

NANIO | NANOSECOND LASERS

Customized Solutions for Perfect Results



Highest flexibility
Designed to provide a wide variety of customization options



Superior Pulse-to-Pulse Stability
Optimized control functions for stable process results



Multiple wavelengths
From 355 nm up to 1342 nm

Highest Flexibility

Multiple Wavelengths and Customization Options

The Nanio series of nanosecond DPSS lasers is a highly reliable and field-proven tool for industrial laser processing systems, even in 24/7 operation. This series is specifically designed for easy customization and is available in a variety of wavelengths.

Find out how you can take your laser machines to the next level with our nanosecond Q-switched lasers.

Benefits

Minimize Downtime

The Nanio Q-switched nanosecond lasers are designed for reliability and flexibility. The Nanio series offers customizable laser parameters that enable the highest speed and quality for your laser process.

The modular design ensures easy maintenance and minimizes downtime. Accelerate your production with the high performance of Nanio Q-switched nanosecond lasers.

Applications

Flexible Lasers for a Wide Range of Applications

- ID Card Marking
- Wafer marking
- Plastic marking
- Glass cutting and drilling
- Wafer dicing

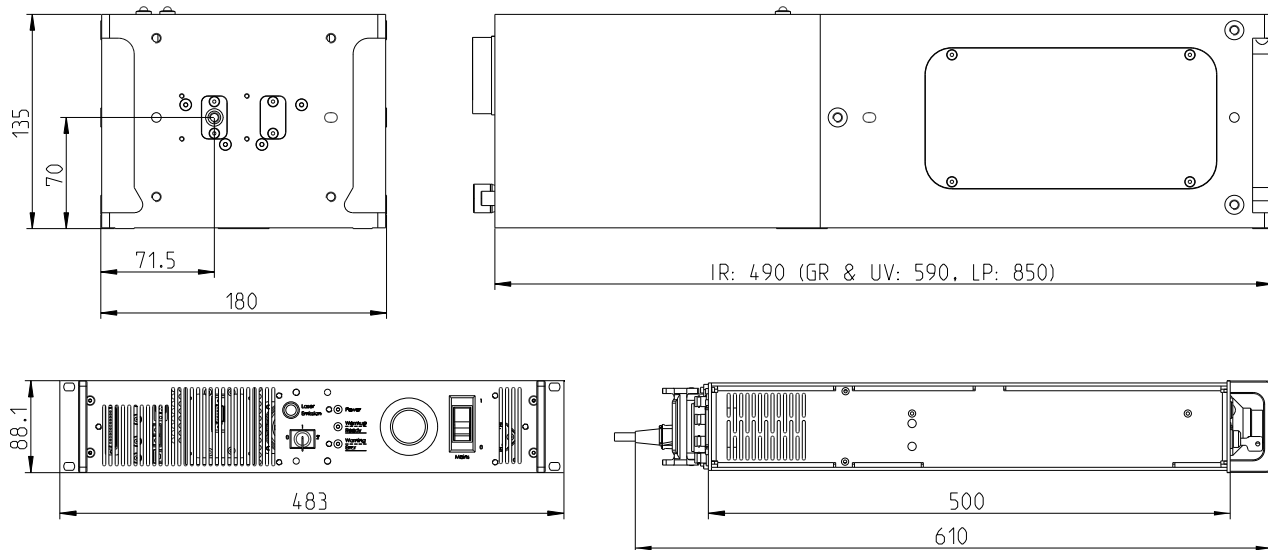
Advantages

Designed for Demanding Industrial Applications

The Nanio Q-switched nanosecond laser is designed for applications that benefit from excellent beam quality with optimized pulse width and high pulse intensity over a wide range of operating conditions. Its features:

- Customizable laser parameters
- High peak power and short pulse width
- Field proven long life pump diode modules

Technical Drawings



Customizations & Options

Highest flexibility with Customizable Nanosecond DPSS lasers

The Nanio Q-switched nanosecond Laser can be tailored regarding optical performance, electrical interfacing, as well as hard- and software control.

A variety of additional options are selectable.

- Pulse picker AOM
- Control and operation modes
- Laser interfacing and software control
- Failsafe safety shutter and electronics
- Umbilical length 1 to 20 m
- Beam expander box
- Motorized attenuator

Specifications

Nanio	355		
Model	355-8-V-60	355-6-V-80	355-3-V-150
Laser Medium	Nd:YVO ₄	Nd:YVO ₄	Nd:YVO ₄
Wavelength	355 nm	355 nm	355 nm
Nominal Power	8 W @ 60 kHz	6 W @ 80 kHz	3 W @ 150 kHz
Repetition Rate	Single Shot to 300 kHz	Single Shot to 300 kHz	Single Shot to 300 kHz
Pulse Width	<25 ns @ 60 kHz	<35 ns @ 80 kHz	<35 ns @ 150 kHz
Pulse Energy	133 µJ @ 60 kHz	75 µJ @ 80 kHz	20 µJ @ 150 kHz
Peak Power	>5.3 kW @ 60 kHz	>2.1 kW @ 80 kHz	>0.57 kW @ 150 kHz
Pulse-to-Pulse Stability	<2% @ 60 kHz	<2% @ 80 kHz	<2% @ 150 kHz
Power Stability (rms, 8h)	<2%	<2%	<2%
Spatial Mode	M ² <1.4, TEM ₀₀	M ² <1.3, TEM ₀₀	M ² <1.3, TEM ₀₀
Nominal Beam Diameter (at waist)	0.24 mm	0.24 mm	0.24 mm
Nominal Waist Location (from output)	-333 mm	-333 mm	-333 mm
Beam Divergence (full angle)	2.6 mrad	2.4 mrad	2.4 mrad
Nominal Beam Diameter (at output)	0.9 mm	0.85 mm	0.85 mm
Polarization	Vertical, >100:1	Vertical, >100:1	Vertical, >100:1
Circularity	>90%	>90%	>90%
Warm-up Time	<15 min	<15 min	<15 min
Operating Voltage	115-230 VAC ± 10%, 50-60 Hz	115-230 VAC ± 10%, 50-60 Hz	115-230 VAC ± 10%, 50-60 Hz
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, non-condensing	15-40 °C, non-condensing	15-40 °C, 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	590 x 180 x 135 mm	590 x 180 x 135 mm
Dimensions Power Supply (L x W x H)	500 x 447 x 88.1 mm, 19" system, 2 RU high	500 x 447 x 88.1 mm, 19" system, 2 RU high	500 x 447 x 88.1 mm, 19" system, 2 RU high
Weight Laser Head	19 kg	19 kg	19 kg
Weight Power Supply	12 kg	12 kg	12 kg

Specifications

Nanio	355	
Model	355-3-V	355-1-V-400
Laser Medium	Nd:YVO ₄	Nd:YVO ₄
Wavelength	355 nm	355 nm
Nominal Power	3 W @ 40 kHz	1 W @ 400 kHz
Repetition Rate	Single Shot to 300 kHz	Single Shot to 500 kHz
Pulse Width	<35 ns @ 40 kHz	<60 ns @ 400 kHz
Pulse Energy	75 µJ @ 40 kHz	2.5 µJ @ 400 kHz
Peak Power	>2.1 kW @ 40 kHz	>0.04 kW @ 400 kHz
Pulse-to-Pulse Stability	<2% @ 40 kHz	<4% @ 400 kHz
Power Stability (rms, 8h)	<2%	<2%
Spatial Mode	M ² <1.3, TEM ₀₀	M ² <1.4, TEM ₀₀
Nominal Beam Diameter (at waist)	0.35 mm	0.16 mm
Nominal Waist Location (from output)	-333 mm	-280 mm
Beam Divergence (full angle)	1.8 mrad	3.9 mrad
Nominal Beam Diameter (at output)	0.66 mm	1.2 mm
Polarization	Vertical, >100:1	Vertical, >100:1
Circularity	>90%	>85%
Warm-up Time	<15 min	<15 min
Operating Voltage	115-230 VAC ± 10%, 50-60 Hz	115-230 VAC ± 10%, 50-60 Hz
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, non-condensing	15-40 °C, 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	490 x 180 x 135 mm
Dimensions Power Supply (L x W x H)	500 x 447 x 88.1 mm, 19" system, 2 RU high	500 x 447 x 88.1 mm, 19" system, 2 RU high
Weight Laser Head	19 kg	17 kg
Weight Power Supply	12 kg	12 kg

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	115-230 VAC ± 10%, 50-60 Hz	115-230 VAC ± 10%, 50-60 Hz
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, non-condensing	15-40 °C, non-condensing	15-40 °C, 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	590 x 180 x 135 mm	590 x 180 x 135 mm
Dimensions Power Supply (L x W x H)	500 x 447 x 88.1 mm, 19" system, 2 RU high	500 x 447 x 88.1 mm, 19" system, 2 RU high	500 x 447 x 88.1 mm, 19" system, 2 RU high
Weight Laser Head	19 kg	19 kg	19 kg
Weight Power Supply	12 kg	12 kg	12 kg

Specifications

Nanio	532		
Model	532-10-V-20	532-10-V-SP	532-18-Y
Laser Medium	Nd:YVO ₄	Nd:YVO ₄	Nd:YAG
Wavelength	532 nm	532 nm	532 nm
Nominal Power	10 W @ 20 kHz	10 W @ 40 kHz	18 W @ 10 kHz
Repetition Rate	Single Shot to 300 kHz	Single Shot to 300 kHz	Single Shot to 100 kHz
Pulse Width	<10 ns @ 20 kHz	<20 ns @ 40 kHz	<40 ns @ 10 kHz
Pulse Energy	500 µJ @ 20 kHz	250 µJ @ 40 kHz	1800 µJ @ 10 kHz
Peak Power	>50 kW @ 20 kHz	>12.5 kW @ 40 kHz	>45 kW @ 10 kHz
Pulse-to-Pulse Stability	<1% @ 20 kHz	<1% @ 40 kHz	<1.5% @ 10 kHz
Power Stability (rms, 8h)	<2%	<2%	<2%
Spatial Mode	M ² <1.2, TEM ₀₀	M ² <1.2, TEM ₀₀	M ² <1.3, TEM ₀₀
Nominal Beam Diameter (at waist)	0.3 mm	0.2 mm	0.5 mm
Nominal Waist Location (from output)	-324 mm	-320 mm	-324 mm
Beam Divergence (full angle)	2.7 mrad	4.4 mrad	1.7 mrad
Nominal Beam Diameter (at output)	0.9 mm	1.4 mm	0.8 mm
Polarization	Horizontal, >100:1	Horizontal, >100:1	Horizontal, >100:1
Circularity	>90%	>90%	>85%
Warm-up Time	<15 min	<15 min	<15 min
Operating Voltage	115-230 VAC ± 10%, 50-60 Hz	115-230 VAC ± 10%, 50-60 Hz	115-230 VAC ± 10%, 50-60 Hz
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, non-condensing	15-40 °C, non-condensing	15-40 °C, 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	490 x 180 x 135 mm	590 x 180 x 135 mm
Dimensions Power Supply (L x W x H)	500 x 447 x 88.1 mm, 19" system, 2 RU high	500 x 447 x 88.1 mm, 19" system, 2 RU high	500 x 447 x 88.1 mm, 19" system, 2 RU high
Weight Laser Head	19 kg	17 kg	19 kg
Weight Power Supply	12 kg	12 kg	12 kg

Specifications

Nanio	1064		
Model	1064-25-V	1064-20-V-20	1064-16-V
Laser Medium	Nd:YVO ₄	Nd:YVO ₄	Nd:YVO ₄
Wavelength	1064 nm	1064 nm	1064 nm
Nominal Power	23 W @ 50 kHz	20 W @ 20 kHz	14 W @ 50 kHz
Repetition Rate	Single Shot to 300 kHz	Single Shot to 60 kHz	Single Shot to 300 kHz
Pulse Width	<40 ns @ 50 kHz	<10 ns @ 20 kHz	<45 ns @ 50 kHz
Pulse Energy	460 µJ @ 50 kHz	1000 µJ @ 20 kHz	280 µJ @ 50 kHz
Peak Power	>11.5 kW @ 50 kHz	>100 kW @ 20 kHz	>6.2 kW @ 50 kHz
Pulse-to-Pulse Stability	<0.5% @ 50 kHz	<1% @ 20 kHz	<0.5% @ 50 kHz
Power Stability (rms, 8h)	<1%	<1%	<1%
Spatial Mode	M ² <1.2, TEM ₀₀	M ² <1.2, TEM ₀₀	M ² <1.2, TEM ₀₀
Nominal Beam Diameter (at waist)	0.7 mm	0.6 mm	0.7 mm
Nominal Waist Location (from output)	-49 mm	-89 mm	-49 mm
Beam Divergence (full angle)	2.3 mrad	2.7 mrad	2.3 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	<15 min	<15 min	<15 min
Operating Voltage	115-230 VAC ± 10%, 50-60 Hz	115-230 VAC ± 10%, 50-60 Hz	115-230 VAC ± 10%, 50-60 Hz
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, non-condensing	15-40 °C, non-condensing	15-40 °C, 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)	490 x 180 x 135 mm	490 x 180 x 135 mm	490 x 180 x 135 mm
Dimensions Power Supply (L x W x H)	500 x 447 x 88.1 mm, 19" system, 2 RU high	500 x 447 x 88.1 mm, 19" system, 2 RU high	500 x 447 x 88.1 mm, 19" system, 2 RU high
Weight Laser Head	17 kg	17 kg	17 kg
Weight Power Supply	12 kg	12 kg	12 kg

Specifications

Nanio	1064			1342
Model	1064-16-V-LP	1064-20-Y	1064-12-Y-LP	1342-8-V
Laser Medium	Nd:YVO ₄	Nd:YAG	Nd:YAG	Nd:YVO ₄
Wavelength	1064 nm	1064 nm	1064 nm	1342 nm
Nominal Power	15 W @ 50 kHz	18 W @ 10 kHz	12 W @ 10 kHz	8 W @ 20 kHz
Repetition Rate	Single Shot to 150 kHz	Single Shot to 50 kHz	1 to 20 kHz	Single Shot to 50 kHz
Pulse Width	<100 ns @ 50 kHz	<40 ns @ 10 kHz	<100 ns	<80 ns @ 20 kHz
Pulse Energy	300 µJ @ 50 kHz	1800 µJ @ 10 kHz	1.2 mJ @ 10 kHz	400 µJ @ 20 kHz
Peak Power	>3 kW @ 50 kHz	>45 kW @ 10 kHz	>12 kW @ 10 kHz	>5 kW @ 20 kHz
Pulse-to-Pulse Stability	<1% @ 50 kHz	<1% @ 10 kHz	<1.5% @ 10 kHz	<2% @ 20 kHz
Power Stability (rms, 8h)	<1%	<1%	<2%	<1%
Spatial Mode	M ² <1.2, TEM ₀₀	M ² <1.2, TEM ₀₀	M ² <1.2, TEM ₀₀	M ² <1.2, TEM ₀₀
Nominal Beam Diameter (at waist)	1.2 mm	0.6 mm	0.6 mm	0.7 mm
Nominal Waist Location (from output)	-273 mm	-57 mm	410 mm	-49 mm
Beam Divergence (full angle)	1.3 mrad	2.7 mrad	2.55 mrad	2.3 mrad
Nominal Beam Diameter (at output)	1.3 mm	0.6 mm	1.2 mm	0.7 mm
Polarization	Vertical, >100:1	Vertical, >100:1	Vertical, >100:1	Vertical, >100:1
Circularity	>90%	>90%	>90%	>90%
Warm-up Time	<15 min	<15 min	<15 min	<15 min
Operating Voltage	115-230 VAC ± 10%, 50-60 Hz	115-230 VAC ± 10%, 50-60 Hz	115-230 VAC ± 10%, 50-60 Hz	115-230 VAC ± 10%, 50-60 Hz
Laser Power Consumption	<500 W	<500 W	<500 W	<500 W
Cooling	Water-to-Water or Water-to-Air	Water-to-Water or Water-to-Air	Water	Water-to-Water or Water-to-Air
Ambient Temperature	15-40 °C, non-condensing	15-40 °C, non-condensing	15-40 °C, non-condensing	15-40 °C, 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	RS232, USB, TTL and Analog Q-Switch Control
Dimensions Laser Head (L x W x H)	850 x 180 x 135 mm	490 x 180 x 135 mm	850 x 180 x 135 mm	490 x 180 x 135 mm
Dimensions Power Supply (L x W x H)	500 x 447 x 88.1 mm, 19" system, 2 RU high	500 x 447 x 88.1 mm, 19" system, 2 RU high	500 x 447 x 88.1 mm, 19" system, 2 RU high	500 x 447 x 88.1 mm, 19" system, 2 RU high
Weight Laser Head	22 kg	17 kg	22 kg	17 kg
Weight Power Supply	12 kg	12 kg	12 kg	12 kg

Iradion follows a policy of continuous product improvement. All specifications are subject to change without notice. Rev. 2.2, 06/2023.
Iradion Laser GmbH is DIN EN ISO 9001 certified.

Iradion Laser GmbH | Justus-von-Liebig-Ring 8 | 82152 Krailling | Germany
Phone: +49 (89) 899 360 - 1200 | info.eu@iradionlaser.com | www.iradionlaser.com

Iradion Laser Inc. | One Technology Drive | Uxbridge, MA 01569 - 2235 | USA
Phone: +1 (401) 762 - 5100 | info.us@iradionlaser.com | www.iradionlaser.com

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