

KLS 246⁺

Pulsed Nd:YAG lasers
10 to 220 W output



- Unique in the field of fine cutting, precision drilling and scribing
- Outstanding beam quality at high peak power
- For conventional beam and/or fiber beam delivery
- Optimum flexibility for a full line of processing and production demands
- Multiple interfaces and user-friendly control

LASAG
INDUSTRIAL-LASERS

KLS 246⁺ ... a unique tool for micromachining

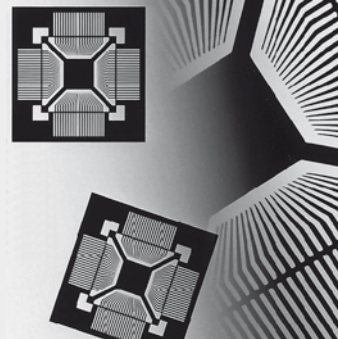
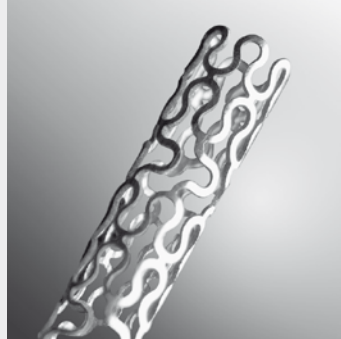
Modern applications in the medical device industry, the electronics, the auto industry and precision engineering demand increasingly flexible tools for highest precision processing with minimum thermal side effects. The KLS 246 lasers have proven themselves under the most punishing industrial conditions.

- Outstanding beam quality at high peak power up to 6 kW distinguishes the KLS 246 series of pulsed Nd:YAG lasers clearly from the competition.
- Provides precision processing with extremely small spot diameters starting at < 20 µm, especially for conventional beam delivery. High pulse frequencies of up to 5 kHz guarantee optimum cutting quality and superior productivity.
- Reproducible mechanical/optical interface between the optical system and the processing head provides quick changeover and superior flexibility for optimum processing and system integration.
- Flexible, cost-efficient production solutions thanks to optional fiber beam delivery to as many as four workstations in time-sharing and/or energy-sharing with a single laser source.
- Compact industrial design guarantees simple and foolproof integration in your production environment. The LASAG interface is compatible with every current CNC, PLC or PC control system.
- Superior serviceability is a matter of course thanks to modular design and remote diagnosis via modem.

KLS 246⁺ ... examples of versatile industrial applications

Fine cutting of medical implants (stents)

- Fulfills highest requirement for cutting quality, dimensional stability and heat input
- Tube diameter ≥ 0.4 mm
- Minimum kerf width < 20 µm
- Smooth cutting kerfs

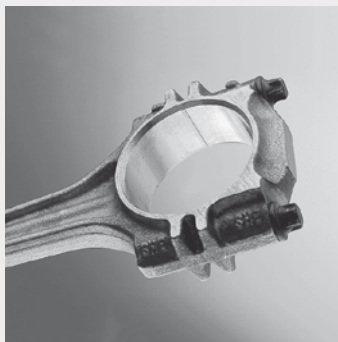


Cutting of solder-screen stencils, etched parts and molded parts

- high cutting speeds up to 4 m/min
- Aspect ratios up to 2 mm
- Material thicknesses up to 2 mm
- Oxide-free and burr-free cutting

Drilling of filters

- Hole diameters down to < 30 µm
- high-speed drilling of up to 500 holes per second with single-shot drilling
- Aspect ratios up to 1:30 for percussion drilling



Scribing

- Creation of fracture notches up to 2 mm depth and down to 0.05 mm width
- Used for cracking processes on brittle metals as C60

Materials suitable for machining with Nd:YAG lasers

- Steel and stainless steel
- Light metal
- Nonferrous metals, precious metals
- Sintered carbide, diamond
- Nickel, cobalt and titanium alloys
- Ceramics and semi-conducting material
- Composites

KLS 246⁺ ... for more flexible beam delivery

The type of processing, workpiece, handling and production environment determine the beam delivery to be used. The KLS 246 series of lasers provides you with solutions for any industrial situation.



- Compact optical system**
- Resonator and processing head are attached directly to the machine
 - Conventional beam delivery and short beam path assure outstanding beam quality and precise processing results

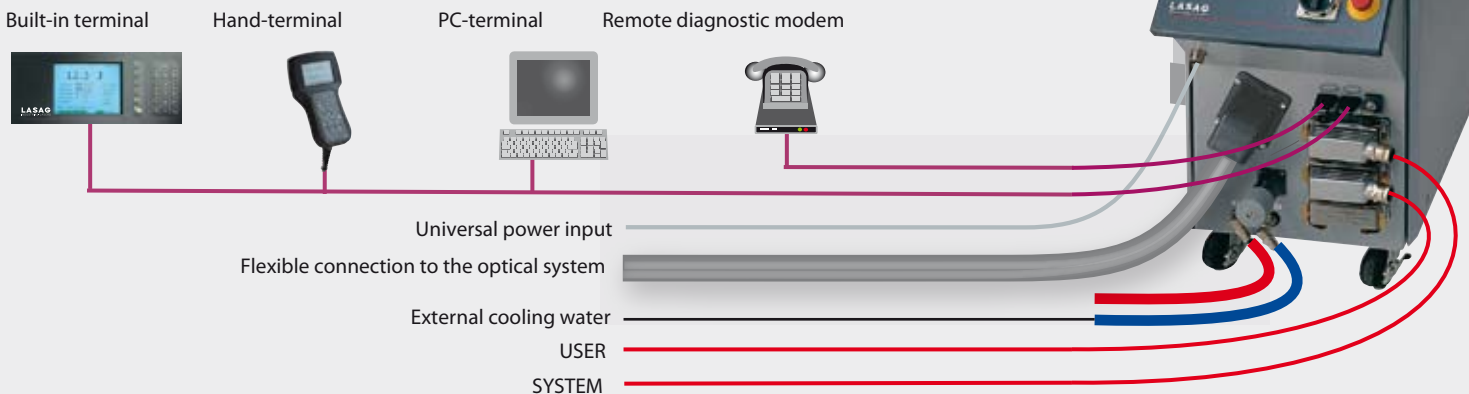
- LLEK**
- Optional module for additional optical components e.g. beam-expander
 - Coupling module handles up to four fibers
 - Industrial mounting plate for resonator and processing head

- BAK 4**
- Industrial standard processing head with mounting plate
 - Focal lengths from 50 to 300 mm
 - Can be swiveled $\pm 90^\circ$
 - Wide variety of cutting, drilling and welding nozzles
 - Optional collision protection and height sensing
 - Observation with monocular, binocular and / or CCD TV cameras
 - Illumination or ring light



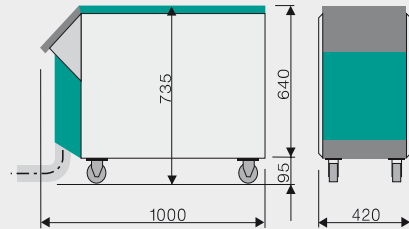
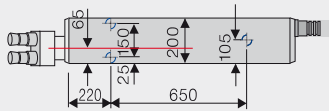
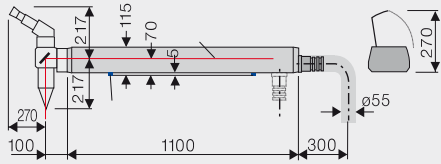
KLS 246⁺ ... for convenient integration

All LASAG lasers have a variety of interface options.



KLS 246 ⁺

Cutting LightWare™



Specifications

Sources available for cavity	-040 FC	-046	-102	-302	-306	-502	MC20
Laser type	Pulsed Nd:YAG-solid-state laser						
Wavelength	nm 1064	1064	1064	1064	1064	1064	1064
Beam diameter	mm 2.5	4.0	6.0	6.0	6.0	6.0	2.5
Pulse length	ms 0.012-0.3	0.02-20	0.02-20	0.1-20	0.1-20	0.1-20	0.015-0.1
Pulse repetition rate	Hz 0.1-5000	0.1-1000	0.1-1000	0.1-1000	0.1-1000	0.1-1000	0.1-5000
Pulse energy max. ¹⁾	J 0.002-0.18 ²⁾	15	30	50	50	50	0.1 ³⁾
Peak power ¹⁾	kW 0.6 ²⁾	4 ²⁾	6 ²⁾	3 ²⁾	5.5 ²⁾	6 ²⁾	1.2 ³⁾
Average power max. ¹⁾	W 15	100	150	220	220	250	20

¹⁾ measured without beam delivery with new flash lamp ²⁾ at 0.3 ms ³⁾ at 0.1 ms

Line power

Configuration	3-phase + ground, ± 10%						
multitap transformer for	3x200 V, 208 V, 230 V, 380 V, 400 V, 480 V						
Power consumption	9 kVA						4 kVA
Line frequency	50 Hz or 60 Hz						

Cooling water connection

Water inlet max.	20°C/8bar						
Pressure drop to outlet, min.	4 bar						
Cooling power max.	8.5 kW, depending on laser output						3 kW

Weight

Laser unit	200 kg						165 kg
Optical system	30 kg						25 kg

Ambient conditions

Ambient temperature max.	10-35°C						
Relative humidity max.	80%						

Emissions

Noise at 1 m, idle	60 dBA						
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Compliance with standards

CE compliant, EN 60825-1, EN 60204-1, EN 207, EN 61000-6-4, EN 61000-6-2	
IEC 825-1, FDA-CDRH: U.S. 21 CFR 1040.10, ISO 11553	Subject to change

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