

# 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

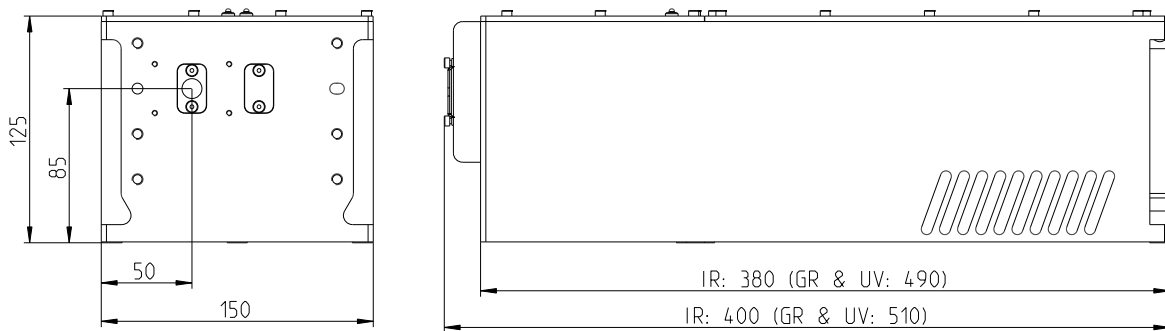


(i) NANIO AIR lasers combine vibration-free air cooling with excellent TEM<sub>00</sub> beam quality, output powers up to 16 W and pulse widths below 10 ns. This minimizes undesirable thermal damage of the material and enables consistent and reliable scribing results.

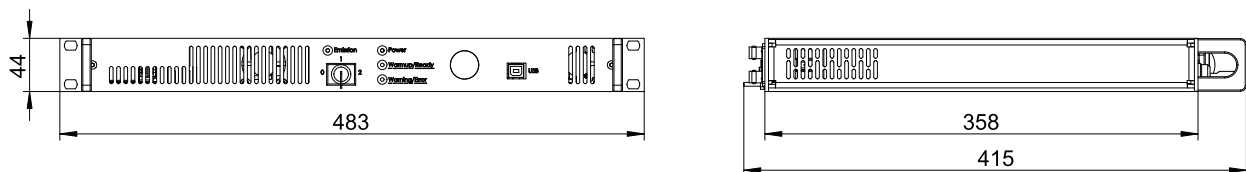


## Technical Drawing

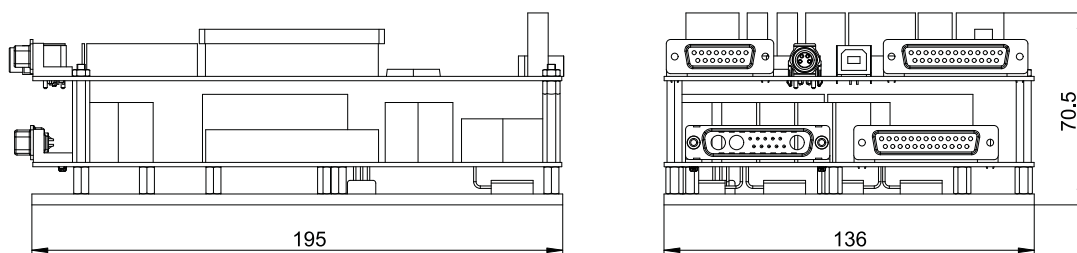
### Laser Head



### 19" Power Supply



### OEM Power Supply

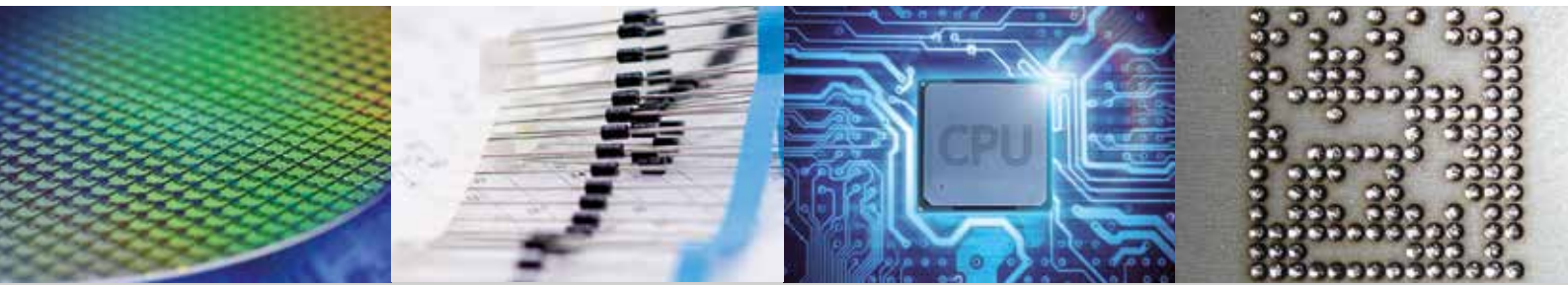




## Specifications

### NANIO AIR 355

Model	355-5-V	355-3-V
Laser Medium	Nd:YVO <sub>4</sub>	Nd:YVO <sub>4</sub>
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 <sup>2</sup> < 1.3, TEM <sub>00</sub>	M <sup>2</sup> < 1.3, TEM <sub>00</sub>
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 <sub>4</sub>	Nd:YVO <sub>4</sub>	Nd:YAG	Nd:YVO <sub>4</sub>
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 <sup>2</sup> < 1.2, TEM <sub>00</sub>	M <sup>2</sup> < 1.2, TEM <sub>00</sub>	M <sup>2</sup> < 1.2, TEM <sub>00</sub>	M <sup>2</sup> < 1.2, TEM <sub>00</sub>
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.)

InnoLas follows a policy of continuous product improvement. All specifications are subject to change without notice. Rev. 2.1, 06/2015.  
InnoLas Photonics GmbH is DIN EN ISO 9001 certified.



## Q-SWITCHED LASERS



### Specifications

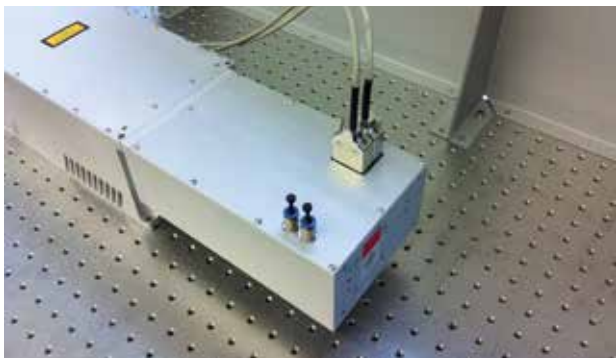
## NANIO AIR 1064

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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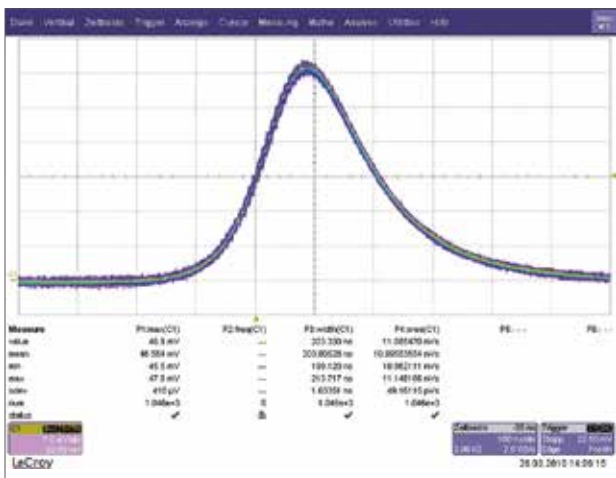


## Options & Customization



### 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.

