



Think of **LASER** as a tool
Innovative Laser Technology for Industrial Use

PRODUCT GUIDE



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Innovative Laser Technology for Industrial Use

**PRODUCT
GUIDE**

WELCOME AT INNOLAS PHOTONICS



Industrial Lasers. Powerful. Reliable. Made in Germany.

InnoLas Photonics designs and manufactures industrial lasers for high precision micro machining applications like PV, electronic and SEMI manufacturing or laser marking, soldering, spot and plastic welding.

As a member of the InnoLas Group, InnoLas Photonics has sales and service offices around the world. We work for and with our customers to provide preferred laser solutions and do not compromise on quality.



The InnoLas building in Krailing/Munich



Reinhard Kelnberger,
General Manager

Our Mission

20 years of experience and thousands of laser systems installed all over the world clearly states our mission: **Think of LASER as a tool.**

Our clean room production and the use of highest quality components ensures consistent quality and longest laser lifetimes for hands-off operation in 24/7 industrial applications.

Our Core Values

Our core values define our culture and the way we work at InnoLas Photonics. They influence our behaviour, uniting people from different cultures, countries and backgrounds and help us to work harmoniously together. Our core values consist of four pairs:

- * Customer Focus & Long Term View
- * Quality & Innovation
- * Freedom & Responsibility
- * Partnership & Fun

Innovation

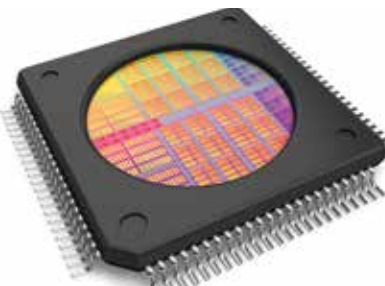
We love to carry engineering skills to the extreme, pushing the limit. The latest laser technologies combined with reliable performance and competitive pricing enable our customers' success in today's industrial world.



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Q-SWITCHED LASERS



blizz* High Power DPSS Lasers

Superior Reliability. Unprecedented Cost-Performance Ratio.

The BLIZZ is the latest addition to our line-up of Q-switched DPSS lasers, engineered for superior reliability and performance. Coming with a disruptive cost-performance ratio the BLIZZ is made for demanding 24/7 industrial applications that require excellent performance but lowest cost-of-ownership. Based on the field proven NANIO SERIES the BLIZZ's

new design cuts down system costs significantly without any trade-offs in quality or laser lifetime. The rugged laser head comes with an exceptionally small 24 VDC power supply for OEMs or optionally with a 1 RU power supply using the field proven InnoLas Laser Control Interface that is common to all InnoLas Photonics industrial lasers.

Applications

- * Touch Panel Manufacturing
- * Ceramic Scribing
- * CFRP Cutting
- * Solar Cell Manufacturing
- * PCB Cutting

Features

- * Superior pulse-to-pulse stability
- * High peak power and short pulse width
- * Compact & rugged industrial design
- * Easy integration and service
- * Compact 24 VDC OEM Power Supply

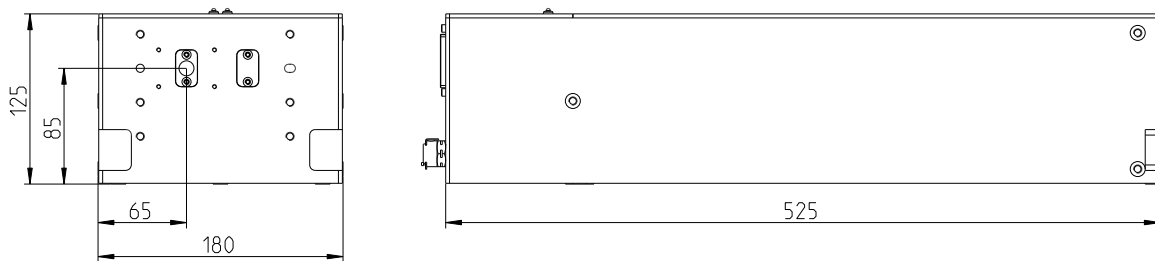


(i) With pulsewidths as short as 20 ns and pulse energies up to 750 μ J, the BLIZZ is the perfect tool for today's demanding applications that require high output power, excellent beam quality and superior pulse-to-pulse stability even at high repetition rates.

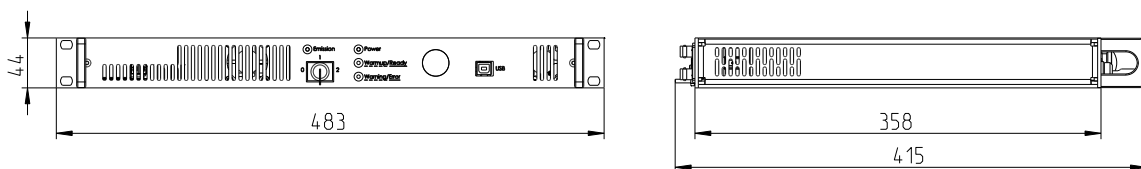


Technical Drawing

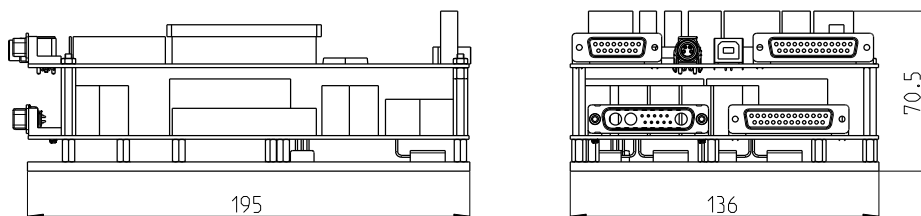
Laser Head



19" Power Supply



OEM Power Supply



Q-SWITCHED LASERS

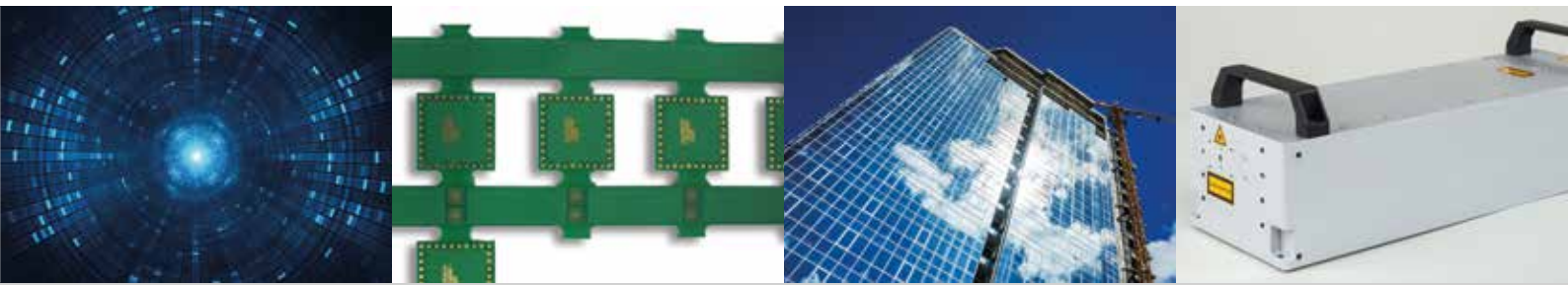


Specifications

BLIZZ 532

Model	532-30-V	532-20-V-300
Laser Medium	Nd:YVO ₄	Nd:YVO ₄
Wavelength	532 nm	532 nm
Nominal Power	30 W @ 40 kHz	20 W @ 300 kHz
Repetition Rate	Single Shot to 400 kHz	Single Shot to 400 kHz
Pulse Width	< 20 ns @ 40 kHz	< 100 ns @ 300 kHz
Pulse Energy	750 μJ @ 40 kHz	67 μJ @ 300 kHz
Peak Power	> 37.5 kW @ 40 kHz	> 0.67 kW @ 300 kHz
Pulse-to-Pulse Stability	< 1% @ 40 kHz	< 3% @ 300 kHz
Power Stability (rms, 8h)	< 2%	< 2%
Spatial Mode	M ² < 1.4, TEM ₀₀	M ² < 1.4, TEM ₀₀
Nominal Beam Diameter (at waist)	0.6 mm	0.6 mm
Nominal Waist Location (from output)	-350 mm	-350 mm
Beam Divergence (full angle)	1.6 mrad	1.6 mrad
Nominal Beam Diameter (at output)	0.5 mm	0.5 mm
Polarization	Vertical, > 100:1	Vertical, > 100:1
Circularity	> 90%	> 90%
Warm-up Time	< 20 min	< 20 min
Operating Voltage	115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase
Laser Power Consumption	< 500 W	< 500 W
Cooling	Water	Water
Ambient Temperature	15-40 °C (59-104 °F), non-condensing	15-40 °C (59-104 °F), non-condensing
External Control	RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control
Dimensions Laser Head (L x W x H)	525 x 180 x 125 mm (20.67 x 7.09 x 4.92 in.)	525 x 180 x 125 mm (20.67 x 7.09 x 4.92 in.)
Dimensions Power Supply (L x W x H)	358 x 447 x 44 mm (14.09 x 17.6 x 1.73 in.) 19" system, 1 RU high	358 x 447 x 44 mm (14.09 x 17.6 x 1.73 in.) 19" system, 1 RU high
Weight Laser Head	20 kg (44.1 lbs.)	20 kg (44.1 lbs.)
Weight Power Supply	6 kg (13.2 lbs.)	6 kg (13.2 lbs.)

InnoLas follows a policy of continuous product improvement. All specifications are subject to change without notice. Rev. 1.2, 06/2015.
InnoLas Photonics GmbH is DIN EN ISO 9001 certified.

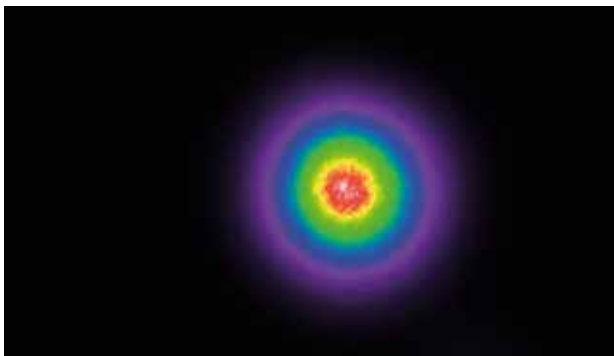


Options & Customization



Available Options

- * Umbilical length 1-10 m
- * 45° connectors at the laser head
- * Pulse picker AOM
- * Beam expander box
- * Variable attenuator box
- * Scan head adapter flanges
- * Water-to-water or water-to-air chiller



Customization

- * Customized laser performance
- * Power supply front panel design
- * Laser interfacing
- * Branded laser control software
- * Special laser developments



nano series* Industrial DPSS Lasers

Reliable. Functional. Modular.

The nano series of diode-pumped solid-state lasers is designed to perfectly fit today's requirements for industrial laser processing systems. The sealed cavity, modular design, fully detachable umbilicals and industrial grade connectors make this laser a rugged tool with exceptional performance and reliability.

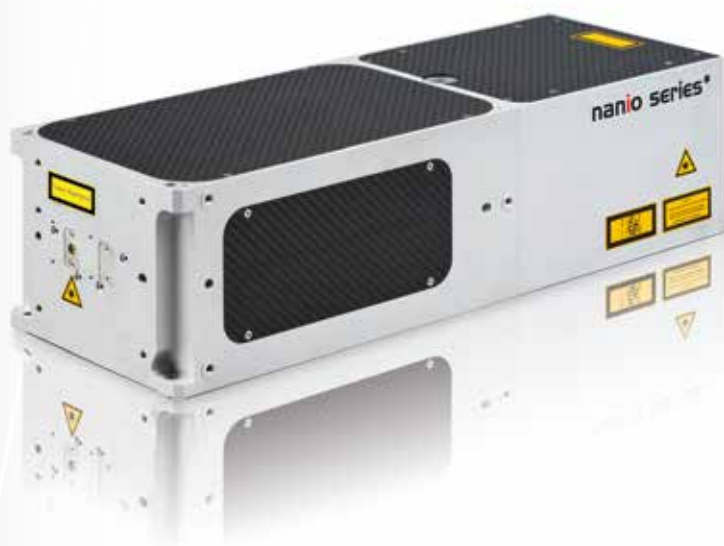
Besides customer needs, reliability was the main driving force during the development of the nano series. Our clean room production and the use of highest quality components ensures consistent quality and longest laser lifetime.

Applications

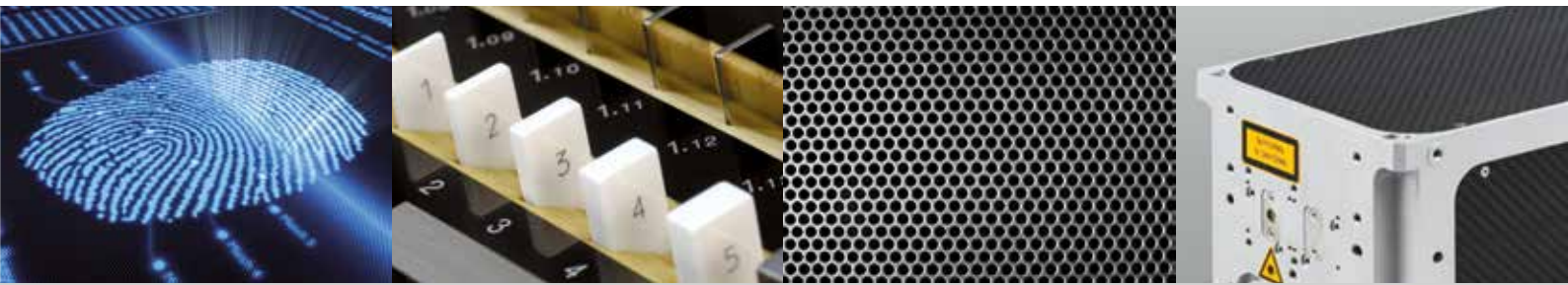
- * ID Card Marking
- * LED Back Light
- * PCB Cutting
- * PV Manufacturing
- * Diamond Cutting

Features

- * Superior pulse-to-pulse stability
- * High peak power and short pulse width
- * Modular industrial design
- * Easy integration and service
- * Field proven long life pump diode modules

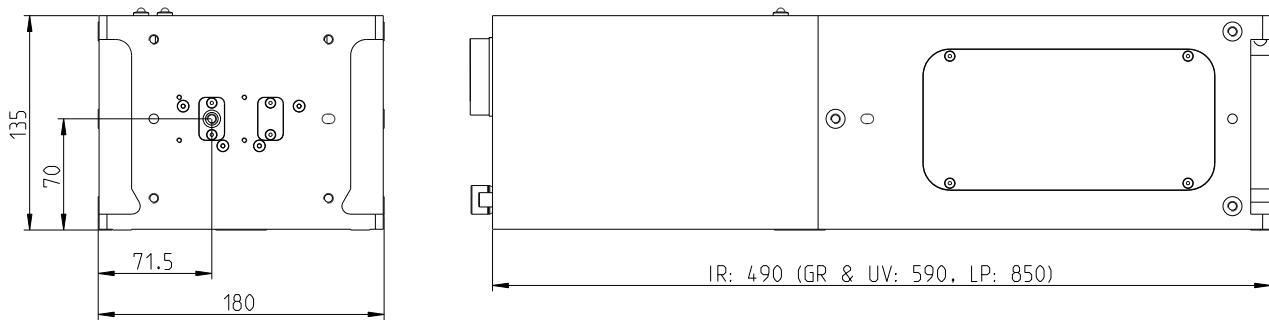


(i) The modular design of the nano series lasers simplifies servicing and minimizes downtime. Every field replaceable component can be exchanged within minutes without dismounting the laser head. So the beam path in your machine remains aligned.

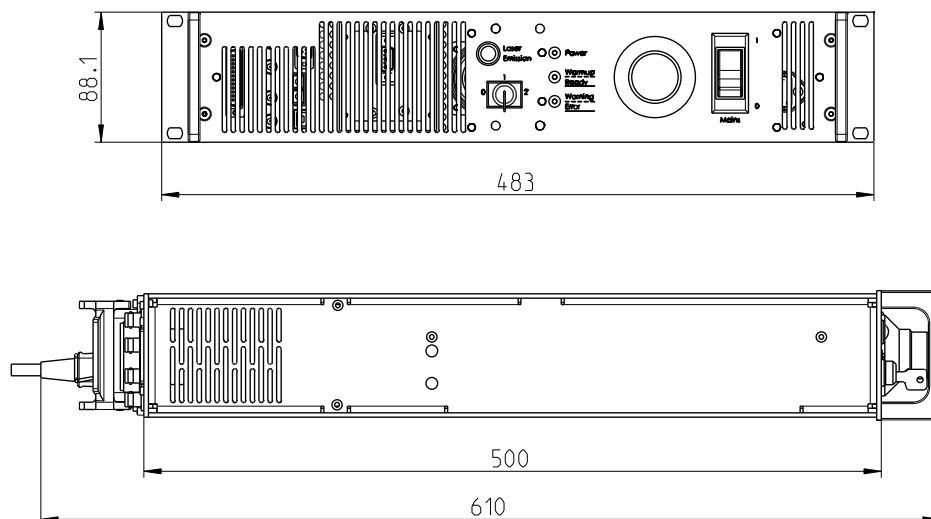


Technical Drawing

Laser Head



Power Supply



Q-SWITCHED LASERS



Specifications

NANIO 355

Model	355-8-V-60	355-6-V-80
Laser Medium	Nd:YVO ₄	Nd:YVO ₄
Wavelength	355 nm	355 nm
Nominal Power	8 W @ 60 kHz	6 W @ 80 kHz
Repetition Rate	Single Shot to 300 kHz	Single Shot to 300 kHz
Pulse Width	< 25 ns @ 60 kHz	< 35 ns @ 80 kHz
Pulse Energy	133 μJ @ 60 kHz	75 μJ @ 80 kHz
Peak Power	> 5.3 kW @ 60 kHz	> 2.1 kW @ 80 kHz
Pulse-to-Pulse Stability	< 2% @ 60 kHz	< 2% @ 80 kHz
Power Stability (rms, 8h)	< 2%	< 2%
Spatial Mode	M ² < 1.4, TEM ₀₀	M ² < 1.3, TEM ₀₀
Nominal Beam Diameter (at waist)	0.24 mm	0.24 mm
Nominal Waist Location (from output)	-333 mm	-333 mm
Beam Divergence (full angle)	2.6 mrad	2.4 mrad
Nominal Beam Diameter (at output)	0.9 mm	0.85 mm
Polarization	Vertical, > 100:1	Vertical, > 100:1
Circularity	> 90%	> 90%
Warm-up Time	< 15 min	< 15 min
Operating Voltage	115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase
Laser Power Consumption	< 500 W	< 500 W
Cooling	Water-to-Water or Water-to-Air	Water-to-Water or Water-to-Air
Ambient Temperature	15-40 °C (59-104 °F), non-condensing	15-40 °C (59-104 °F), non-condensing
External Control	RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control
Dimensions Laser Head (L x W x H)	590 x 180 x 135 mm (23.23 x 7.09 x 5.31 in.)	590 x 180 x 135 mm (23.23 x 7.09 x 5.31 in.)
Dimensions Power Supply (L x W x H)	500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.) 19" system, 2 RU high	500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.) 19" system, 2 RU high
Weight Laser Head	19 kg (41.9 lbs.)	19 kg (41.9 lbs.)
Weight Power Supply	12 kg (26.5 lbs.)	12 kg (26.5 lbs.)



355-3-V-150	355-3-V	355-1-V-400
Nd:YVO ₄	Nd:YVO ₄	Nd:YVO ₄
355 nm	355 nm	355 nm
3 W @ 150 kHz	3 W @ 40 kHz	1 W @ 400 kHz
Single Shot to 300 kHz	Single Shot to 300 kHz	Single Shot to 500 kHz
< 35 ns @ 150 kHz	< 35 ns @ 40 kHz	< 60 ns @ 400 kHz
20 μJ @ 150 kHz	75 μJ @ 40 kHz	2.5 μJ @ 400 kHz
> 0.57 kW @ 150 kHz	> 2.1 kW @ 40 kHz	> 0.04 kW @ 400 kHz
< 2% @ 150 kHz	< 2% @ 40 kHz	< 4% @ 400 kHz
< 2%	< 2%	< 2%
M ² < 1.3, TEM ₀₀	M ² < 1.3, TEM ₀₀	M ² < 1.4, TEM ₀₀
0.24 mm	0.35 mm	0.16 mm
-333 mm	-333 mm	-280 mm
2.4 mrad	1.8 mrad	3.9 mrad
0.85 mm	0.66 mm	1.2 mm
Vertical, > 100:1	Vertical, > 100:1	Vertical, > 100:1
> 90%	> 90%	> 85%
< 15 min	< 15 min	< 15 min
115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase
< 500 W	< 500 W	< 500 W
Water-to-Water or Water-to-Air	Water-to-Water or Water-to-Air	Water-to-Water or Water-to-Air
15-40 °C (59-104 °F), non-condensing	15-40 °C (59-104 °F), non-condensing	15-40 °C (59-104 °F), non-condensing
RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control
590 x 180 x 135 mm (23.23 x 7.09 x 5.31 in.)	590 x 180 x 135 mm (23.23 x 7.09 x 5.31 in.)	490 x 180 x 135 mm (19.29 x 7.09 x 5.31 in.)
500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.)	500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.)	500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.)
19" system, 2 RU high	19" system, 2 RU high	19" system, 2 RU high
19 kg (41.9 lbs.)	19 kg (41.9 lbs.)	17 kg (37.5 lbs.)
12 kg (26.5 lbs.)	12 kg (26.5 lbs.)	12 kg (26.5 lbs.)

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Specifications

NANIO 532

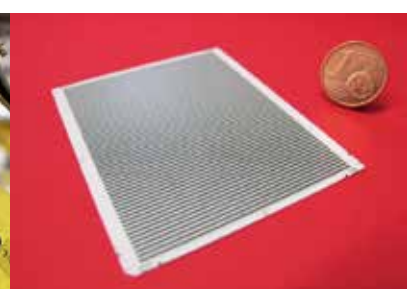
Model	532-20-V	532-20-V-100	532-10-V
Laser Medium	Nd:YVO ₄	Nd:YVO ₄	Nd:YVO ₄
Wavelength	532 nm	532 nm	532 nm
Nominal Power	20 W @ 40 kHz	20 W @ 100 kHz	10 W @ 40 kHz
Repetition Rate	Single Shot to 500 kHz	Single Shot to 500 kHz	Single Shot to 300 kHz
Pulse Width	< 20 ns @ 40 kHz	< 40 ns @ 100 kHz	< 30 ns @ 40 kHz
Pulse Energy	500 μJ @ 40 kHz	200 μJ @ 100 kHz	250 μJ @ 40 kHz
Peak Power	> 25 kW @ 40 kHz	> 5 kW @ 100 kHz	> 8.3 kW @ 40 kHz
Pulse-to-Pulse Stability	< 1% @ 40 kHz	< 1% @ 100 kHz	< 1% @ 40 kHz
Power Stability (rms, 8h)	< 2%	< 2%	< 2%
Spatial Mode	M ² < 1.3, TEM ₀₀	M ² < 1.4, TEM ₀₀	M ² < 1.2, TEM ₀₀
Nominal Beam Diameter (at waist)	0.4 mm	0.4 mm	0.5 mm
Nominal Waist Location (from output)	-324 mm	-292 mm	-324 mm
Beam Divergence (full angle)	2.2 mrad	2.3 mrad	1.6 mrad
Nominal Beam Diameter (at output)	0.8 mm	0.8 mm	0.7 mm
Polarization	Horizontal, > 100:1	Horizontal, > 100:1	Horizontal, > 100:1
Circularity	> 90%	> 85%	> 90%
Warm-up Time	< 15 min	< 15 min	< 15 min
Operating Voltage	115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase
Laser Power Consumption	< 500 W	< 500 W	< 500 W
Cooling	Water-to-Water or Water-to-Air	Water-to-Water or Water-to-Air	Water-to-Water or Water-to-Air
Ambient Temperature	15-40 °C (59-104 °F), non-condensing	15-40 °C (59-104 °F), non-condensing	15-40 °C (59-104 °F), non-condensing
External Control	RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control
Dimensions Laser Head (L x W x H)	590 x 180 x 135 mm (23.23 x 7.09 x 5.31 in.)	590 x 180 x 135 mm (23.23 x 7.09 x 5.31 in.)	590 x 180 x 135 mm (23.23 x 7.09 x 5.31 in.)
Dimensions Power Supply (L x W x H)	500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.) 19" system, 2 RU high	500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.) 19" system, 2 RU high	500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.) 19" system, 2 RU high
Weight Laser Head	19 kg (41.9 lbs.)	19 kg (41.9 lbs.)	19 kg (41.9 lbs.)
Weight Power Supply	12 kg (26.5 lbs.)	12 kg (26.5 lbs.)	12 kg (26.5 lbs.)



532-10-V-20	532-14-V-400	532-18-Y
Nd:YVO ₄	Nd:YVO ₄	Nd:YAG
532 nm	532 nm	532 nm
10 W @ 20 kHz	14 W @ 400 kHz	18 W @ 10 kHz
Single Shot to 300 kHz	Single Shot to 500 kHz	Single Shot to 50 kHz
< 10 ns @ 20 kHz	< 60 ns @ 400 kHz	< 40 ns @ 10 kHz
500 μJ @ 20 kHz	35 μJ @ 400 kHz	1800 μJ @ 10 kHz
> 50 kW @ 20 kHz	> 0.58 kW @ 400 kHz	> 45 kW @ 10 kHz
< 1% @ 20 kHz	< 3% @ 400 kHz	< 1.5% @ 10 kHz
< 2%	< 2%	< 2%
M ² < 1.2, TEM ₀₀	M ² < 1.3, TEM ₀₀	M ² < 1.3, TEM ₀₀
0.3 mm	0.2 mm	0.5 mm
-324 mm	-320 mm	-324 mm
2.7 mrad	4.4 mrad	1.7 mrad
0.9 mm	1.4 mm	0.8 mm
Horizontal, > 100:1	Horizontal, > 100:1	Horizontal, > 100:1
> 90%	> 90%	> 85%
< 15 min	< 15 min	< 15 min
115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase
< 500 W	< 500 W	< 500 W
Water-to-Water or Water-to-Air	Water-to-Water or Water-to-Air	Water-to-Water or Water-to-Air
15-40 °C (59-104 °F), non-condensing	15-40 °C (59-104 °F), non-condensing	15-40 °C (59-104 °F), non-condensing
RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control
590 x 180 x 135 mm (23.23 x 7.09 x 5.31 in.)	490 x 180 x 135 mm (19.29 x 7.09 x 5.31 in.)	590 x 180 x 135 mm (23.23 x 7.09 x 5.31 in.)
500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.) 19" system, 2 RU high	500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.) 19" system, 2 RU high	500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.) 19" system, 2 RU high
19 kg (41.9 lbs.)	17 kg (37.5 lbs.)	19 kg (41.9 lbs.)
12 kg (26.5 lbs.)	12 kg (26.5 lbs.)	12 kg (26.5 lbs.)

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Q-SWITCHED LASERS



Specifications

NANIO 1064

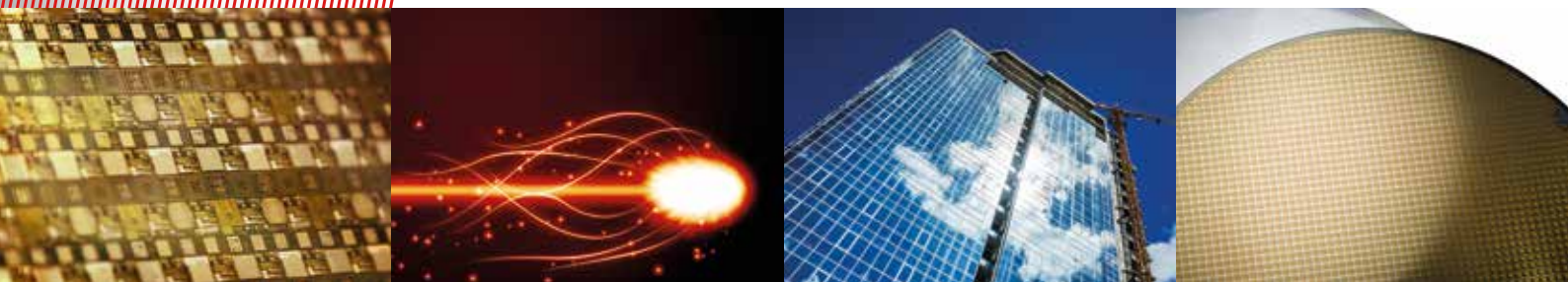
Model	1064-25-V	1064-20-V-20
Laser Medium	Nd:YVO ₄	Nd:YVO ₄
Wavelength	1064 nm	1064 nm
Nominal Power	23 W @ 50 kHz	20 W @ 20 kHz
Repetition Rate	Single Shot to 300 kHz	Single Shot to 60 kHz
Pulse Width	< 40 ns @ 50 kHz	< 10 ns @ 20 kHz
Pulse Energy	460 μJ @ 50 kHz	1000 μJ @ 20 kHz
Peak Power	> 11.5 kW @ 50 kHz	> 100 kW @ 20 kHz
Pulse-to-Pulse Stability	< 0.5% @ 50 kHz	< 1% @ 20 kHz
Power Stability (rms, 8h)	< 1%	< 1%
Spatial Mode	M ² < 1.2, TEM ₀₀	M ² < 1.2, TEM ₀₀
Nominal Beam Diameter (at waist)	0.7 mm	0.6 mm
Nominal Waist Location (from output)	-49 mm	-89 mm
Beam Divergence (full angle)	2.3 mrad	2.7 mrad
Nominal Beam Diameter (at output)	0.7 mm	0.7 mm
Polarization	Vertical, > 100:1	Vertical, > 100:1
Circularity	> 90%	> 90%
Warm-up Time	< 15 min	< 15 min
Operating Voltage	115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase
Laser Power Consumption	< 500 W	< 500 W
Cooling	Water-to-Water or Water-to-Air	Water-to-Water or Water-to-Air
Ambient Temperature	15-40 °C (59-104 °F), non-condensing	15-40 °C (59-104 °F), non-condensing
External Control	RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control
Dimensions Laser Head (L x W x H)	490 x 180 x 135 mm (19.29 x 7.09 x 5.31 in.)	490 x 180 x 135 mm (19.29 x 7.09 x 5.31 in.)
Dimensions Power Supply (L x W x H)	500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.) 19" system, 2 RU high	500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.) 19" system, 2 RU high
Weight Laser Head	17 kg (37.5 lbs.)	17 kg (37.5 lbs.)
Weight Power Supply	12 kg (26.5 lbs.)	12 kg (26.5 lbs.)



1064-16-V	1064-16-V-LP	1064-20-Y
Nd:YVO ₄	Nd:YVO ₄	Nd:YAG
1064 nm	1064 nm	1064 nm
14 W @ 50 kHz	15 W @ 50 kHz	18 W @ 10 kHz
Single Shot to 300 kHz	Single Shot to 150 kHz	Single Shot to 100 kHz
< 45 ns @ 50 kHz	< 100 ns @ 50 kHz	< 40 ns @ 10 kHz
280 µJ @ 50 kHz	300 µJ @ 50 kHz	1800 µJ @ 10 kHz
> 6.2 kW @ 50 kHz	> 3 kW @ 50 kHz	> 45 kW @ 10 kHz
< 0.5% @ 50 kHz	< 1% @ 50 kHz	< 1% @ 10 kHz
< 1%	< 1%	< 1%
M ² < 1.2, TEM ₀₀	M ² < 1.2, TEM ₀₀	M ² < 1.2, TEM ₀₀
0.7 mm	1.2 mm	0.6 mm
-49 mm	-273 mm	-57 mm
2.3 mrad	1.3 mrad	2.7 mrad
0.7 mm	1.3 mm	0.6 mm
Vertical, > 100:1	Vertical, > 100:1	Vertical, > 100:1
> 90%	> 90%	> 90%
< 15 min	< 15 min	< 15 min
115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase
< 500 W	< 500 W	< 500 W
Water-to-Water or Water-to-Air	Water-to-Water or Water-to-Air	Water-to-Water or Water-to-Air
15-40 °C (59-104 °F), non-condensing	15-40 °C (59-104 °F), non-condensing	15-40 °C (59-104 °F), non-condensing
RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control
490 x 180 x 135 mm (19.29 x 7.09 x 5.31 in.)	850 x 180 x 135 mm (33.46 x 7.09 x 5.31 in.)	490 x 180 x 135 mm (19.29 x 7.09 x 5.31 in.)
500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.)	500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.)	500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.)
19" system, 2 RU high	19" system, 2 RU high	19" system, 2 RU high
17 kg (37.5 lbs.)	22 kg (48.5 lbs.)	17 kg (37.5 lbs.)
12 kg (26.5 lbs.)	12 kg (26.5 lbs.)	12 kg (26.5 lbs.)

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Q-SWITCHED LASERS

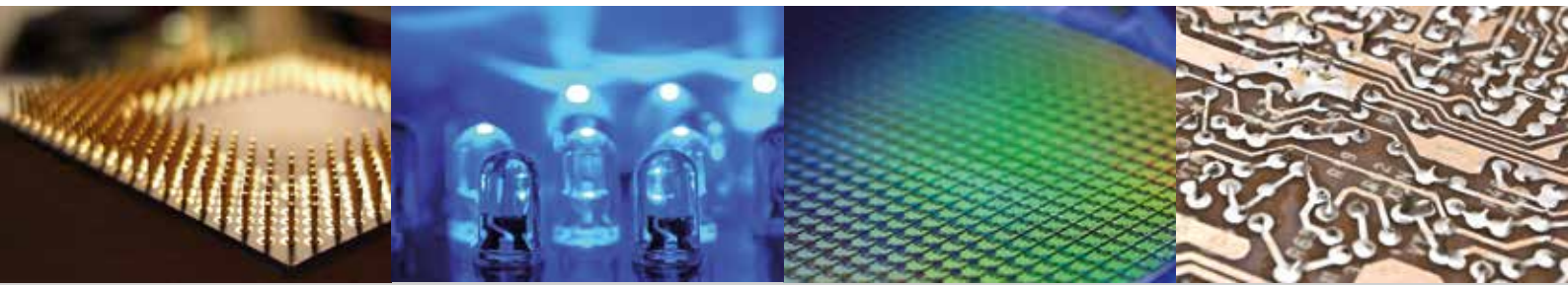


Specifications

NANIO 1342-8-V

Laser Medium	Nd:YVO ₄
Wavelength	1342 nm
Nominal Power	8 W @ 20 kHz
Repetition Rate	Single Shot to 100 kHz
Pulse Width	< 80 ns @ 20 kHz
Pulse Energy	400 µJ @ 20 kHz
Peak Power	> 5 kW @ 20 kHz
Pulse-to-Pulse Stability	< 2.0% @ 20 kHz
Power Stability (rms, 8h)	< 1%
Spatial Mode	M ² < 1.2, TEM ₀₀
Nominal Beam Diameter (at waist)	0.7 mm
Nominal Waist Location (from output)	-49 mm
Beam Divergence (full angle)	2.3 mrad
Nominal Beam Diameter (at output)	0.7 mm
Polarization	Vertical, > 100:1
Circularity	> 90%
Warm-up Time	< 15 min
Operating Voltage	115-230 VAC ± 10%, 50-60 Hz, single phase
Laser Power Consumption	< 500 W
Cooling	Water-to-Water or Water-to-Air
Ambient Temperature	15-40 °C (59-104 °F), non-condensing
External Control	RS232, USB, TTL and Analog Q-Switch Control
Dimensions Laser Head (L x W x H)	490 x 180 x 135 mm (19.29 x 7.09 x 5.31 in.)
Dimensions Power Supply (L x W x H)	500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.) 19" system, 2 RU high
Weight Laser Head	17 kg (37.5 lbs.)
Weight Power Supply	12 kg (26.5 lbs.)

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InnoLas Photonics GmbH is DIN EN ISO 9001 certified.

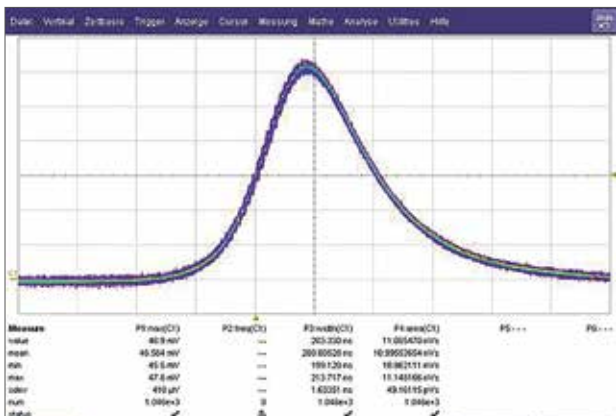


Options & Customization



Available Options

- * Water/air & water/water chiller
- * Failsafe safety shutter & electronics
- * Umbilical length 1-20 m
- * Beam expander box
- * Variable attenuator box
- * Scan head adapter flanges
- * Constant pulse energy mode

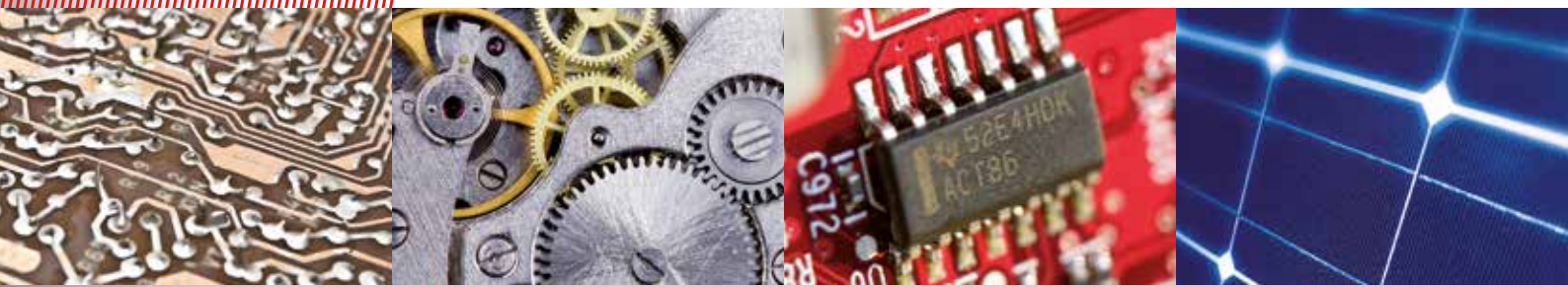


Customization

- * Customized laser performance
- * Pulse picker AOM
- * Power supply front panel design
- * Laser interfacing
- * Branded laser control software
- * Special chillers
- * Special laser developments

(i) Since today's demanding applications deserve optimized laser parameters, we do not only sell off-the-shelf products. We can tailor our laser performance, design, interfacing or software to perfectly fit your individual application needs.





nanio air* Industrial DPSS Lasers

Engineered Reliability. Rugged Design. No Water.

The NANIO AIR lasers are a family of Q-switched DPSS lasers engineered for demanding 24/7 industrial applications based on the proven NANIO series platform. Available in 1064, 532 and 355 nm the NANIO AIR lasers are designed for applications that require short pulse widths, excellent beam quality and high intensity pulses over a wide range

of operating conditions without the need for water cooling. The compact and air cooled system comes with an exceptionally small 1 RU power supply and features quick connectors, wide range AC or 24 VDC supply voltage and the field proven InnoLas Laser Control (ILC) interface which is common to all InnoLas industrial lasers.

Applications

- * Resistor Trimming
- * ID Card Marking
- * PCB Marking
- * LED Backlight
- * Plastic Marking

Features

- * Air Cooling
- * Superior pulse-to-pulse stability
- * High peak power and short pulse width
- * Low cost of ownership
- * Field proven long life pump diode

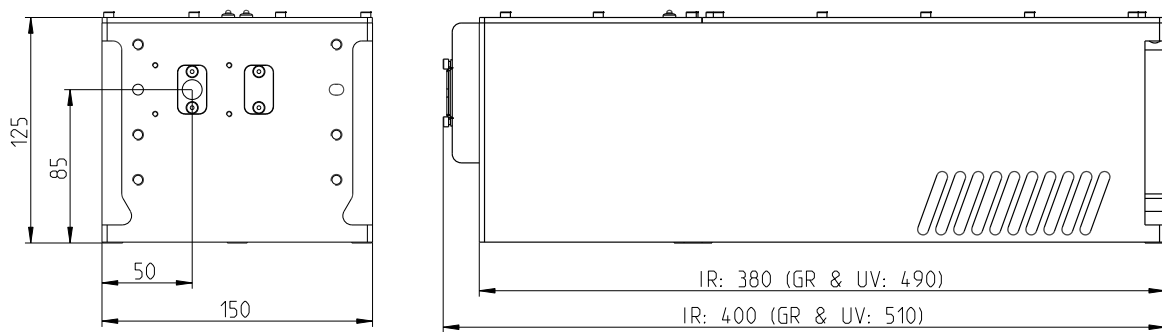


(i) NANIO AIR lasers combine vibration-free air cooling with excellent TEM₀₀ beam quality, output powers up to 16 W and pulse widths below 10 ns. This minimizes undesirable thermal damage of the material and enables consistent and reliable scribing results.

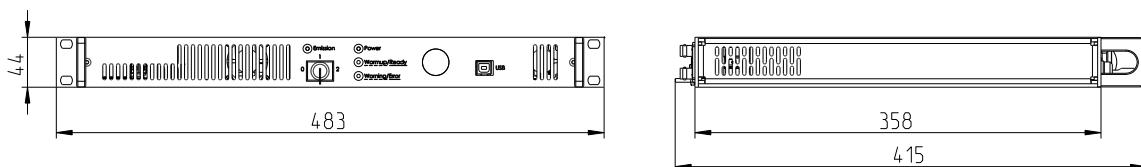


Technical Drawing

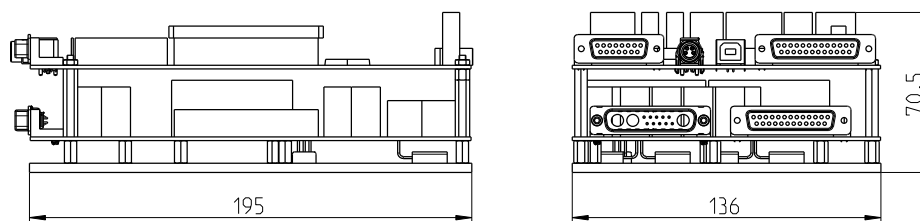
Laser Head



19" Power Supply



OEM Power Supply

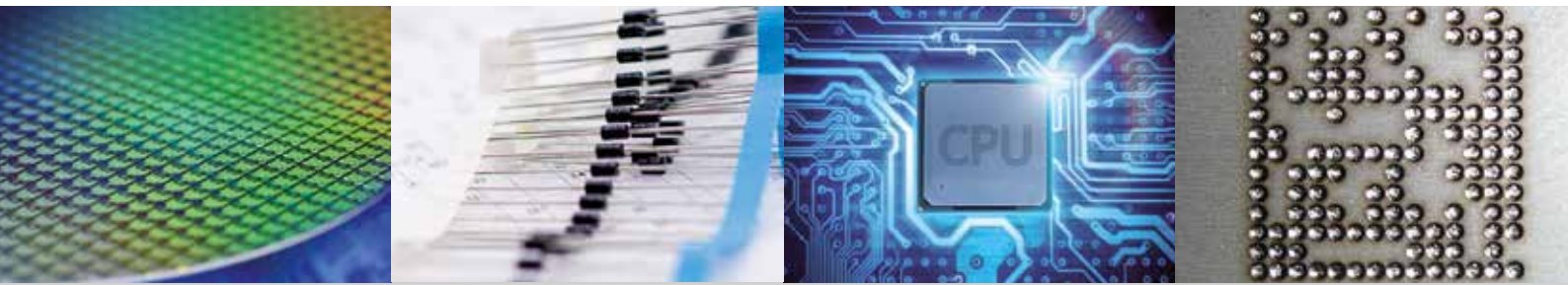




Specifications

NANIO AIR 355

Model	355-5-V	355-3-V
Laser Medium	Nd:YVO ₄	Nd:YVO ₄
Wavelength	355 nm	355 nm
Nominal Power	5 W @ 40 kHz	3 W @ 40 kHz
Repetition Rate	Single Shot to 300 kHz	Single Shot to 300 kHz
Pulse Width	< 20 ns @ 40 kHz	< 35 ns @ 40 kHz
Pulse Energy	125 µJ @ 40 kHz	75 µJ @ 40 kHz
Peak Power	> 6.2 kW @ 40 kHz	> 2.1 kW @ 40 kHz
Pulse-to-Pulse Stability	< 2% @ 40 kHz	< 2% @ 40 kHz
Power Stability (rms, 8h)	< 2%	< 2%
Spatial Mode	M ² < 1.3, TEM ₀₀	M ² < 1.3, TEM ₀₀
Nominal Beam Diameter (at waist)	0.3 mm	0.4 mm
Nominal Waist Location (from output)	-380 mm	-408 mm
Beam Divergence (full angle)	1.9 mrad	1.4 mrad
Nominal Beam Diameter (at output)	0.8 mm	0.7 mm
Polarization	Vertical, > 100:1	Vertical, > 100:1
Circularity	> 90%	> 90%
Warm-up Time	< 15 min	< 15 min
Operating Voltage	115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase
Laser Power Consumption	< 350 W	< 350 W
Cooling	Air	Air
Ambient Temperature	15-35 °C (59-95 °F), non-condensing	15-35 °C (59-95 °F), non-condensing
External Control	RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control
Dimensions Laser Head (L x W x H)	510 x 150 x 125 mm (20.08 x 5.91 x 4.92 in.)	510 x 150 x 125 mm (20.08 x 5.91 x 4.92 in.)
Dimensions Power Supply (L x W x H)	358 x 447 x 44 mm (14.09 x 17.6 x 1.73 in.) 19" system, 1 RU high	358 x 447 x 44 mm (14.09 x 17.6 x 1.73 in.) 19" system, 1 RU high
Weight Laser Head	12 kg (26.5 lbs.)	12 kg (26.5 lbs.)
Weight Power Supply	6 kg (13.2 lbs.)	6 kg (13.2 lbs.)



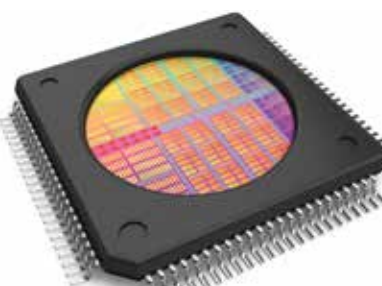
532

1064

532-10-V-SP	532-10-V	532-4-Y-50	1064-16-V
Nd:YVO ₄	Nd:YVO ₄	Nd:YAG	Nd:YVO ₄
532 nm	532 nm	532 nm	1064 nm
10 W @ 40 kHz	10 W @ 40 kHz	4 W @ 10 kHz	14 W @ 50 kHz
Single Shot to 300 kHz	Single Shot to 300 kHz	Single Shot to 100 kHz	Single Shot to 300 kHz
< 20 ns @ 40 kHz	< 30 ns @ 40 kHz	< 50 ns @ 10 kHz	< 45 ns @ 50 kHz
250 μJ @ 40 kHz	250 μJ @ 40 kHz	400 μJ @ 10 kHz	280 μJ @ 50 kHz
> 12.5 kW @ 40 kHz	> 8.3 kW @ 40 kHz	> 8 kW @ 10 kHz	> 6.2 kW @ 50 kHz
< 1% @ 40 kHz	< 1% @ 40 kHz	< 1% @ 10 kHz	< 0.5% @ 50 kHz
< 2%	< 2%	< 2%	< 1%
M ² < 1.2, TEM ₀₀	M ² < 1.2, TEM ₀₀	M ² < 1.2, TEM ₀₀	M ² < 1.2, TEM ₀₀
0.4 mm	0.5 mm	0.5 mm	0.7 mm
-350 mm	-408 mm	-408 mm	-44 mm
2.0 mrad	1.6 mrad	1.6 mrad	2.3 mrad
0.8 mm	0.8 mm	0.8 mm	0.7 mm
Horizontal, > 100:1	Horizontal, > 100:1	Horizontal, > 100:1	Vertical, > 100:1
> 90%	> 90%	> 90%	> 90%
< 15 min	< 15 min	< 15 min	< 10 min
115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase
< 350 W	< 350 W	< 350 W	< 350 W
Air	Air	Air	Air
15-35 °C (59-95 °F), non-condensing	15-35 °C (59-95 °F), non-condensing	15-35 °C (59-95 °F), non-condensing	15-35 °C (59-95 °F), non-condensing
RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control
510 x 150 x 125 mm (20.08 x 5.91 x 4.92 in.)	510 x 150 x 125 mm (20.08 x 5.91 x 4.92 in.)	510 x 150 x 125 mm (20.08 x 5.91 x 4.92 in.)	400 x 150 x 125 mm (15.75 x 5.91 x 4.92 in.)
358 x 447 x 44 mm (14.09 x 17.6 x 1.73 in.) 19" system, 1 RU high	358 x 447 x 44 mm (14.09 x 17.6 x 1.73 in.) 19" system, 1 RU high	358 x 447 x 44 mm (14.09 x 17.6 x 1.73 in.) 19" system, 1 RU high	358 x 447 x 44 mm (14.09 x 17.6 x 1.73 in.) 19" system, 1 RU high
12 kg (26.5 lbs.)	12 kg (26.5 lbs.)	12 kg (26.5 lbs.)	10.5 kg (23.1 lbs.)
6 kg (13.2 lbs.)	6 kg (13.2 lbs.)	6 kg (13.2 lbs.)	6 kg (13.2 lbs.)

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Q-SWITCHED LASERS



Specifications

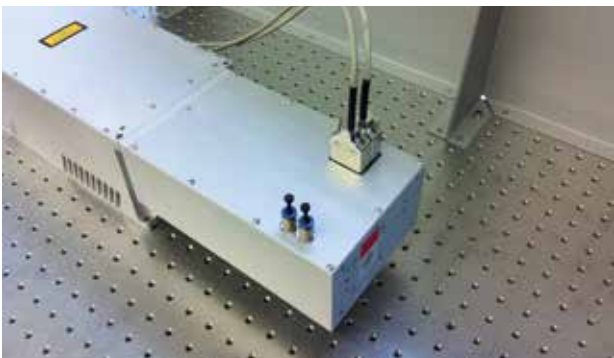
NANIO AIR 1064

Model	1064-7-Y-30	1064-7-Y-50	1064-7-Y-70
Laser Medium	Nd:YAG	Nd:YAG	Nd:YAG
Wavelength	1064 nm	1064 nm	1064 nm
Nominal Power	7 W @ 10 kHz	7 W @ 10 kHz	7 W @ 10 kHz
Repetition Rate	Single Shot to 100 kHz	Single Shot to 100 kHz	Single Shot to 100 kHz
Pulse Width	< 35 ns @ 10 kHz	< 50 ns @ 10 kHz	< 100 ns @ 10 kHz
Pulse Energy	700 µJ @ 10 kHz	700 µJ @ 10 kHz	700 µJ @ 10 kHz
Peak Power	> 20 kW @ 10 kHz	> 14 kW @ 10 kHz	> 7 kW @ 10 kHz
Pulse-to-Pulse Stability	< 1% @ 10 kHz	< 0.5% @ 10 kHz	< 1% @ 10 kHz
Power Stability (rms, 8 h)	< 1%	< 1%	< 1%
Spatial Mode	$M^2 < 1.15, TEM_{00}$	$M^2 < 1.15, TEM_{00}$	$M^2 < 1.15, TEM_{00}$
Nominal Beam Diameter (at waist)	0.5 mm	0.5 mm	0.7 mm
Nominal Waist Location (from output)	-164 mm	-132 mm	-92 mm
Beam Divergence (full angle)	3.1 mrad	3.1 mrad	2.2 mrad
Nominal Beam Diameter (at output)	0.7 mm	0.7 mm	0.7 mm
Polarization	Vertical, > 100:1	Vertical, > 100:1	Vertical, > 100:1
Circularity	> 90%	> 90%	> 90%
Warm-up Time	< 10 min	< 10 min	< 10 min
Operating Voltage	115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase
Laser Power Consumption	< 350 W	< 350 W	< 350 W
Cooling	Air	Air	Air
Ambient Temperature	15-35 °C (59-95 °F), non-condensing	15-35 °C (59-95 °F), non-condensing	15-35 °C (59-95 °F), non-condensing
External Control	RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control
Dimensions Laser Head (L x W x H)	400 x 150 x 125 mm (15.75 x 5.91 x 4.92 in.)	400 x 150 x 125 mm (15.75 x 5.91 x 4.92 in.)	510 x 150 x 125 mm (20.08 x 5.91 x 4.92 in.)
Dimensions Power Supply (L x W x H)	358 x 447 x 44 mm (14.09 x 17.6 x 1.73 in.) 19" system, 1 RU high	358 x 447 x 44 mm (14.09 x 17.6 x 1.73 in.) 19" system, 1 RU high	358 x 447 x 44 mm (14.09 x 17.6 x 1.73 in.) 19" system, 1 RU high
Weight Laser Head	10.5 kg (23.1 lbs.)	10.5 kg (23.1 lbs.)	12 kg (26.5 lbs.)
Weight Power Supply	6 kg (13.2 lbs.)	6 kg (13.2 lbs.)	6 kg (13.2 lbs.)

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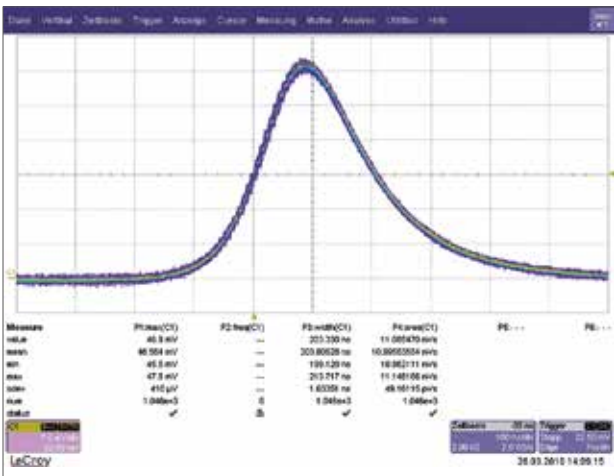


Options & Customization



Available Options

- * Umbilical length 1-10 m
- * 45° connectors at the laser head
- * Pulse picker AOM
- * Beam expander box
- * Variable attenuator box
- * Scan head adapter flanges
- * Constant pulse energy mode



Customization

- * Customized laser performance
- * Power supply front panel design
- * Laser interfacing
- * Branded laser control software
- * Special laser developments

(i) Since today's demanding applications deserve optimized laser parameters, we do not only sell off-the-shelf products. We can tailor our laser performance, design, interfacing or software to perfectly fit your individual application needs.





mosquitoo*X Mini DPSS Lasers

Versatility. Flexibility. Reliability.

The second generation of mosquitoo X mini DPSS lasers are designed to deliver exceptional performance in a compact footprint. The innovative system architecture provides a nearly diffraction limited beam with short pulse widths and superior pulse-to-pulse stability even at high repetition rates. The compact, conduction cooled laser head and the field proven

InnoLas Laser Control (ILC) interface allows easiest integration and make this laser a rugged tool with exceptional performance and reliability. Our clean room production and the use of highest quality components ensures consistent quality and longest laser lifetimes.

Applications

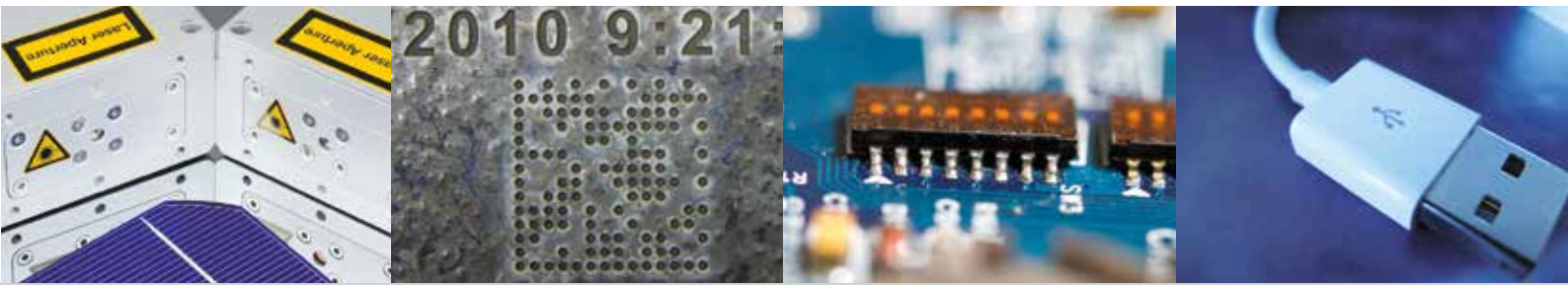
- * Photovoltaic Manufacturing
- * LED Chip and PCB Marking
- * Stereo Lithography
- * Semiconductor Manufacturing
- * Resistor Trimming

Features

- * Short pulse widths of <math><10\text{ ns}</math>
- * Rugged design for hands-off operation
- * Contact cooling
- * Small footprint
- * Long life pump diode

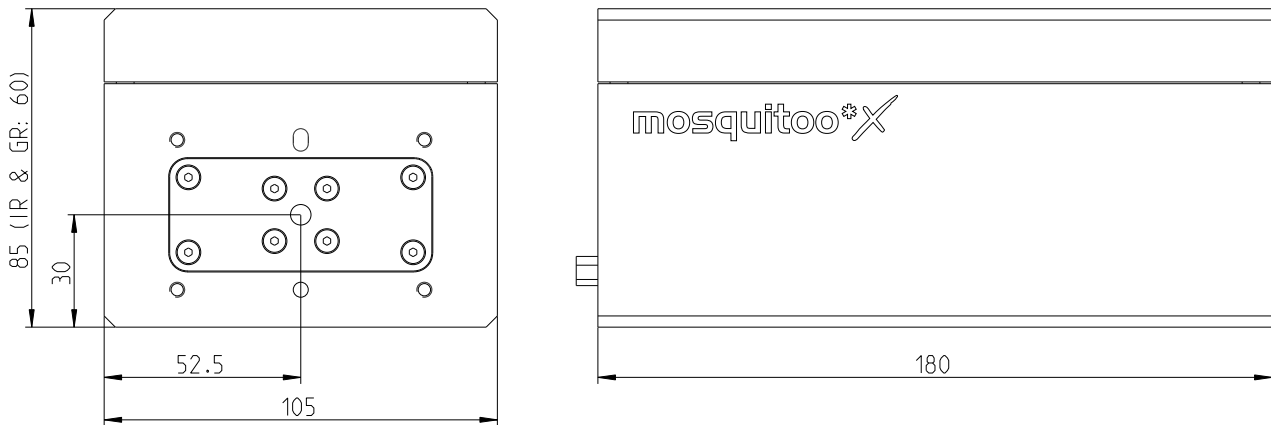


(i) Pulse widths as short as 6 ns and pulse peak powers above 10 kW open new possibilities in laser material processing applications. Processes which previously required cost intensive high power lasers can now be accomplished with the compact and conduction cooled mosquitoo X laser.

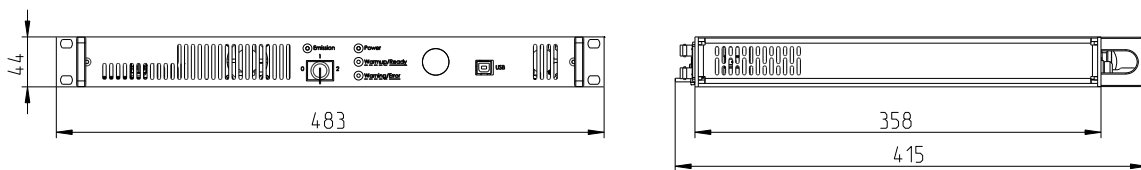


Technical Drawing

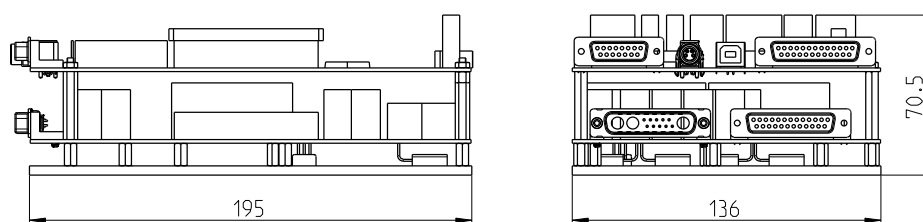
Laser Head



19" Power Supply



OEM Power Supply



Q-SWITCHED LASERS



Specifications

mosquitoo X 355

Model	355-1-V	355-0.3-V	355-0.3-Y
Laser Medium	Nd:YVO ₄	Nd:YVO ₄	Nd:YAG
Wavelength	355 nm	355 nm	355 nm
Nominal Power	1 W @ 50 kHz	0.3 W @ 50 kHz	0.3 W @ 10 kHz
Repetition Rate	Single Shot to 200 kHz	Single Shot to 200 kHz	Single Shot to 100 kHz
Pulse Width	< 12 ns @ 50 kHz	< 10 ns @ 50 kHz	< 13 ns @ 10 kHz
Pulse Energy	20 μJ @ 50 kHz	6 μJ @ 50 kHz	30 μJ @ 10 kHz
Peak Power	> 1.6 kW @ 50 kHz	> 0.6 kW @ 50 kHz	> 2.3 kW @ 10 kHz
Pulse-to-Pulse Stability	< 2%	< 4%	< 4%
Power Stability (rms, 8h)	< 2%	< 2%	< 2%
Spatial Mode	M ² < 1.3, TEM ₀₀	M ² < 1.3, TEM ₀₀	M ² < 1.3, TEM ₀₀
Nominal Beam Diameter (at waist)	0.2 mm	0.2 mm	0.2 mm
Nominal Waist Location (from output)	-164 mm	-164 mm	-164 mm
Beam Divergence (full angle)	2.9 mrad	2.9 mrad	2.9 mrad
Nominal Beam Diameter (at output)	0.5 mm	0.5 mm	0.5 mm
Polarization	Vertical, > 100:1	Vertical, > 100:1	Vertical, > 100:1
Circularity	> 85%	> 85%	> 85%
Warm-up Time	< 10 min	< 10 min	< 10 min
Operating Voltage	115-230 VAC ± 10%, 50-60 Hz, single phase, 24 VDC on request	115-230 VAC ± 10%, 50-60 Hz, single phase, 24 VDC on request	115-230 VAC ± 10%, 50-60 Hz, single phase, 24 VDC on request
Laser Power Consumption	< 170 W	< 150 W	< 150 W
Cooling	Contact, < 100 W, 40 °C Maximum Base Temperature	Contact, < 80 W, 40 °C Maximum Base Temperature	Contact, < 80 W, 40 °C Maximum Base Temperature
Ambient Temperature	15-35 °C (59-95 °F), non-condensing	15-35 °C (59-95 °F), non-condensing	15-35 °C (59-95 °F), non-condensing
External Control	RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control
Dimensions Laser Head (L x W x H)	180 x 105 x 85 mm (7.09 x 4.13 x 3.35 in.)	180 x 105 x 85 mm (7.09 x 4.13 x 3.35 in.)	180 x 105 x 85 mm (7.09 x 4.13 x 3.35 in.)
Dimensions Power Supply (L x W x H)	408 x 447 x 44 mm (16.06 x 17.6 x 1.73 in.), 19" system, 1 RU high	408 x 447 x 44 mm (16.06 x 17.6 x 1.73 in.) 19" system, 1 RU high	408 x 447 x 44 mm (16.06 x 17.6 x 1.73 in.) 19" system, 1 RU high
Weight Laser Head	1.7 kg (3.7 lbs.)	1.5 kg (3.3 lbs.)	1.5 kg (3.3 lbs.)
Weight Power Supply	6 kg (13.2 lbs.)	6 kg (13.2 lbs.)	6 kg (13.2 lbs.)



mosquito X 532

532-5-V	532-2-V	532-2-Y
Nd:YVO ₄	Nd:YVO ₄	Nd:YAG
532 nm	532 nm	532 nm
5 W @ 50 kHz	2 W @ 50 kHz	2 W @ 10 kHz
Single Shot to 200 kHz	Single Shot to 200 kHz	Single Shot to 100 kHz
< 12 ns @ 50 kHz	< 12 ns @ 50 kHz	< 15 ns @ 10 kHz
100 µJ @ 50 kHz	40 µJ @ 50 kHz	200 µJ @ 10 kHz
> 8.3 kW @ 50 kHz	> 3.3 kW @ 50 kHz	> 13.3 kW @ 10 kHz
< 2%	< 3%	< 3%
< 2%	< 2%	< 2%
M ² < 1.3, TEM ₀₀	M ² < 1.3, TEM ₀₀	M ² < 1.3, TEM ₀₀
0.3 mm	0.3 mm	0.3 mm
-164 mm	-164 mm	-164 mm
2.9 mrad	2.9 mrad	2.9 mrad
0.6 mm	0.6 mm	0.6 mm
Horizontal, > 100:1	Horizontal, > 100:1	Horizontal, > 100:1
> 85%	> 85%	> 85%
< 10 min	< 10 min	< 10 min
115-230 VAC ± 10%, 50-60 Hz, single phase, 24 VDC on request	115-230 VAC ± 10%, 50-60 Hz, single phase, 24 VDC on request	115-230 VAC ± 10%, 50-60 Hz, single phase, 24 VDC on request
< 170 W	< 150 W	< 150 W
Contact, < 100 W, 40 °C Maximum Base Temperature	Contact, < 80 W, 40 °C Maximum Base Temperature	Contact, < 80 W, 40 °C Maximum Base Temperature
15-35 °C (59-95 °F), non-condensing	15-35 °C (59-95 °F), non-condensing	15-35 °C (59-95 °F), non-condensing
RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control
180 x 105 x 60 mm (7.09 x 4.13 x 2.36 in.)	180 x 105 x 60 mm (7.09 x 4.13 x 2.36 in.)	180 x 105 x 60 mm (7.09 x 4.13 x 2.36 in.)
500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.) 19" system, 1 RU high	408 x 447 x 44 mm (16.06 x 17.6 x 1.73 in.) 19" system, 1 RU high	408 x 447 x 44 mm (16.06 x 17.6 x 1.73 in.) 19" system, 1 RU high
1.7 kg (3.7 lbs.)	1.5 kg (3.3 lbs.)	1.5 kg (3.3 lbs.)
12 kg (26.5 lbs.)	6 kg (13.2 lbs.)	6 kg (13.2 lbs.)

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Specifications

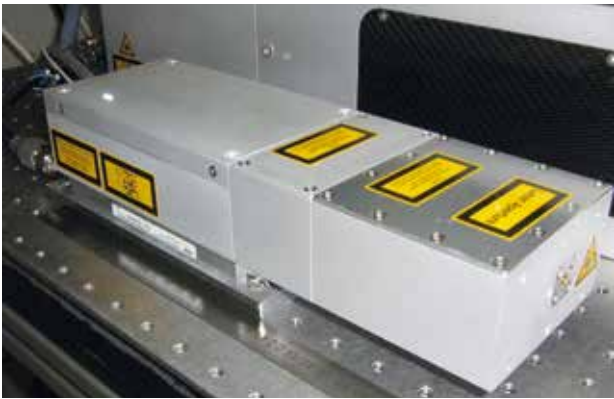
mosquito X 1064

Model	1064-6-V	1064-3-V
Laser Medium	Nd:YVO ₄	Nd:YVO ₄
Wavelength	1064 nm	1064 nm
Nominal Power	6 W @ 100 kHz	3 W @ 100 kHz
Repetition Rate	Single Shot to 200 kHz	Single Shot to 200 kHz
Pulse Width	< 13 ns @ 50 kHz	< 13 ns @ 50 kHz
Pulse Energy	100 μJ @ 50 kHz	50 μJ @ 50 kHz
Peak Power	> 7.6 kW @ 50 kHz	> 3.8 kW @ 50 kHz
Pulse-to-Pulse Stability	< 1%	< 2%
Power Stability (rms, 8h)	< 2%	< 2%
Spatial Mode	M ² < 1.2, TEM ₀₀	M ² < 1.2, TEM ₀₀
Nominal Beam Diameter (at waist)	0.4 mm	0.4 mm
Nominal Waist Location (from output)	-85 mm	-85 mm
Beam Divergence (full angle)	4.0 mrad	4.0 mrad
Nominal Beam Diameter (at output)	0.5 mm	0.5 mm
Polarization	Vertical, > 100:1	Vertical, > 100:1
Circularity	> 90%	> 90%
Warm-up Time	< 10 min	< 10 min
Operating Voltage	115-230 VAC ± 10%, 50-60 Hz, single phase, 24 VDC on request	115-230 VAC ± 10%, 50-60 Hz, single phase, 24 VDC on request
Laser Power Consumption	< 170 W	< 150 W
Cooling	Contact, < 100 W, 40 °C Maximum Base Temperature	Contact, < 80 W, 40 °C Maximum Base Temperature
Ambient Temperature	15-35 °C (59-95 °F), non-condensing	15-35 °C (59-95 °F), non-condensing
External Control	RS232, USB, TTL and Analog Q-Switch Control	RS232, USB, TTL and Analog Q-Switch Control
Dimensions Laser Head (L x W x H)	180 x 105 x 60 mm (7.09 x 4.13 x 2.36 in.)	180 x 105 x 60 mm (7.09 x 4.13 x 2.36 in.)
Dimensions Power Supply (L x W x H)	500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.) 19" system, 1 RU high	408 x 447 x 44 mm (16.06 x 17.6 x 1.73 in.), 19" system, 1 RU high
Weight Laser Head	1.7 kg (3.7 lbs.)	1.7 kg (3.7 lbs.)
Weight Power Supply	12 kg (26.5 lbs.)	6 kg (13.2 lbs.)

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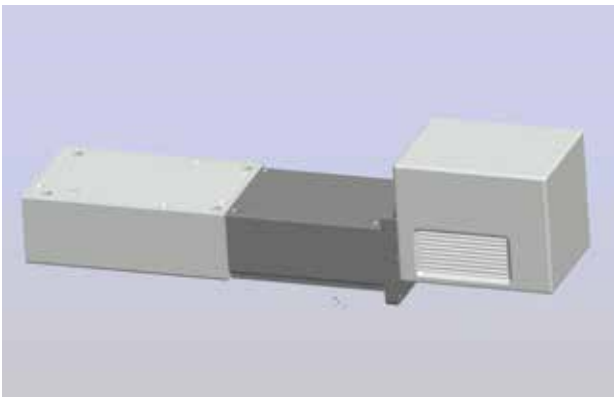


Options & Customization



Available Options

- * Umbilical length 1-10 m
- * 45° connectors at the laser head
- * Cooling plates
- * Beam expander box
- * Variable attenuator box
- * Scan head adapter flanges



Customization

- * Customized laser performance
- * Power supply front panel design
- * Laser interfacing
- * Branded laser control software
- * Special laser developments

(i) Since today's demanding applications deserve optimized laser parameters, we do not only sell off-the-shelf products. We can tailor our laser performance, design, interfacing or software to perfectly fit your individual application needs.





air...mark* Laser Marking Module

Compact. Powerful. Reliable.

The brand-new Air Mark combines laser head, power supply, beam expander and scanning unit for the first time in one, revolutionary small design. Based on the field proven NANIO AIR series, this all-in-one system is available with 16 W IR, 10 W green and 5 W UV, a variety of beam expanders and scanning systems

perfectly adapted for your specific application. The Air Mark is the ideal OEM solution for industrial customers combining all standard purchased parts in one compact device using the XY2-100 scanner interface but leaving the proprietary control and software competences in the hand of our customers.

Applications

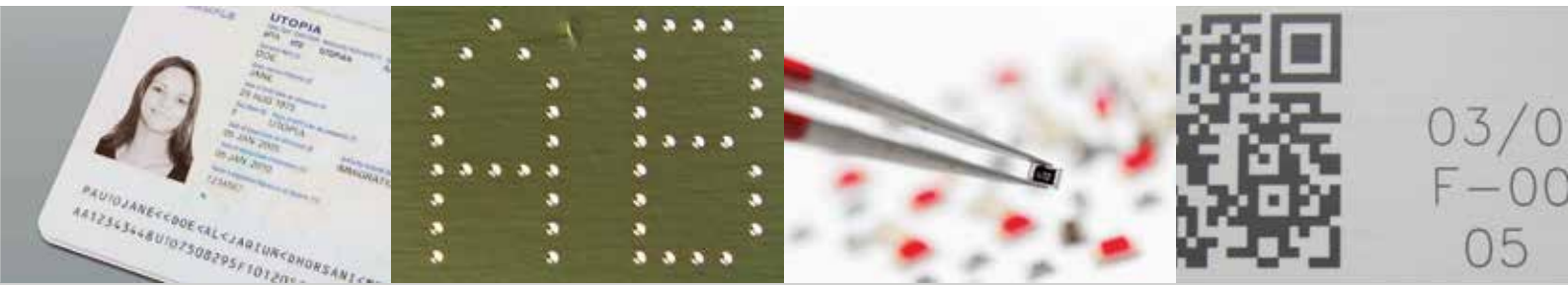
- * PCB/Flex PCB Marking
- * ID Card Marking
- * Plastic Marking
- * Ceramic Marking
- * IC Marking

Features

- * Compact all-in-one design
- * High peak power and short pulse width
- * Superior pulse-to-pulse stability
- * Low cost of ownership
- * Long life pump diodes



(i) Air Mark – The world's first all-in-one DPSS laser marker combines superior performance and vibration-free air cooling in a revolutionary all-in-one design. Output powers up to 16 W and pulse widths below 10 ns minimize undesirable thermal damage of the material and enable consistent and reliable marking results.

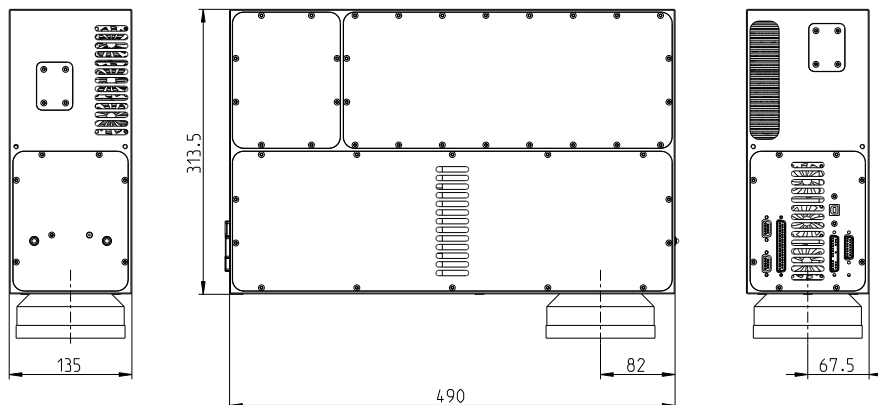


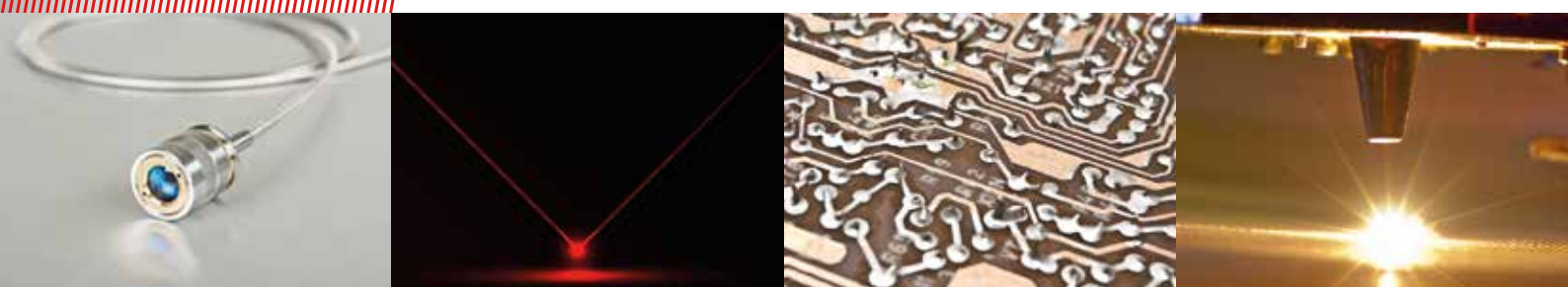
Specifications

Model	1064-16-V	532-10-V	355-5-V
Laser Medium	Nd:YVO ₄	Nd:YVO ₄	Nd:YVO ₄
Wavelength	1064 nm	532 nm	355 nm
Nominal Power	14 W @ 50 kHz	10 W @ 40 kHz	5 W @ 40 kHz
Repetition Rate	Single Shot to 300 kHz	Single Shot to 300 kHz	Single Shot to 300 kHz
Pulse Width	< 45 ns @ 50 kHz	< 30 ns @ 40 kHz	< 20 ns @ 40 kHz
Pulse Energy	280 μJ @ 50 kHz	250 μJ @ 40 kHz	125 μJ @ 40 kHz
Peak Power	> 6.2 kW @ 50 kHz	> 8.3 kW @ 40 kHz	> 6.2 kW @ 40 kHz
Pulse-to-Pulse Stability	< 0.5% @ 50 kHz	< 1% @ 40 kHz	< 2% @ 40 kHz
Power Stability (rms, 8h)	< 1%	< 2%	< 2%
Warm-up Time	< 20 min	< 20 min	< 20 min
Operating Voltage	24 VDC, 17 A	24 VDC, 17 A	24 VDC, 17 A
Laser Power Consumption	< 400 W	< 400 W	< 400 W
Cooling	Air	Air	Air
Ambient Temperature	15-35 °C (59-95 °F), non-condensing	15-35 °C (59-95 °F), non-condensing	15-35 °C (59-95 °F), non-condensing
External Control	RS232, USB, TTL and Analog Q-Switch Control, XY2-100	RS232, USB, TTL and Analog Q-Switch Control, XY2-100	RS232, USB, TTL and Analog Q-Switch Control, XY2-100
Dimensions (L x W x H)	490 x 135 x 314 mm (19.29 x 5.31 x 12.36 in.)	490 x 135 x 314 mm (19.29 x 5.31 x 12.36 in.)	490 x 135 x 314 mm (19.29 x 5.31 x 12.36 in.)
Weight	20 kg (44.1 lbs.)	20 kg (44.1 lbs.)	20 kg (44.1 lbs.)

InnoLas follows a policy of continuous product improvement. All specifications are subject to change without notice. Rev. 1.2, 06/2015.
InnoLas Photonics GmbH is DIN EN ISO 9001 certified.

Technical Drawing





nano direct diode* Turn-key Systems

Compact. Versatile. Reliable.

The NANIO Direct Diode lasers are designed to perfectly fit today's requirements for industrial grade diode laser processing systems. The compact module size, its modular turn-key design, the armored delivery fiber and industrial grade connectors make the NANIO Direct Diode a rugged tool with exceptional performance and reliability. Based on patented

single emitter technology the NANIO Direct Diode is designed for longest diode life times and ease of integration and operation. The armored delivery fiber allows fast connection with optionally available imagers, collimator modules or commercially available beam delivery packages.

Applications

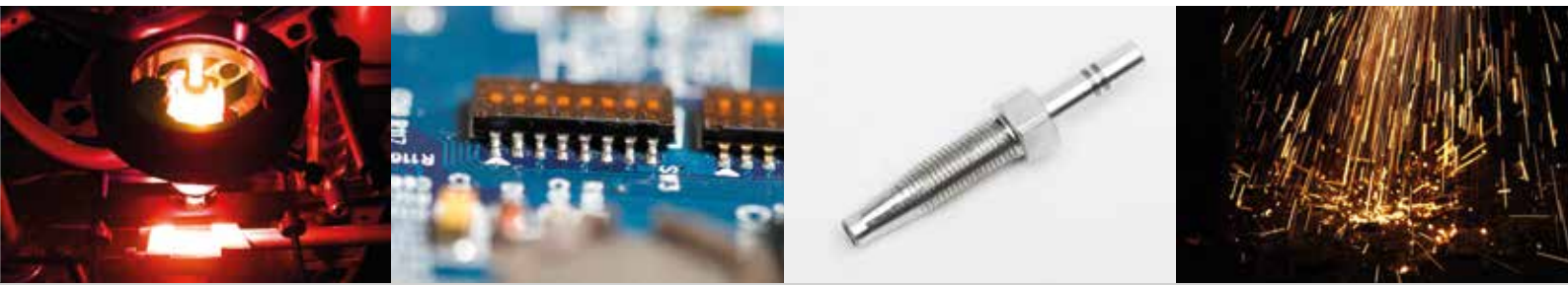
- * Laser Hardening
- * Plastic Welding
- * Thin Sheet Metal Welding
- * Brazing & Soldering
- * BioTec & Scientific

Features

- * Modular industrial design
- * Outstanding performance & reliability
- * Superior power stability
- * Small 2 RU, air cooled unit
- * Field proven long life diode modules



(i) 810 nm fiber coupled direct diode lasers for industrial applications ranging from 50 to 100 W in a 400 μ m industrial grade armored fiber. The air cooled system is only 2 RU high and features the same ILC interfacing as all other InnoLas Photonics industrial lasers.

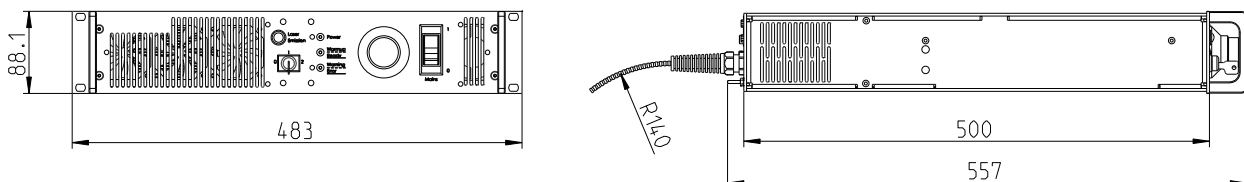


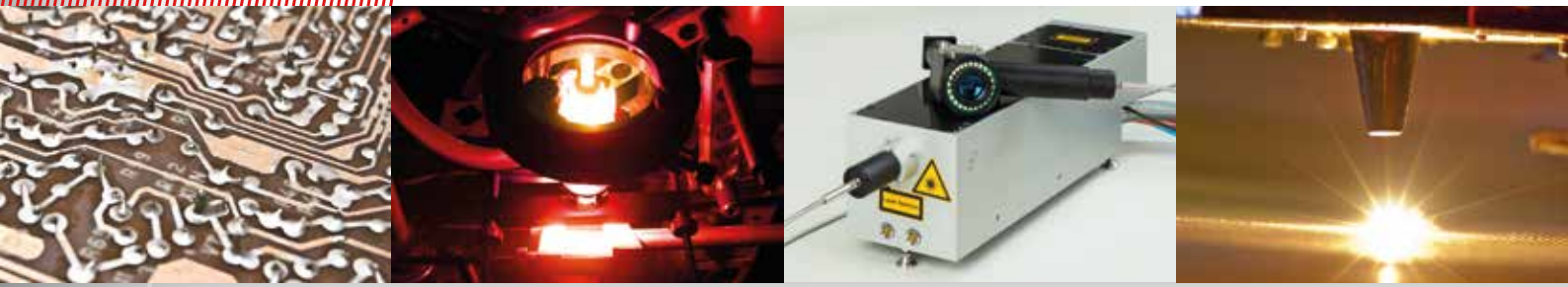
Specifications

Model	810-50-400	810-80-400	810-100-400
Wavelength	810 nm	810 nm	810 nm
Wavelength Tolerance	± 10 nm	± 10 nm	± 10 nm
Nominal Power	50 W	80 W	100 W
Rise / Fall Time	< 10 µs	< 10 µs	< 10 µs
Fiber Core Diameter	400 µm	400 µm	400 µm
Fiber Numerical Aperture	0.17	0.17	0.17
Fiber Connector	SMA 905	SMA 905	SMA 905
Fiber Type & Length (standard)	Industrial Armored, 3 m	Industrial Armored, 3 m	Industrial Armored, 3 m
Power Stability (rms, 8h)	< 1%	< 1%	< 1%
Warm-up Time	< 10 min	< 10 min	< 10 min
Operating Voltage	115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase	115-230 VAC ± 10%, 50-60 Hz, single phase
Laser Power Consumption	< 500 W	< 550 W	< 600 W
Cooling	Air	Air	Air
Ambient Temperature	15-35 °C (59-95 °F), non-condensing	15-35 °C (59-95 °F), non-condensing	15-35 °C (59-95 °F), non-condensing
External Control	RS232, USB, TTL and Analog Control	RS232, USB, TTL and Analog Control	RS232, USB, TTL and Analog Control
Dimensions (L x W x H)	500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.) 19" system, 2 RU high	500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.) 19" system, 2 RU high	500 x 447 x 88.1 mm (19.69 x 17.6 x 3.47 in.) 19" system, 2 RU high
Weight	15 kg (33.1 lbs.)	15 kg (33.1 lbs.)	15 kg (33.1 lbs.)

InnoLas follows a policy of continuous product improvement. All specifications are subject to change without notice. Rev. 1.1, 06/2015.
InnoLas Photonics GmbH is DIN EN ISO 9001 certified.

Technical Drawing





SL 400 MICRO WELD High Energy Lasers

High energy. Flash lamp pumped. Fiber coupled.

The flash lamp pumped SL 400 MICRO WELD is designed for maximum flexibility using one or two industrial grade high power fibers that allow to go basically anywhere with the processing head. The air cooled system comes with adjustable pulse energy and repetition rate up to 2 Hz and a compact processing head including a state of the art vision system

that is available as an option. Based on the field proven SpitLight Series the SL 400 MICRO WELD comes with long life flash lamps and detachable, armored delivery fibers for fast connection with optionally available imagers, collimator modules or commercially available beam delivery packages.

Applications

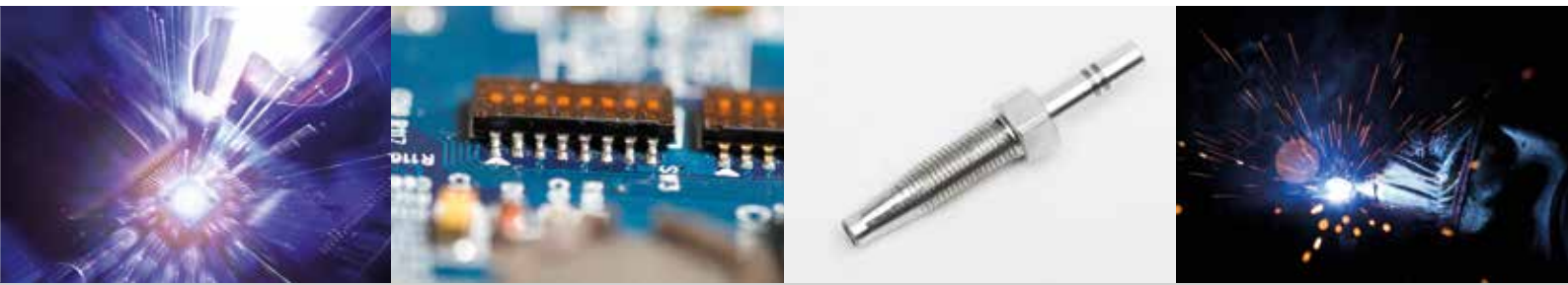
- * Industrial Manufacturing
- * Spot Welding
- * Seam Welding
- * Brazing & Soldering
- * Scientific

Features

- * Modular industrial design
- * Single or dual fiber output
- * Adjustable pulsewidth
- * Long life flash lamp pumped
- * Processing head including vision system



(i) The more the better: 8 Joules of raw pulse energy delivered by one or two high power industrial grade fibers. This is the SL 400 MICRO WELD. As the name implies this laser is the perfect choice for demanding micro welding applications where high pulse energy is the key to perfect welding joints.



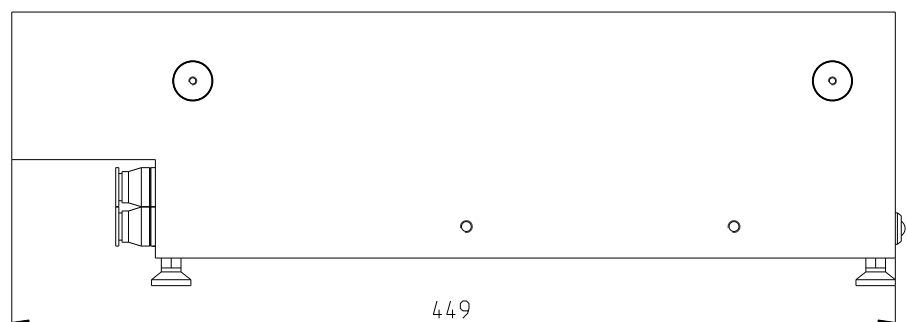
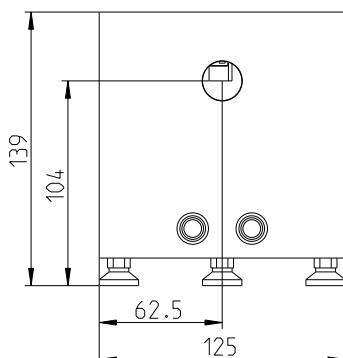
Specifications

Model	MICRO WELD	MICRO WELD DUO
Wavelength	1064 nm	1064 nm
Nominal Power	7 W	2 x 4 W
Pulse Energy	7 J @ 1 Hz	2 x 4 J @ 1 Hz
Pulse Width	2-10 ms	2-10 ms
Peak Power	up to 3.5 kW @ 1 Hz	up to 2 x 2 kW @ 1 Hz
Fiber Core Diameter	200 µm	200 µm
Fiber Numerical Aperture	< 0.22	< 0.22
Fiber Connector	SMA 905	SMA 905
Fiber Type & Length (standard)	Industrial Armored, 3 m	Industrial Armored, 3 m
Warm-up Time	< 20 min	< 20 min
Operating Voltage	230 VAC ± 10%, 50-60 Hz, single phase	230 VAC ± 10%, 50-60 Hz, single phase
Laser Power Consumption	< 500 W	< 500 W
Cooling	Water-to-Air	Water-to-Air
Ambient Temperature	15-30 °C (59-86 °F), non-condensing	15-30 °C (59-86 °F), non-condensing
External Control	TTL and Analog Control	TTL and Analog Control
Dimensions Laser Head (L x W x H)	449 x 125 x 193 mm (17.68 x 4.92 x 7.6 in.)	449 x 125 x 193 mm (17.68 x 4.92 x 7.6 in.)
Dimensions Power Supply (L x W x H)	693 x 483 x 260 mm (27.28 x 19.02 x 10.24 in.) 19" system, 6 RU high	693 x 483 x 260 mm (27.28 x 19.02 x 10.24 in.) 19" system, 6 RU high
Weight Laser Head	15 kg (33.1 lbs.)	15 kg (33.1 lbs.)
Weight Power Supply	30 kg (66.1 lbs.)	30 kg (66.1 lbs.)

InnoLas follows a policy of continuous product improvement. All specifications are subject to change without notice. Rev. 1.2, 06/2015.
InnoLas Photonics GmbH is DIN EN ISO 9001 certified.

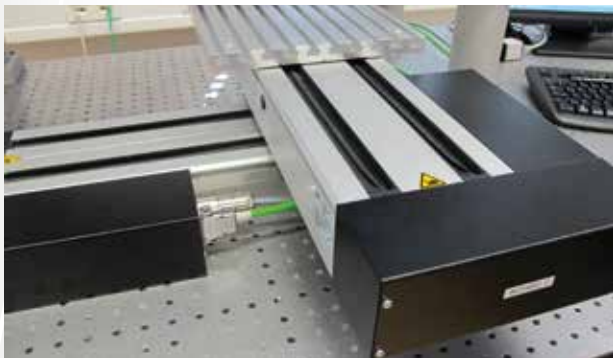
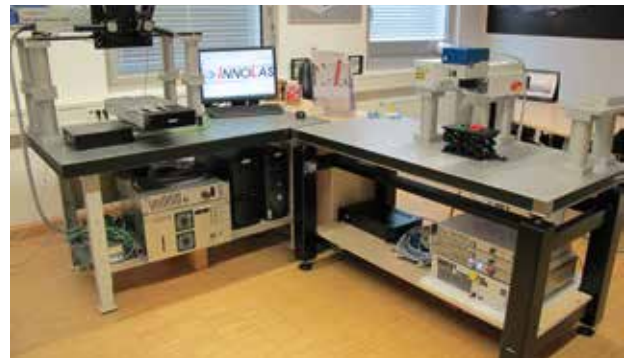
Technical Drawing

Laser Head



Applications Lab

InnoLas Photonics offers the services of our fully equipped application lab. True to our motto „Think of LASER as a tool“, we develop new possibilities for your laser processes. Send your samples and requirements to our application lab. We are looking forward to your challenge! You will be amazed what our lasers can do.



Lab Equipment

Lasers:

- * BLIZZ
- * NANIO
- * NANIO AIR
- * mosquito X
- * NANIO Direct Diode
- * SL 400 MICRO WELD

Wavelengths:

- * 355 nm
- * 532 nm
- * 810 nm
- * 1064 nm
- * 1342 nm

Optics / Mechanics:

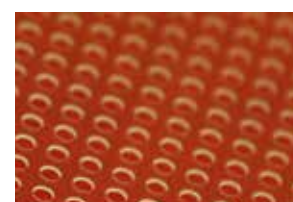
- * Scan Heads
- * Linear Stages
- * Process Heads
- * In-Line Vision

Applications

Display Manufacturing

Improve your display manufacturing quality and throughput with InnoLas Photonics lasers "Made in Germany". Excellent laser stability at repetition rates up to 500 kHz allows highest processing speeds. Our unique CPEM+ and SPX options additionally enable the fastest scanning patterns available today. Experience perfect processing quality as well as highest throughput and up time.

- * Scribing/Patterning
- * LED Back Light/Blue Dot Patterning
- * Marking (Glass)
- * Cutting (Glass)
- * Drilling (Glass)
- * Repair



LED Manufacturing

InnoLas Photonics provides very cost effective and reliable solutions for today's LED manufacturing industry. While the unmatched stability of our lasers guarantees highest yield and best performance, our strength of supporting customized OEM laser solutions allows extremely cost effective manufacturing.

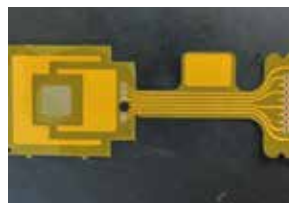
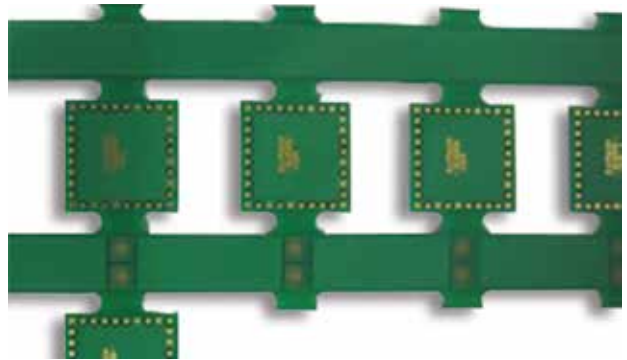
- * Scribing
- * Dicing
- * Marking
- * Laser Lift-Off



Printed Circuit Boards – Flexible & Rigid

Providing the one laser to match the throughput, cost and quality requirements of your PCB applications is our mission. We can customize our lasers to be extremely versatile and cost effective at the same time. Our unique CPEM+ option additionally enables the fastest scanning patterns available today, making our lasers a perfect tool for all PCB applications.

- * Cutting/Profiling
- * Via drilling
- * Marking
- * Depaneling
- * Repair Epoxy/Solder
- * Package Singulation



Photovoltaics

You are planning to roll out a new PV production? You want to improve the efficiency of your existing production? You are researching on tomorrow's photovoltaics technology? No matter what you do InnoLas Photonics is your best partner for lasers in PV applications. While the unmatched stability of our lasers guarantees highest yield and best performance, our strength of supporting customized OEM laser solutions allows you to master processes that nobody else did before.

- * Edge Isolation & Drilling
- * PERC, LFC, LGBC
- * SiN Opening
- * EWT, MWT
- * Laser Doping
- * Scribing & Structuring
- * BIPV
- * Selective Emitter



Marking

There is virtually nothing that you cannot mark with the right choice of laser. No matter if you are looking for a laser that can mark almost everything or you have a very specific marking in mind that requires a highly specialized laser, InnoLas Photonics has a solution for you. Providing the one laser to match your throughput, cost and quality requirements is our mission.

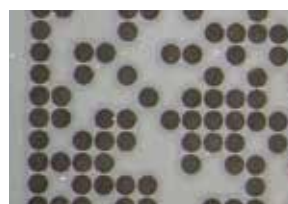
- * ID Card/Greyscale
- * Silicon, IC
- * Metal
- * Plastic
- * In/On Glass, Fused Silica, Sapphire
- * Ceramic, LTCC
- * PCB/Flex PCB



Industrial Manufacturing

Think of LASER as a tool! We provide the latest laser tools required to make your manufacturing process successful. The Ready-For-Scanner option greatly reduces integration efforts and speeds up the time to market. In line integration is easy and cost efficient with OEM solutions perfectly fitting your requirements. Should your requirements change later on, no problem. The laser can be easily changed without any modifications on the interfacing or software of your machine.

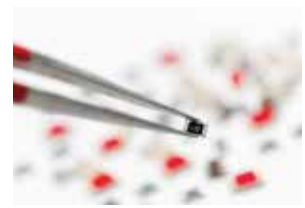
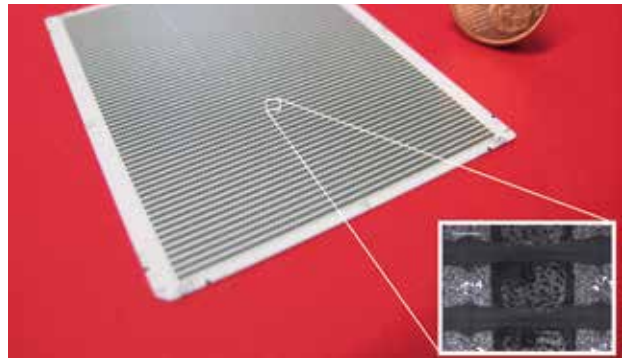
- * Engraving, Cutting, Drilling
- * Micromachining
- * Rapid Prototyping/Stereo Lithography
- * Marking
- * Soldering, Brazing
- * Plastic Welding, Spot & Seam Welding
- * Package Singulation LED Manufacturing



Resistor Trimming

InnoLas Photonics provides lasers specially optimized to match high quality with cost efficient solutions for resistor mass production. Our quality lasers "Made in Germany" are maintenance free with exceptional diode life times. This reduces the cost of ownership to an amazingly low value.

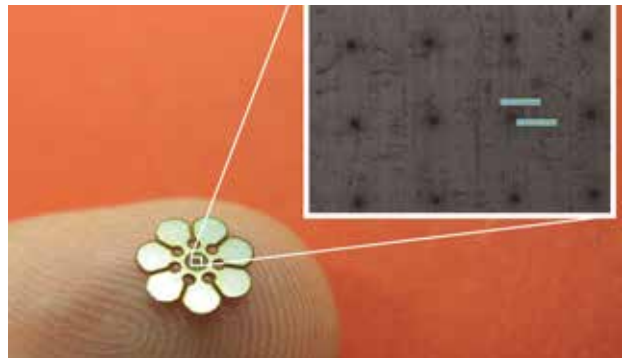
- * Thin Film
- * Thick Film
- * Low Ohm
- * Precision Resistors



Semiconductor Industry

Boost up the quality and yield of your semiconductor processes by our unparalleled laser stability. Our strength in customizing the laser performance combined with our advanced CPEM+ and SPX options can further improve the process quality and throughput.

- * Scribing/Dicing/Grooving
- * Cutting DAF
- * Via/Drilling
- * Micromachining
- * Memory Repair
- * Package Singulation
- * Laser Lift-Off



Bio Tech & Medical

InnoLas Photonics offers small, reliable and cost-effective solutions for today's bio technology industry and research. High intensity pulses with low jitter in a pulse on demand mode give you best signal to noise ratios for precise measurements. The outstanding laser properties, exceptional lifetime and our unique special features make these lasers as well the perfect tool for medical device manufacturing.

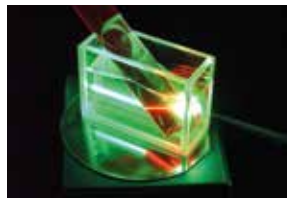
- * MALDI
- * LMD
- * LCM
- * UHMWPE Marking
- * Medical Device Manufacturing



Scientific

InnoLas Photonics lasers strongly benefit from 20 years of experience in scientific laser development combined with our 24/7 industrial reliability products. No matter if it is a calibration laser for the world's most precise weight measurement tool or special guide star lasers for the world's largest telescope, we have a solution for you. If you have any special requirement, we are looking forward to your challenge.

- * Laser Guide Star
- * Calibration Electron Generation
- * Fast PIV
- * TiSa Pumping
- * R&D





Service Mission

Being close to the customer is our strength. Customer requests, new challenges or service issues are handled directly in our engineering department. And we guarantee fastest response times as you expect it.

Service Strategy

Our work isn't done once a laser is sold. At this point the substantial work starts in field integration support. Whenever help is needed our qualified tech support engineers help our customers during integration, installation and even in process development. We also offer qualified laser integration and service trainings at the customer site, at our distributor's office or in our head quarter in Krailling.



Service Key Facts

- * Fastest response times
- * Direct line to customer support
- * Modularity of head & power supply
- * Easiest exchange of field replaceable units
- * Component exchange without un-mounting the laser head
- * Plug-and-play components
- * Consignment stock available
- * Service stock in Germany, Korea, Taiwan, China & Singapore



Contacts at InnoLas Photonics

We would like to introduce some of our team members:



Reinhard Kelnberger

General Manager

Reinhard.Kelnberger@innolas.com

phone: +49 89 899360 - 1200



Christian Hahn

Vice President Engineering

Christian.Hahn@innolas.com

phone: +49 89 899 360 - 1204



Martin Paster

Sales Manager

Martin.Paster@innolas.com

phone: +49 89 899 360 - 1205



Alexander Jaeckl

Sales

Alexander.Jaeckl@innolas.com

phone: +49 89 899360 - 1210



Rebecca Wachter

Application

Rebecca.Wachter@innolas.com

phone: +49 89 899 360 - 1227



Stephan Falk

Service Manager

Stephan.Falk@innolas.com

phone: +49 89 899360 - 1206



Wolfgang Beuth

Service

Wolfgang.Beuth@innolas.com

phone: +49 89 899360 - 1211

Worldwide – short distances, great support

In order to serve all customers perfectly InnoLas Photonic has highly specialized technology partners around the world. They are ready to handle all requests, provide service and will be your main contact in your own country.

EUROPE

France – Optoprim SAS



www.optoprim.com
 address: Optoprim SAS, 21/23, rue Aristide Briand, 92170 VANVES, France
 phone: +33 (1) 4190 6180
 fax: +33 (1) 4190 6189
 e-mail: info@optoprim.com

Italy – Optoprim S.r.l.



www.optoprim.it
 address: Optoprim srl, Via Rota 37, 20900 Monza, Italy
 phone: +39 039 834 977
 fax: +39 039 284 5269
 e-mail: info@optoprim.it

Lithuania – UAB Altechna



www.altechna.com
 address: UAB Altechna, Mokslininsku st. 6A, 08412 Vilnius, Lithuania
 phone: +370 (5) 273 5830
 fax: +370 (5) 272 3704
 e-mail: tomas.mosteikis@altechna.com

Poland – Spectropol



www.spectropol.pl
 address: Spectropol, ul. Trakt Lubelski 271 G, 04-667 Warszawa , Poland
 phone: +48 (22) 617-67-17
 fax: +48 (22) 617-67-97
 e-mail: biuro@spectropol.pl

Russia – Lasertrack



www.lasertrack.ru
 address: LASERTRACK Bakhrushina str., 12, building 1 115184 Moscow Russia
 phone: +7 (495) 959 5552
 fax: +7 (495) 959 5552
 e-mail: c_berezhnoy@lasertrack.ru

United Kingdom – InnoLas UK Ltd



www.innolas.co.uk
 address: InnoLas UK Ltd, 20 Butlers Leap, Rugby, Warwickshire, CV21 3RQ, UK
 phone: +44 1788 550777
 fax: +44 1788 550888
 e-mail: info@innolas.co.uk

USA

USA – Market Tech, Inc.



www.markettechinc.net
 address: Market Tech, Inc., 340 El Pueblo Road, Suite C, Scotts Valley, CA 95066, USA
 phone: +1-831-461-1101
 fax: +1-831-461-1136
 e-mail: info@markettechinc.net



ASIA

China – Suzhou JDU Laser Pte. Ltd



www.jd-union.com.cn
 address: Suzhou JDU Laser Pte. Ltd, 328 Xinghu Street, #22-206 SIP, Suzhou, Jiangsu, China 215123
 phone: +86 151 5751 8898
 e-mail: JDunion@gmail.com

China – Pulsepower Technology



www.pulsepower.cn
 address: Pulsepower Technology Ltd., Rm 17H, 89 Zhongguanchundong Rd., Haidian District, 100080, Beijing
 phone: +86 (10) 8441 3925
 fax: +86 (10) 8441 3971
 e-mail: mlu@pulsepower.cn

India – Aimil Ltd.



www.aimil.com
 address: Aimil Ltd., BSEL Tech Park, B wing, 11th floor, Sector 30 A Opp Vashi Railway Station, Vashi, Navi Mumbai 400705 Maharashtra
 phone: +91 22 396 467 12
 fax: +91 22 396 44 444
 e-mail: deepakyewale@aimil.com

Japan – AkiTech LEO Inc.



www.akitechleo.com
 address: AkiTech LEO Inc., 5-2-2 Nakato, Musashimurayama-shi, Tokyo, 208-0001, Japan
 phone: +81 (42) 563-6476
 fax: +81 (42) 516-9474
 e-mail: info@akitechleo.com

Korea – Wooyang Photonics



www.coslaser.co.kr
 address: Wooyang Photonics Co. Ltd. Leaders Bldg, 13th Floor, 1599-11 Seocho-Dong, Seocho-Ku Seoul 137-070 Korea
 phone: +82 (2) 525 3816 9
 fax: +82 (2) 586 6721
 e-mail: gbkim@coslaser.co.kr

Singapore – JD Union



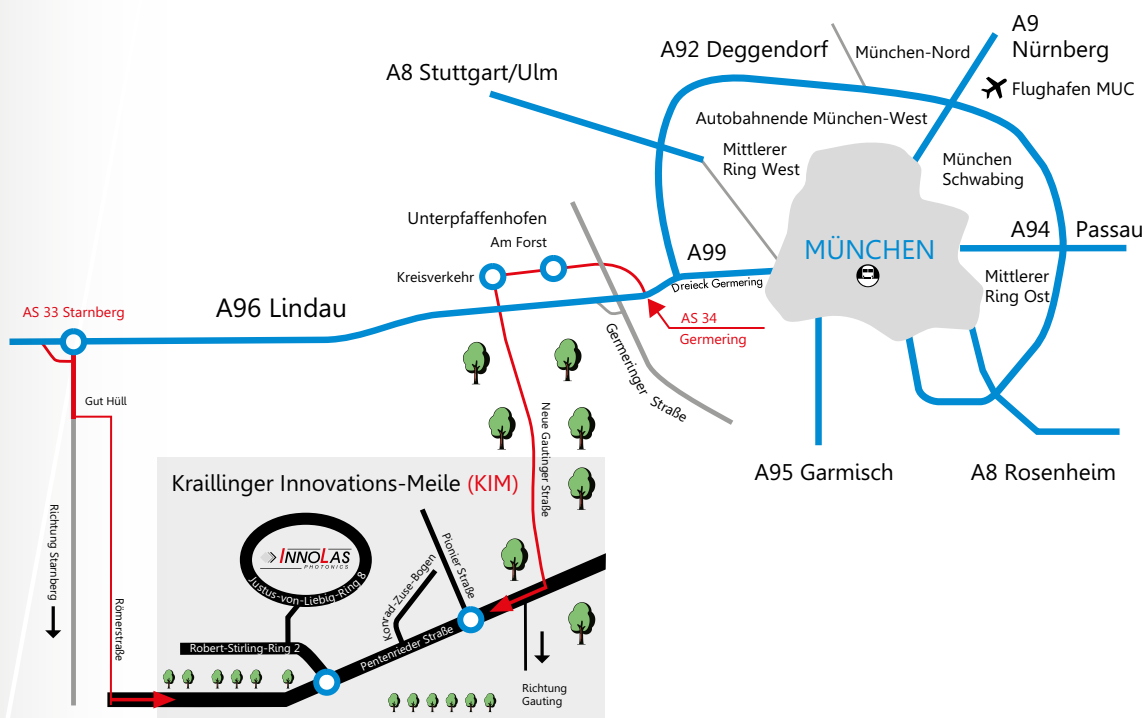
www.jd-union.com
 address: JD Union Pte Ltd., 8 Boon Lay Way, #07-06, Tradehub 21, Singapore 609964
 phone: (65) 6515 6606
 fax: (65) 6491 6507
 e-mail: Joan@jd-union.com

Taiwan – ALASER Co., Ltd.



www.alaser.com.tw
 address: ALASER Co., LTD., 15F.-14, No. 189, Sec. 2, Keelung Rd., Xinyi Dist., Taipei City 11054, Taiwan (R.O.C.)
 phone: 886-2-2377-3118
 fax: 886-2-2377-3119
 e-mail: alexfu@alaser.com.tw

Directions



Travelling by car 🚗

- * Follow Highway A96 towards Lindau.
- * Take Exit 34 for Germering-Süd / Krailling / Unterpfaffenhofen.
- * Cross B2 towards Unterpfaffenhofen.
- * At roundabout, take the second exit.
- * At next roundabout, take the third exit.
- * Follow signs for "KIM" (you will cross A96 highway).
- * Follow this secluded road for approximately 2 km.
- * At stop sign, turn right.
- * At next roundabout, continue straight (second exit).
- * At next roundabout, take the first exit (right).
- * Follow signs for BLUE ZONE 4.
- * Our location: Justus-von-Liebig-Ring 8

Travelling by train 🚆

From Munich Central Station

- * Take the S8 train toward Herrsching. Train departs every 20 minutes.
- * Exit the train at Germering station and take a taxi to InnoLas. Trip takes about 30 minutes.

Travelling by plane ✈️

From Airport Munich

- * Take the S8 toward Herrsching.
- * Exit the train at Germering station and take a taxi to InnoLas. Trip takes about 60 minutes.

Your notes

Specifications Summary



Think of **LASER** as a tool

Specifications Summary

Model	Nominal Power	Peak Power	PRF, single shot	M ²	Spatial Mode	Pulse Width	Pulse Energy
NANIO							
Nd:YAG							
NANIO 1064-20-Y	18 W	45 kW @ 10 kHz	up to 100 kHz	< 1.2	TEM ₀₀	40 ns @ 10 kHz	1800 µJ @ 10 kHz
NANIO 532-18-Y	18 W	45 kW @ 10 kHz	up to 50 kHz	< 1.3	TEM ₀₀	40 ns @ 10 kHz	1800 µJ @ 10 kHz
Nd:YVO₄							
NANIO 1342-8-V	8 W	5 kW @ 20 kHz	up to 100 kHz	< 1.2	TEM ₀₀	80 ns @ 20 kHz	400 µJ @ 20 kHz
NANIO 1064-25-V	23 W	11.5 kW @ 50 kHz	up to 300 kHz	< 1.2	TEM ₀₀	40 ns @ 50 kHz	460 µJ @ 50 kHz
NANIO 1064-20-V-20	20 W	100 kW @ 20 kHz	up to 60 kHz	< 1.2	TEM ₀₀	10 ns @ 20 kHz	1000 µJ @ 20 kHz
NANIO 1064-16-V	14 W	6.2 kW @ 50 kHz	up to 300 kHz	< 1.2	TEM ₀₀	45 ns @ 50 kHz	280 µJ @ 50 kHz
NANIO 1064-16-V-LP	15 W	3 kW @ 50 kHz	up to 150 kHz	< 1.2	TEM ₀₀	100 ns @ 50 kHz	300 µJ @ 50 kHz
NANIO 532-20-V	20 W	25 kW @ 40 kHz	up to 500 kHz	< 1.3	TEM ₀₀	20 ns @ 40 kHz	500 µJ @ 40 kHz
NANIO 532-20-V-100	20 W	5 kW @ 100 kHz	up to 500 kHz	< 1.4	TEM ₀₀	40 ns @ 100 kHz	200 µJ @ 100 kHz
NANIO 532-14-V-400	14 W	0.58 kW @ 400 kHz	up to 500 kHz	< 1.3	TEM ₀₀	60 ns @ 400 kHz	35 µJ @ 400 kHz
NANIO 532-10-V	10 W	8.3 kW @ 40 kHz	up to 300 kHz	< 1.2	TEM ₀₀	30 ns @ 40 kHz	250 µJ @ 40 kHz
NANIO 532-10-V-20	10 W	50 kW @ 20 kHz	up to 300 kHz	< 1.2	TEM ₀₀	10 ns @ 20 kHz	500 µJ @ 20 kHz
NANIO 355-8-V-60	8 W	5.3 kW @ 60 kHz	up to 300 kHz	< 1.4	TEM ₀₀	25 ns @ 60 kHz	133 µJ @ 60 kHz
NANIO 355-6-V-80	6 W	2.1 kW @ 80 kHz	up to 300 kHz	< 1.3	TEM ₀₀	35 ns @ 80 kHz	75 µJ @ 80 kHz
NANIO 355-3-V-150	3 W	0.57 kW @ 150 kHz	up to 300 kHz	< 1.3	TEM ₀₀	35 ns @ 150 kHz	20 µJ @ 150 kHz
NANIO 355-3-V	3 W	2.1 kW @ 40 kHz	up to 300 kHz	< 1.3	TEM ₀₀	35 ns @ 40 kHz	75 µJ @ 40 kHz
NANIO 355-1-V-400	1 W	0.04 kW @ 400 kHz	up to 500 kHz	< 1.4	TEM ₀₀	60 ns @ 400 kHz	2.5 µJ @ 400 kHz
NANIO AIR							
Nd:YAG							
NANIO AIR 1064-7-Y-30	7 W	20 kW @ 10 kHz	up to 100 kHz	< 1.15	TEM ₀₀	35 ns @ 10 kHz	700 µJ @ 10 kHz
NANIO AIR 1064-7-Y-50	7 W	14 kW @ 10 kHz	up to 100 kHz	< 1.15	TEM ₀₀	50 ns @ 10 kHz	700 µJ @ 10 kHz
NANIO AIR 1064-7-Y-70	7 W	7 kW @ 10 kHz	up to 100 kHz	< 1.15	TEM ₀₀	100 ns @ 10 kHz	700 µJ @ 10 kHz
NANIO AIR 532-4-Y-50	4 W	8 kW @ 10 kHz	up to 100 kHz	< 1.2	TEM ₀₀	50 ns @ 10 kHz	400 µJ @ 10 kHz
Nd:YVO₄							
NANIO AIR 1064-16-V	14 W	6.2 kW @ 50 kHz	up to 300 kHz	< 1.2	TEM ₀₀	45 ns @ 50 kHz	280 µJ @ 50 kHz
NANIO AIR 532-10-V	10 W	8.3 kW @ 40 kHz	up to 300 kHz	< 1.2	TEM ₀₀	30 ns @ 40 kHz	250 µJ @ 40 kHz
NANIO AIR 355-3-V	3 W	2.1 kW @ 40 kHz	up to 300 kHz	< 1.3	TEM ₀₀	35 ns @ 40 kHz	75 µJ @ 40 kHz

Model	Nominal Power	Peak Power	PRF, single shot	M ²	Spatial Mode	Pulse Width	Pulse Energy
MOSQUITOO X							
Nd:YAG							
mosquitoo X 355-0.3-Y	0.3 W	2.3 kW @ 10 kHz	up to 100 kHz	< 1.3	TEM ₀₀	13 ns @ 10 kHz	30 µJ @ 10 kHz
mosquitoo X 532-2-Y	2 W	13.3 kW @ 10 kHz	up to 100 kHz	< 1.3	TEM ₀₀	15 ns @ 10 kHz	200 µJ @ 10 kHz
mosquitoo X 1064-3-Y	3 W	20 kW @ 10 kHz	up to 100 kHz	< 1.2	TEM ₀₀	15 ns @ 10 kHz	300 µJ @ 10 kHz
Nd:YVO₄							
mosquitoo X 355-1-V	1 W	1.6 kW @ 50 kHz	up to 200 kHz	< 1.3	TEM ₀₀	12 ns @ 50 kHz	20 µJ @ 50 kHz
mosquitoo X 355-0.3-V	0.3 W	0.6 kW @ 50 kHz	up to 200 kHz	< 1.3	TEM ₀₀	10 ns @ 50 kHz	6 µJ @ 50 kHz
mosquitoo X 532-5-V	5 W	8.3 kW @ 50 kHz	up to 200 kHz	< 1.3	TEM ₀₀	12 ns @ 50 kHz	100 µJ @ 50 kHz
mosquitoo X 532-2-V	2 W	3.3 kW @ 50 kHz	up to 200 kHz	< 1.3	TEM ₀₀	12 ns @ 50 kHz	40 µJ @ 50 kHz
mosquitoo X 1064-6-V	6 W	7.6 kW @ 50 kHz	up to 200 kHz	< 1.2	TEM ₀₀	13 ns @ 50 kHz	100 µJ @ 50 kHz
mosquitoo X 1064-3-V	3 W	3.8 kW @ 50 kHz	up to 200 kHz	< 1.2	TEM ₀₀	13 ns @ 50 kHz	50 µJ @ 50 kHz
BLIZZ							
BLIZZ 532-30-V	30 W	> 37.5 kW @ 40 kHz	up to 400 kHz	< 1.4	TEM ₀₀	< 20 ns @ 40 kHz	750 µJ @ 40 kHz
BLIZZ 532-20-V-300	20 W	> 0.67 kW @ 300 kHz	up to 400 kHz	< 1.4	TEM ₀₀	< 100 ns @ 300 kHz	67 µJ @ 300 kHz
NANIO DIRECT DIODE							
NANIO 810-50-400	50 W	n.a.	cw/modulated cw	< 0.17 NA	fiber 400 µm	rise/fall time < 10 µs	n.a.
NANIO 810-80-400	80 W	n.a.	cw/modulated cw	< 0.17 NA	fiber 400 µm	rise/fall time < 10 µs	n.a.
NANIO 810-100-400	100 W	n.a.	cw/modulated cw	< 0.17 NA	fiber 400 µm	rise/fall time < 10 µs	n.a.
SL 400 MICRO WELD							
SL 400 MICRO WELD	7 W	3.5 kW @ 1 Hz	up to 2 Hz	< 0.22 NA	fiber 200 µm	2-10 ms	7 J @ 1 Hz
SL 400 MICRO WELD DUO	2 x 4 W	2 x 2 kW @ 1 Hz	up to 2 Hz	< 0.22 NA	fiber 200 µm	2-10 ms	2 x 4 J @ 1 Hz

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InnoLas follows a policy of continuous product improvement. All specifications are subject to change without notice.
InnoLas Photonics GmbH is DIN EN ISO 9001 certified.

