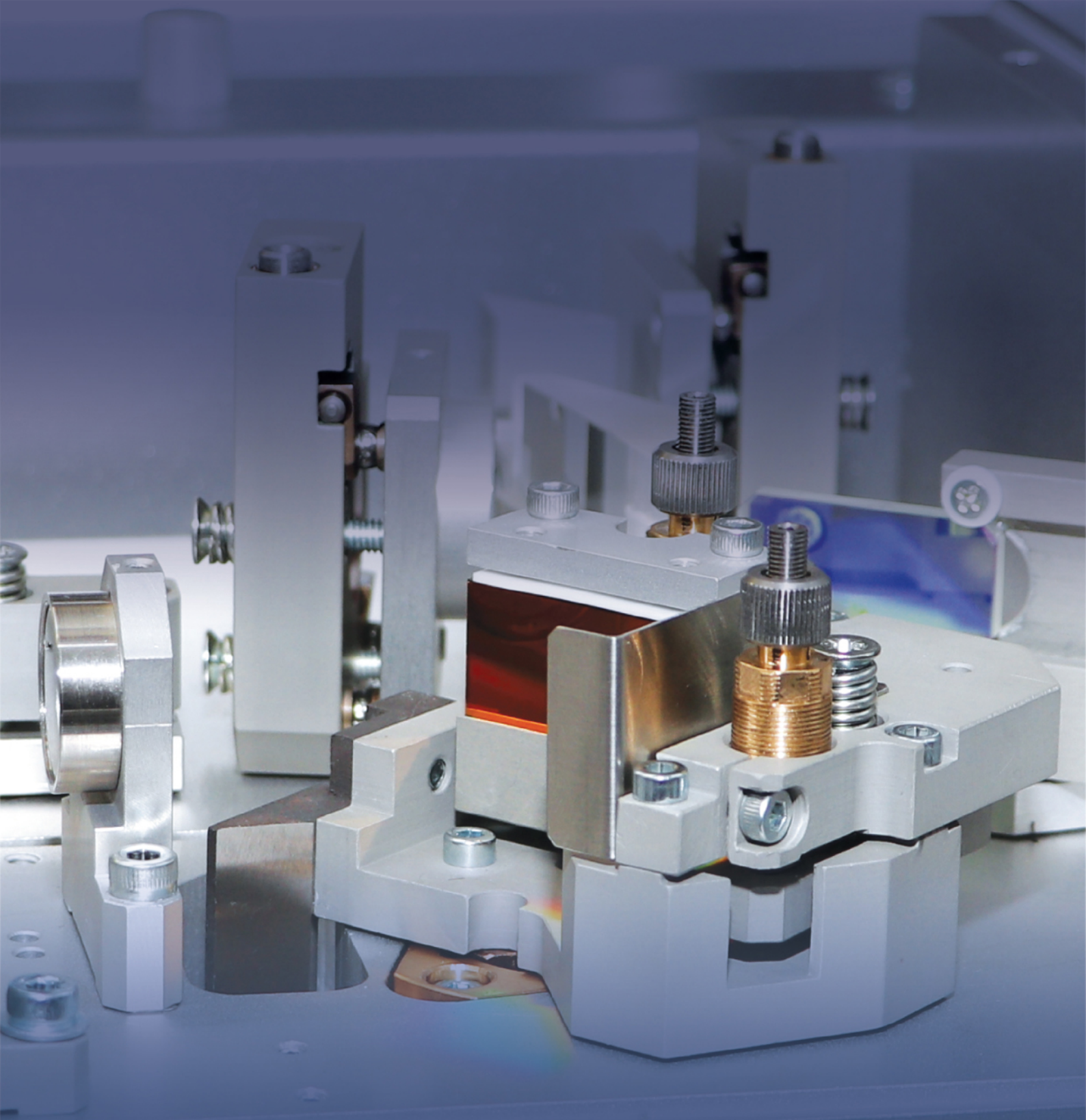


The WF series laser head outline drawing



The WF series power supply outline drawing





HARMONIC GENERATORS

At Wavelight Technologies, we are committed to pushing the boundaries of photonic innovation. Our advanced laser frequency conversion solutions are meticulously engineered to meet the demanding requirements of both industrial and scientific applications.

Whether you're developing next-generation medical devices, high-precision measurement systems, or cutting-edge research tools, our harmonic generation platforms—such as the WH100—are designed to deliver unmatched efficiency, reliability, and performance.

In this catalog, you will discover how our laser domain frequency converters empower professionals worldwide to achieve greater clarity, power, and control across every application.

| Models Guide | | |
|--------------|---|------|
| Model | Features | Page |
| WH100 | Compatible with Nanosecond laser technology | 35 |
| WH200 | Compatible with Nanosecond laser technology | 35 |
| WH300 | Compatible with Tunable laser sources | 35 |
| WH400 | Designed for Femtosecond laser operation | 36 |
| WH500 | Operates with Picosecond laser pulses | 36 |



HARMONIC GENERATORS MODELS



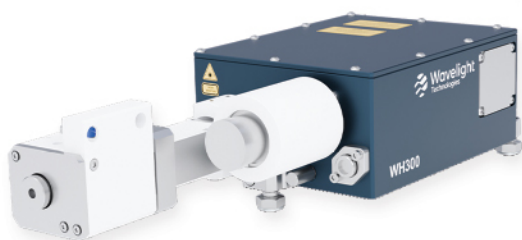
WH100

Engineered for precise frequency conversion of nanosecond laser radiation, the WH100 delivers efficient second, third, fourth, and even fifth harmonic generation. Its robust performance and high conversion efficiency make it an essential tool for both industrial and scientific laser systems.



WH200

The WH200 provides excellent conversion of IR output from the DPSS laser model WH500 to the VIS or UV range. Its compact design and unique optical scheme allow for stable output wavelength tuning quickly and without the need for additional adjustments.



WH300

The WH300 is a series of harmonic generators designed for the conversion of tunable laser radiation, such as Ti:Sapphire lasers and OPO/OPA systems. These generators feature a dust-proof design and an effective beam separation scheme for isolating the converted beam from the input radiation. They are available with either manual wavelength control or a PC-controlled option.

HARMONIC GENERATORS MODELS



WH400

Optimized for femtosecond pulse durations, the WH400 delivers high-quality and efficient harmonic generation. It is ideal for advanced research and experiments in ultrafast laser diagnostics, multiphoton absorption, and polymerization—where precise timing and spatial alignment are critical.



WH500

Designed for picosecond pulsed lasers, the WH500 combines ultra-efficient conversion with long-term output stability. Its advanced optical design allows for easy wavelength selection from IR to UV, making it a valuable tool for scientists working in nonlinear and ultrafast spectroscopy, pump-probe experiments, and micromachining.



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CUSTOMIZED LASER SYSTEMS

Since 2020, Wavelight Technologies has specialized in designing and producing customized laser systems for private and government clients. With deep expertise in solid-state lasers, we also contribute to research in science, medicine, and industry.

Our team, including PhD physicists and engineers, understands the challenges researchers face—such as limited budgets, space constraints, and complex technical requirements. To address these needs, we offer a dedicated Custom Laser Solutions Program, delivering systems tailored to specific applications.

By combining proven modules from our standard products with redesigned components, we ensure fast development, high reliability, and precise performance. All custom systems come with full warranty and expert support.

Key Features of Wavelight Custom Laser Systems

- Spectral range: 0.2 – 20 μm
- Fixed or tunable wavelengths
- Narrow linewidth: down to 0.05 cm^{-1}
- Pulse durations: femto- to millisecond range
- Pulse energy: sub- μJ to 100 J
- Diode- and lamp-pumped options
- Repetition rate: single shot to 80 MHz
- Integrated wavelength & energy meters
- Fully automated PC control
- Adjustable pulse shape and duration

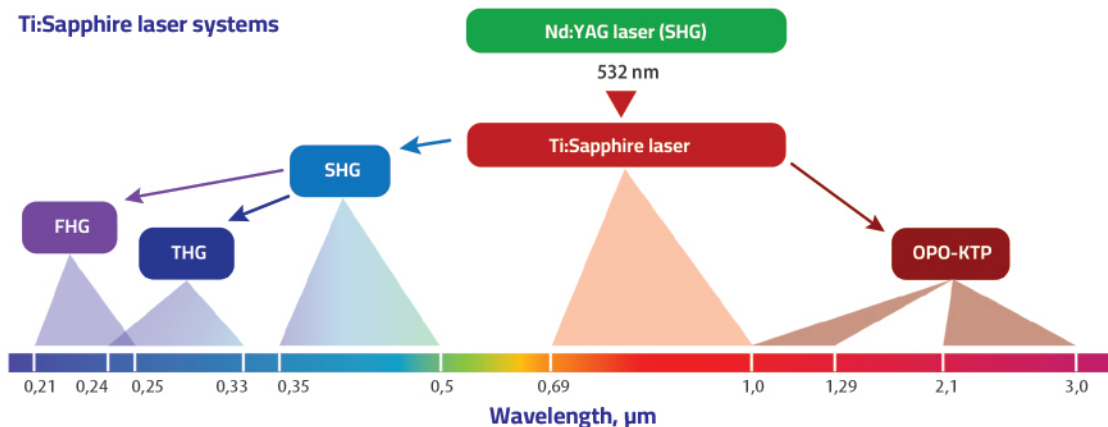
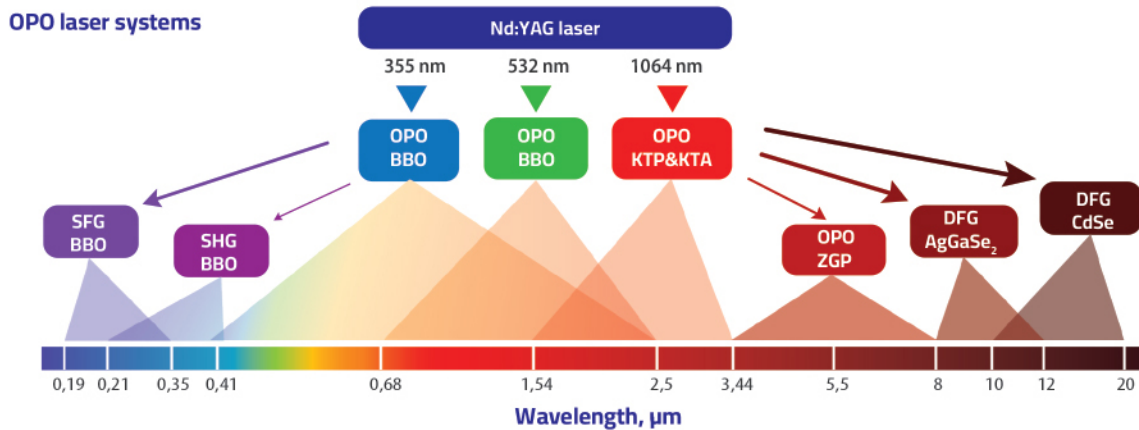


ARCHITECTURE AND PRINCIPLES OF CONSTRUCTION

Combining various laser and nonlinear converters using the most advanced active media and nonlinear crystals allows us to provide laser output both with any set of fixed wavelengths and with a possibility of continuous wavelength tuning within the range from 0,2 μm to 20 μm .

When designing a laser system under your requirements we, as a rule, create it on the basis of the following main modules:

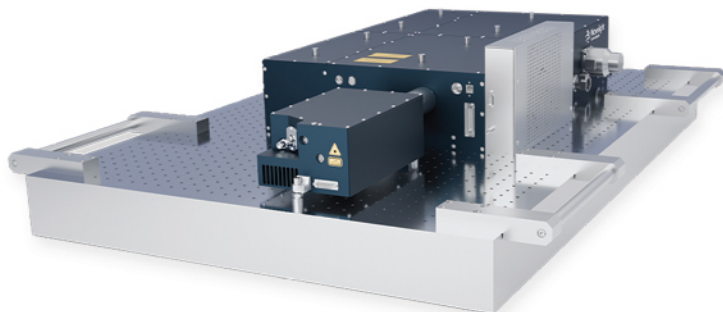
- Nd:YAG lasers with harmonic generators;
- Ti:Sapphire lasers with harmonic generators;
- OPO with harmonic generators based on BBO, KTP, KTA, AgGaSe₂, ZGP crystals;
- Sum-Frequency Generators based on BBO, KTP, KTA crystals;
- Difference-Frequency Generators based on ZGP, CdSe crystals.



Design of such laser systems takes into account the customers requirements in terms of the spatial arrangement, laser radiation parameters and possibility to control the whole system or its separate modules. Depending on your requirements to the laser system both our standard modules and individually developed ones can be used as the system's separate parts.

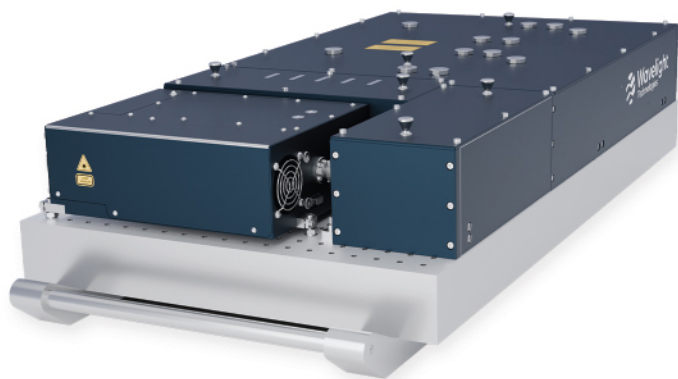
Optional components such as power meters, attenuators, wavelength control, and spectral analysis tools can be seamlessly integrated into your laser system from the development stage.

CUSTOMIZED LASER SYSTEMS



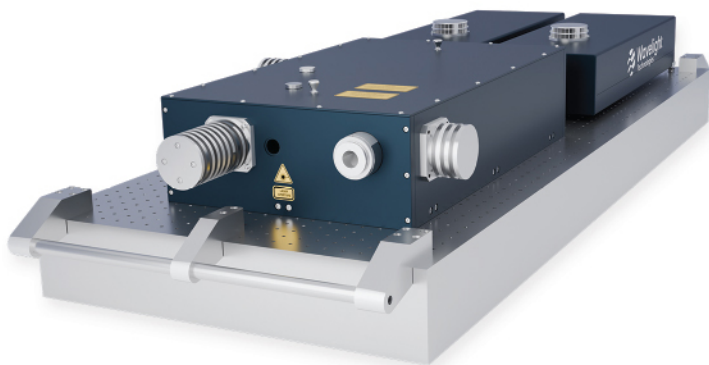
Laser system with adjustable pulse duration, shape and output energy – for modeling the impact of ionizing radiation on electronic components of devices

- Operation wavelength: 1064 nm
- PRR: 1-10 Hz
- Pulsewidth (adjustable): 0.1 ... 30 us (microsecond)
- Peak power: 3 ... 100 kW/cm²
- Bead dia (adjustable): 8 ... 30 mm
- Divergence: ≤ 2 mrad



Laser system for differential absorption and scattering LIDAR for measuring methane concentration in the atmosphere.

- Operation wavelengths: 3428,18nm and 3422,05nm
- Linewidth $\leq 1,5$ cm⁻¹ (FWHM)
- Pulse energy: 3 mJ
- PRR: 10 Hz
- Pulsewidth: 8 ns
- Divergence: ≤ 5 mrad
- Bead dia: ≤ 6 mm



High pulse energy laser system to study Thomson scattering

- Operation wavelength: 532 nm
- PRR: 10 Hz
- Pulse energy: 1200 mJ
- Pulsewidth: 13 ns
- Available also for 1064nm or 266nm

LASER ACCESSORIES



WA100 Laser power attenuators LA

Laser power attenuators allow for gradual adjustment of the laser radiation's energy or power.

Application

- Scientific research
- Industrial laser systems
- Micromachining laser systems

Laser power attenuators are designed to smoothly adjust the energy or power of laser radiation.

The attenuator is made up of a phase plate and a thin-film polarizer positioned at a Brewster angle. The polarizer allows P-polarization to pass while reflecting S-polarization. The phase plate rotates the polarization plane, and transmission is controlled by adjusting the phase plate.

These attenuators are compatible with a wide range of laser radiation sources, including 1064nm, 1030nm, 532nm, 515nm, 355nm, 343nm, 266nm, and 257nm.

Specifications

| Parameter | Value | | | |
|----------------------|------------------------|----------------------|----------------------|----------------------|
| | 1064nm / 1030nm | 532nm / 515nm | 355nm / 343nm | 266nm / 257nm |
| Aperture | Ø 15 mm | | | |
| Max allowed beam dia | Ø 15 mm | | | |
| Optical scheme | Wave plate + polarizer | | | |
| Attenuation range | 0,1..98% | 0,1..98% | 0,2..96% | 0,5..95% |
| LIDT | >10 J/cm ² | >5 J/cm ² | >3 J/cm ² | >2 J/cm ² |
| Close to open time | <0.2 sec | | | |
| Contrast | 1:1000 | 1:1000 | 1:500 | 1:200 |
| Input voltage | DC 12V | | | |
| Control | built-in software | | | |
| Mounting holes | M4, M6 | | | |

