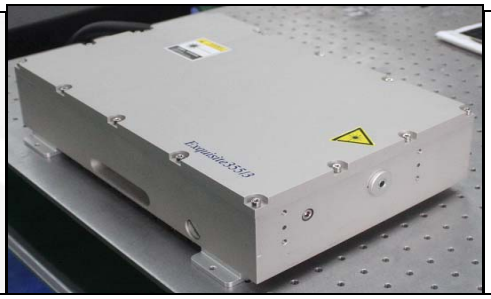
Sintec Optronics

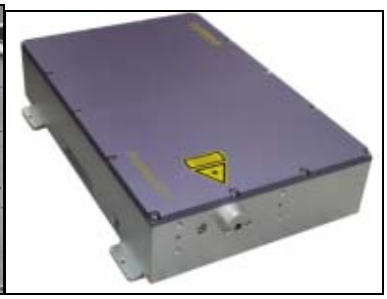
Diode Pumped 355nm UV Lasers

Diode end-pumped lasers adopt full sealed-off design with small volume and low power consumption as well as fiber-coupled pumping, which is easily for the integration of system and equipment. The modularized design provides the convenience for changing by customers. The laser beam is TEMoo with high beam quality, high peak power and short pulse width. Excellent resonator design can keep average laser power and pulsed peak power stable & constant. This laser can meet the requirements of most industrial precision processing. The micro-optics design of key pumping source is the most advanced all over the world.

3W air-cooled laser



3W water-cooled laser



5W water-cooled laser

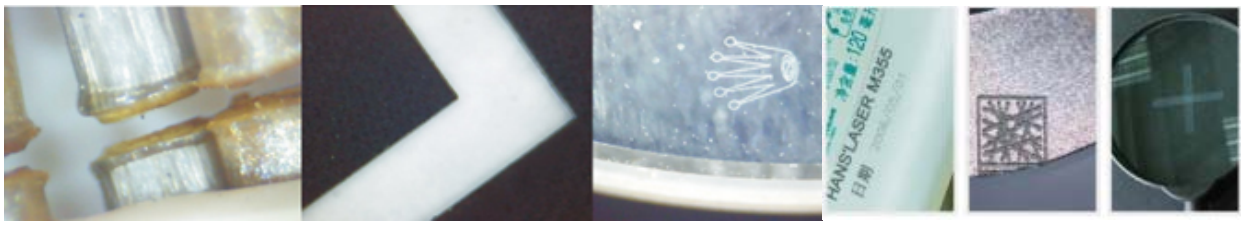
Features

- Unique split type design
- Good beam quality. It is TEM00 with $M^2 \leq 1.2$. It can be used to mark fine lines, suitable for high precision marking applications.
- Fiber coupled diode pumping with high pumping efficiency & long lifetime (>20,000 hrs).
- The laser is sealed and it is anti-dusty.
- High performance price ratio.
- Simple control design for easy installation and operation.

Applications

End-pumped diode laser is suitable for marking on various materials, such as nylon, ABS, PVC, PES, steel, titanium, copper, plating materials, coating materials, sprayed materials, plastic, rubber, epoxy resin etc.

Diode end-pumped laser has excellent applications in various fields, such as mobile phone, jewellery, crafts, scribing, film removing, laser marking & engraving, resistance trimming, range finding, scientific research, LED scribing, FPC cutting, micro-drilling (<10um in diameter), flexible PCB marking & scribing, silicon wafer micro-drilling and blind hole drilling etc.



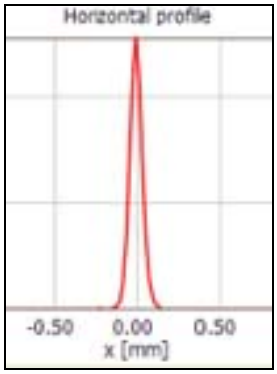
Main Technical Specifications

Product number	DPSS-355-3A	DPSS-355-3W	DPSS-355-5W
Laser wavelength	355nm	355nm	355nm
Average power	>3W@20kHz	>3W@20kHz	>5W@20kHz
Beam diameter	<0.8mm	<0.8mm	<0.8mm
Beam divergence	<1mrad	<1mrad	<1mrad
Pulse width	<15ns@20kHz	<15ns@20kHz	<15ns@20kHz
Beam mode	TEM_{00}	TEM_{00}	TEM_{00}
Beam qualityM^2	M^2≤1.2	M^2<1.2	M^2<1.2
Pulse repetition rate	5kHz~100kHz	5kHz~100kHz	5kHz~100kHz
Power stability	<2%	<2%	<2%
Pointing RMS	<10urad	<10urad	<10urad
Cooling	Air-ccoling	Water-cooling	Water cooling
Warm-up	3～5min	3～5min	3～5min
Input power	220VAC/50Hz	220VAC/50Hz	220VAC/50Hz
Environment temp.	15℃~30℃	15℃~30℃	15℃~30℃
Laser head dimension	290x150x110mm	380x250x84m	380x250x84m
Laser head weight	7.8kg	15kg	15kg
Driver dimension	445x405x140mm	445x405x140mm	445x405x140mm
Driver weight	12kg	9kg	9kg

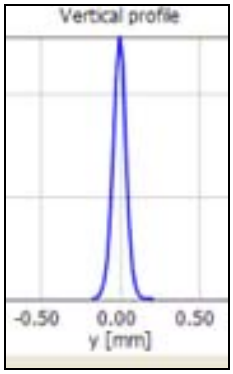
Part number	DPSS-355-4-IL	DPSS-355-7-IL	DPSS-355-10-IL
Average power @20kHz	4W	7W	10W
Beam Mode	TEM_{00}-M^2<1.2	TEM_{00}-M^2<1.3	TEM_{00}-M^2<1.5
Peak power@ 20kHz	13.3 kW	17.5 kW	25 kW
Pulse Energy	0.2mJ	0. 35mJ	0.5mJ
Pulse width	15ns@20kHz	20ns@20kHz	20ns@20kHz
Wavelength	355nm		
Beam Diameter	1.0mm		
Beam Divergence	＜2.5mrad		
Polarization Ratio	100:1 Horizontal		
Average Power Stability	<3%		
Beam-Pointing stability	＜25μrad		
Pulse Repetition Rate Range	5K - 200KHz / CW		
Cooling	Water-cooling		
Ambient Temperature	15~30^{0}C		

Laser Beam Energy Distribution

3D distribution



Distribution along X-axis



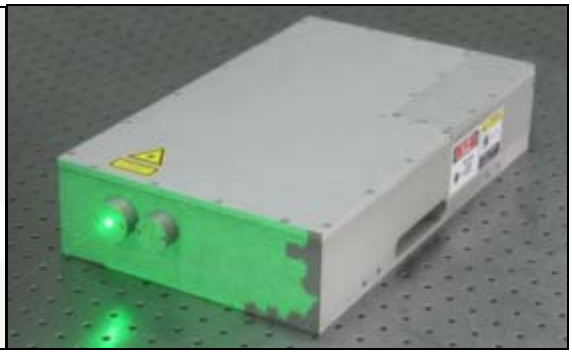
Distribution along Y-axis

The beam energy distributions along X axis and Y axis are symmetric.

Diode Pumped 532nm Green Lasers

Diode end-pumped lasers adopt full sealed-off design with small volume and low power consumption as well as fiber-coupled pumping, which is easily for the integration of system and equipment. The modularized design provides the convenience for changing by customers. The laser beam is TEMoo with high beam quality, high peak power and short pulse width. Excellent resonator design can keep average laser power and pulsed peak power stable & constant. This laser can meet the requirements of most industrial precision processing. The micro-optics design of key pumping source is the most advanced all over the world.

5W & 8Wair-cooled laser



15W water-cooled laser

Features

- Unique split type design
- Good beam quality. It is TEM00 with $M^2 \leq 1.2$. It can be used to mark fine lines, suitable for high precision marking applications.
- Fiber coupled diode pumping with high pumping efficiency & long lifetime (>20,000 hrs).
- The laser is sealed and it is anti-dusty.
- High performance price ratio.
- Simple control design for easy installation and operation.

Applications

End-pumped diode laser is suitable for marking on various materials, such as nylon, ABS, PVC, PES, steel, titanium, copper, plating materials, coating materials, sprayed materials, plastic, rubber, epoxy resin etc.

Diode end-pumped laser has excellent applications in various fields, such as mobile phone, jewellery, crafts, scribing, film removing, laser marking & engraving, resistance trimming, range finding, scientific research, LED scribing, FPC cutting, micro-drilling (<10um in diameter), flexible PCB marking & scribing, silicon wafer micro-drilling and blind hole drilling etc.

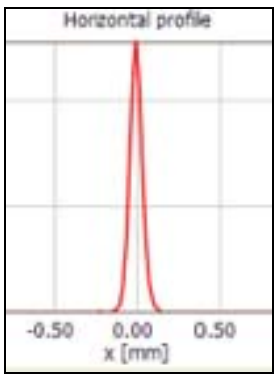
Main Technical Specifications

Product number	DPSS-532-5A	DPSS-532-8A	DPSS-532-15W
Laser wavelength	532nm	532nm	532nm
Average power	5W@20kHz	8W@20kHz	>15W@20kHz
Beam diameter	0.8mm	0.8mm	<1mm
Beam divergence	<1mrad	<1mrad	<1mrad
Pulse width	<15ns@20kHz	<15ns@20kHz	<15ns@20kHz
Beam mode	TEM_{00}	TEM_{00}	TEM_{00}
Beam qualityM^2	M^2<1.2	M^2<1.2	M^2<1.2
Pulse repetition rate	5kHz~100kHz	5kHz~100kHz	5kHz~100kHz
Power stability	<2%	<2%	<2%
Pointing RMS	<10μrad	<10urad	<10urad
Cooling	Air-cooling	Air-cooling	Water-cooling
Warm-up	3～5min	3～5min	3～5min
Input power	220VAC/50Hz	220VAC/50Hz	220VAC/50Hz
Environment temp.	15℃~30℃	15℃~30℃	15℃~30℃
Laser head dimension	290x150x110mm	290x150x110mm	436x250x88mm
Laser head weight	7kg	7kg	14kg
Driver dimension	445x405x140mm	445x405x140mm	445x405x140mm
Driver weight	12kg	12kg	9kg

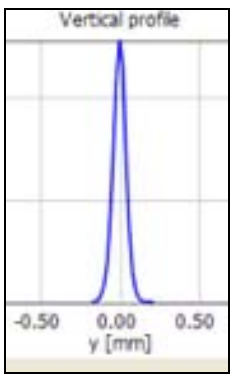
Part number	DPSS-532-7-IL	DPSS-532-10-IL	DPSS-532-15-IL	DPSS-532-20-IL
Average power @30kHz	7W	10W	15W	20W
Beam Mode	TEM_{00}-M^2<1.2	TEM_{00}-M^2<1.3	TEM_{00}-M^2<1.5	TEM_{00}-M^2<1.8
Peak power@ 30kHz	11.7 kW	16.7 kW	25 kW	33.3 kW
Pulse Energy@ 30kHz	0.23mJ	0. 33mJ	0.5mJ	0.67mJ
Wavelength	532nm			
Pulse width	20ns@30Khz			
Beam Diameter	1.0mm			
Beam Divergence	＜2.5mrad			
Polarization Ratio	100:1 Vertical			
Average Power Stability	<2%			
Beam-Pointing stability	＜25μrad			
Pulse Repetition Rate	5K - 200KHz / CW			
Cooling	Air-cooling			
Ambient Temperature	15~30^{0}C			

Laser Beam Energy Distribution

3D distribution



Distribution along X-axis



Distribution along Y-axis

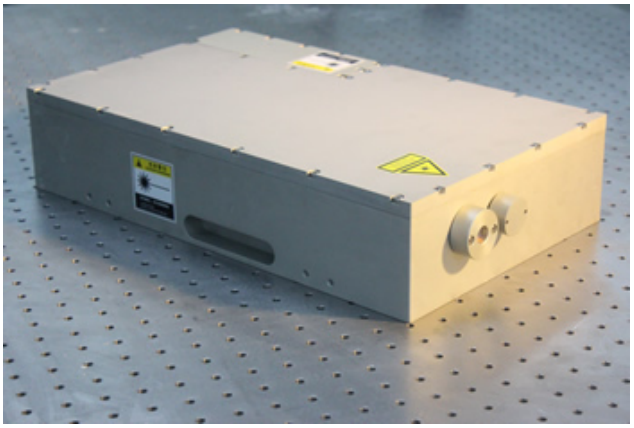
The beam energy distributions along X axis and Y axis are symmetric.

Sintec Optronics

Diode Pumped 1064nm IR Lasers

Diode end-pumped lasers adopt full sealed-off design with small volume and low power consumption as well as fiber-coupled pumping, which is easily for the integration of system and equipment. The modularized design provides the convenience for changing by customers. The laser beam is TEMoo with high beam quality, high peak power and short pulse width. Excellent resonator design can keep average laser power and pulsed peak power stable & constant. This laser can meet the requirements of most industrial precision processing. The micro-optics design of key pumping source is the most advanced all over the world.

12W & 20W laser



30W laser

Features

- Unique split type design
- Good beam quality. It is TEM00 with $M^2 \leq 1.2$. It can be used to mark fine lines, suitable for high precision marking applications.
- Fiber coupled diode pumping with high pumping efficiency & long lifetime (>20,000 hrs).
- The laser is sealed and it is anti-dusty.
- High performance price ratio.
- Simple control design for easy installation and operation.

Applications

End-pumped diode laser is suitable for marking on various materials, such as nylon, ABS, PVC, PES, steel, titanium, copper, plating materials, coating materials, sprayed materials, plastic, rubber, epoxy resin etc.

Diode end-pumped laser has excellent applications in various fields, such as mobile phone, jewellery, crafts, scribing, film removing, laser marking & engraving, resistance trimming, range finding, scientific research, LED scribing, FPC cutting, micro-drilling (<10um in diameter), flexible PCB marking & scribing, silicon wafer micro-drilling and blind hole drilling etc.

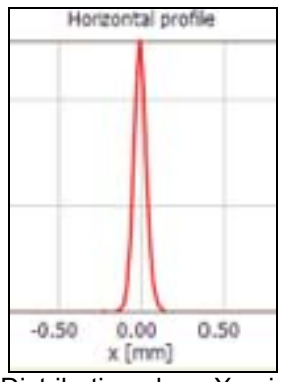
Main Technical Specifications

Product number	DPSS-1064-12A	DPSS-1064-20A	DPSS-1064-30W
Laser wavelength	1064nm	1064nm	1064nm
Average power	>12W@CW	>20W@CW	>30W@CW
Beam diameter	0.8mm	0.8mm	<1.0mm
Beam divergence	<1mrad	<1mrad	<1mrad
Pulse width	<20ns@20kHz	<20ns@20kHz	<20ns@20kHz
Beam mode	TEM_{00}	TEM_{00}	TEM_{00}
Beam qualityM^2	M^2<1.2	M^2<1.2	M^2<1.2
Pulse repetition rate	5kHz~100kHz	5kHz~100kHz	5kHz~100kHz
Power stability	<2%	<2%	<2%
Pointing RMS	<10urad	<10urad	<10urad
Cooling	Air-cooling	Air-cooling	Water-cooling
Warm-up	3～5min	3～5min	3～5min
Input power	220VAC/50Hz	220VAC/50Hz	220VAC/50Hz
Environment temp.	15℃~30℃	15℃~30℃	15℃~30℃
Laser head dimension	270x130x109mm	270x130x109mm	436x250x88mm
Laser head weight	7kg	7kg	14kg
Driver dimension	445x405x140mm	445x405x140mm	445x405x140mm
Driver weight	12kg	12kg	9kg

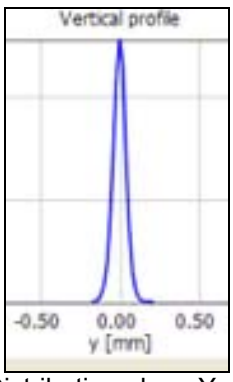
Part number	DPSS-1064-10-IL	DPSS-1064-15-IL	DPSS-1064-20-IL	DPSS-1064-25-IL	DPSS-1064-30-IL
Laser power	10W	15W	20W	25W	30W
Wavelength	1064nm				
Beam quality	M^2<1.2	M^2<1.2	M^2<1.4	M^2<1.6	M^2<2
Power stability	<2%				
Modulation	3kHz-200kHz				
Pulse width	8-40ns				
Peak power	25-200KW/10KHz				
Dimension	L540×W176×H489mm				
Weight	28.5kg				
Power supply	220V/50-60Hz				
Power consumption	600W	700W	800W	1200W	1200W
Cooling	Air				Water

Laser Beam Energy Distribution

3D distribution



Distribution along X-axis



Distribution along Y-axis

The beam energy distributions along X axis and Y axis are symmetric.

Outlook of IL Series Lasers

Integrated Diode Side-pumped Solid-State Lasers

Conventional solid-state lasers are pumped by a flashlamp. The lifetime of the lamp is generally shorter than 400 hours and the coupling efficiency of the lamp power into the laser crystal is very low (normally less than 3%), resulting in various undesirable effects such as serious thermal lensing, bad beam quality, bulky physical size and frequent replacement of the flashlamps. Solid-state lasers have undergone a renaissance since the development of reliable and cheap diode lasers, which can be used as pump sources. It has led to a new class of diode-pumped solid-state (DPSS) lasers which have been demonstrated to be highly efficient, reliable, and are attractive for a wide range of applications. DPSS lasers take the advantages of both flashlamp-pumped solid-state lasers and diode lasers, and therefore exhibit more advantages as follows:

Integrated Nd:YAG Laser

High optical-to-optical conversion efficiency (>50%);
Good laser beam quality (M^2 ~1.1);
Stable output laser power (±0.5%);
Low maintenance or maintenance-free;
Compact in size.

The performance of our DPSS lasers is comparable with similar products in the world, but their prices are very attractive and competitive. These lasers are widely used in industries such as electronics, semiconductor, hardware, precision machining, science, defence and medicine for laser marking, trimming and cutting.

Model	DPSS-50	DPSS-75	DPSS-150	DPSS-35S	DPSS-50S
Laser type	Diode-pumped solid-state lasers				
Laser wavelength	1064nm				
Beam diameter	3mm	3mm	6.3mm	2mm	2mm
Beam mode	Multi-mode	Multi-mode	Multi-mode	TEM00*	TEM00*
Laser power	50W	75W	150W	35	50
Power stability	±1%	±1%	±1%	±1.5%	±1.5%
Cooling	Water	Water	Water	Water	Water
Electrical requirements	220VAC, 1KVA	220VAC, 1.5KVA	220VAC, 2.5kW	220VAC, 1KVA	220VAC, 1.5KVA
Chiller	ST-LW16-PF	ST-LW16-PF	ST-LW27-PF	ST-LW16-PF	ST-LW16-PF
Options					
Laser marking head, Q-switch element, laser chiller, lab jack					

* Here TEM00 is not 100% TEM00 and it is low-order mode. The beam quality depends on the laser resonator mirrors, optical length etc.

Typical Applications:

Laser marking; Laser medicine; Laser trimming; Laser cutting; Laser micro-machining; Science & defence.

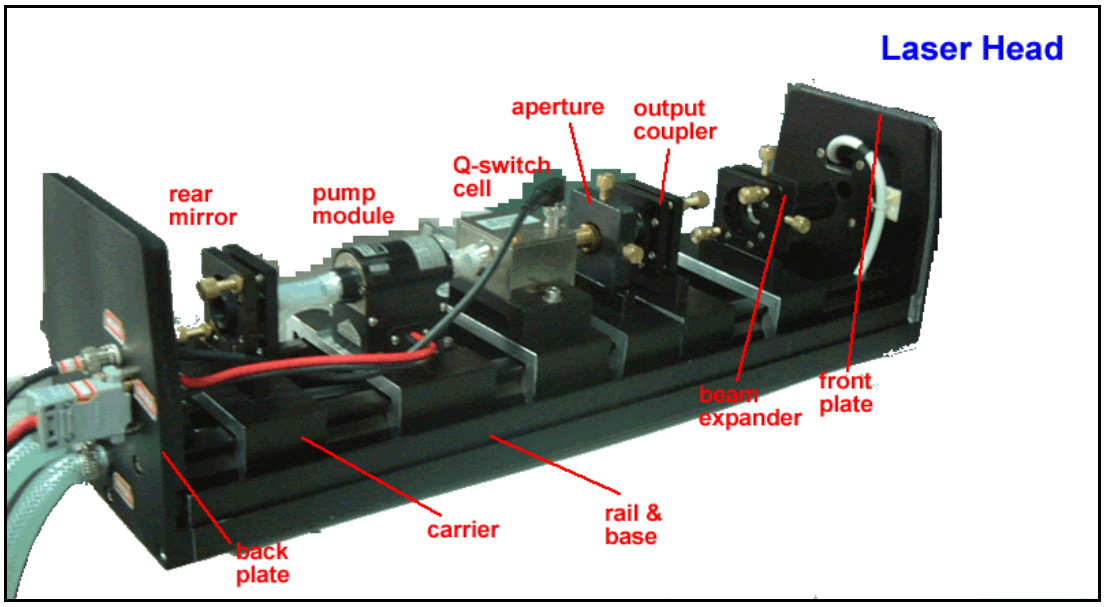
OEM Diode Side-pumped Solid-State Lasers

For OEM users or laser integrators, we can provide OEM and system integrators with a range of high performance components and sub-assemblies of diode-pumped Nd:YAG laser at more attractive prices. These components and sub-assemblies include laser head (diode pump module, laser resonator, Q-switch cell), Q-switch driver, diode driver and chiller.

Model	ST-DPSS-50OEM	ST-DPSS-75OEM	ST-DPSS-150OEM
Laser type	Diode-pumped solid-state lasers		
Laser wavelength	1064nm		
Beam diameter	3mm	3mm	6.3mm
Beam mode	50W	Multi-mode	Multi-mode
Laser power	50W	75W	150W
Power stability	±1%	±1%	±1%
Cooling requirement	Water	Water	water
Electrical requirements	220VAC, 1KVA	220VAC, 1.5KVA	220VAC, 2.5kW
Composition	Laser head, diode driver, Q-switch & driver (option), chiller (option)		
Optional chiller	PH-LW10-CLP	PH-LW16-PF	PH-LW27-PF

1. Laser Head

A laser head consists of base rail, diode pump module, output coupler and rear mirror, front plate, rear plate, and cover. Options include aperture, AO Q-switch cell and beam expander.



2. Q-switch Driver

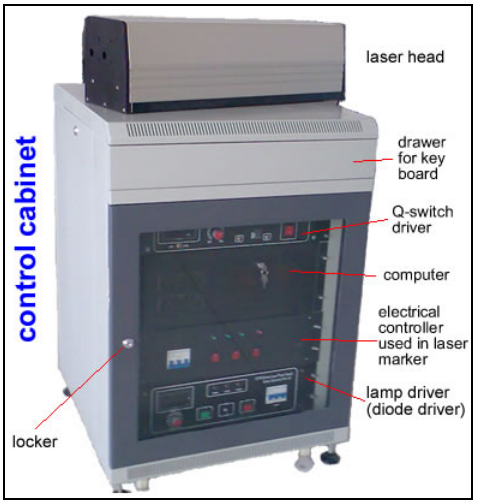
The panel is standard 19 inch.

3. Diode Driver

The panel is standard 19 inch.

4. Chiller

5. Control Cabinet



Remark:

"2 in 1" or "3 in 1" laser power supply available upon request. "2 in 1" laser power supply integrates diode driver and Q-switch driver into one unit. "3 in 1" laser power supply integrates diode driver, Q-switch driver and the power supply of laser marking head into one unit and it is mostly used in a laser marking machine.

High Repetition Rate Q-switched Lasers

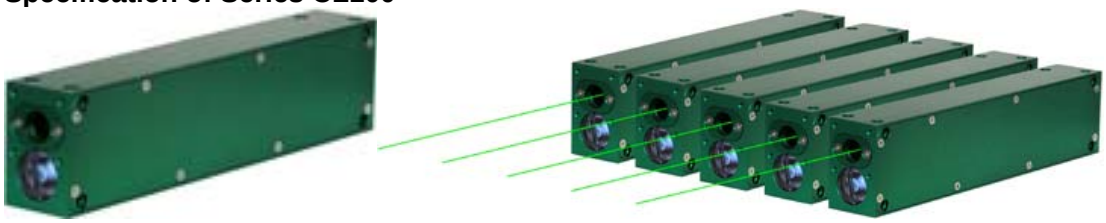
Features:

- high repetition rate solid-state diode pumped Q-switched lasers
- fundamental 1064 nm, green 532 nm and UV 355 nm available
- air-cooled, compact laser for micro and precision processing
- no additional cooling unit required
- excellent beam quality
- short pulses at high repetition rates
- high Peak Power
- first pulse suppression by fast energy modulation
- high reliability for 24/7 operation
- ports for TTL, analog and RS 232 control
- cost-effective operation

Applications:

- rapid prototyping
- micro-machining
- thin film solar cell scribing
- marking, structuring, trimming
- greyscale ID-cards

Specification of Series CL100



Model	CL100-1064	CL100-532
Wavelength	1064 nm	532 nm
Power	3W @ 25 kHz	1,5W @ 25 kHz
Pulse Repetition Rate	1 - 100 kHz	1 - 100 kHz
Pulse Width	15 ns @ 25 kHz	15 ns @ 25 kHz
Pulse Energy	120 µJ @ 25 kHz	60 µJ @ 25 kHz
Peak Power	8 kW @ 25kHz	4 kW @ 25kHz
Beam Quality	$M^2 < 1,4$	$M^2 < 1,5$
Polarization	linear	linear
Dimension Laser Head (W/H/L)	39 x 59 x 280 mm	39 x 59 x 280 mm
Dimension Power Supply (W/H/L)	320 x 120 x 320 mm	320 x 120 x 320 mm
Power Consumption	110-240V, 50-60Hz, 300W	110-240V, 50-60Hz, 300W
Operating Temperature	15 - 35°	15 - 35°

Specification of Series CL200

Model	CL200-1064	CL200-532	CL200-355
Wavelength	1064 nm	532 nm	355 nm
Power	12W CW	4W @ 15 kHz	1.5W @ 15 kHz

	10W @ 25 kHz		
Pulse Repetition Rate	1 - 200 kHz	1 - 200 kHz	1 - 200 kHz
Pulse Width	30 ns @ 20 kHz	20 ns @ 25 kHz	20 ns @ 25 kHz
Pulse Energy	600µJ @ 10 kHz	300µJ @ 10 kHz	120µJ @ 10 kHz
Peak Power	2 kW @ 10 kHz	15kW @ 10 kHz	6 kW @ 10 kHz
Beam Quality	$M^2 < 1.2$	$M^2 < 1.4$	$M^2 < 1.4$
Polarization	linear	linear	linear
Dimension Laser Head (W/H/L)	80x130x495mm	125x129x600mm	125x129x600mm
Dimension Power Supply (W/H/L)	19”, 3U	19”, 3U	19”, 3U
Power Consumption	110-240V, 50-60Hz, 300W	110-240V, 50-60Hz, 300W	110-240V, 50-60Hz, 300W
Operating Temperature	15 - 35°	15 - 35°	15 - 35°

Specification of Series CL210

Modell	CL210-1064	CL210-532	CL210-355
Wavelength	1064 nm	532 nm	355 nm
Power	20W cw 18W @ 20 kHz	7W @ 15 kHz	3W @ 15 kHz
Pulse Repetition Rate	1 - 100 kHz	1 - 100 kHz	1 - 100 kHz
Pulse Width	30 ns @ 20 kHz	20 ns @ 25 kHz	20 ns @ 25 kHz
Pulse Energy	1000 µJ @10 kHz	500 µJ @10 kHz	250 µJ @10 kHz
Peak Power	40 kW @ 10 kHz	25 kW @10 kHz	12 kW @10 kHz
Beam Quality	$M^2 < 1.2$	$M^2 < 1.4$	$M^2 < 1.4$
Polarization	linear	linear	linear
Dimension Laser Head (W/H/L)	125x129x600mm	125x129x600mm	125x129x600mm
Dimension Power Supply (W/H/L)	2 x 19”, 3U	2 x 19”, 3U	2 x 19”, 3U
Power Consumption	110-240V, 50-60Hz, 600W	110-240V, 50-60Hz, 600W	110-240V, 50-60Hz, 600W
Operating Temperature	15 - 35°	15 - 35°	15 - 35°

High Peak Power Lasers

Features:

- high peak power solid-state diode pumped Q-switched lasers
- fundamental 1064 nm, green 532 nm and UV 355 nm available
- air-cooled, compact laser for micro and precision processing
- no additional cooling unit required
- excellent beam quality
- short pulses at high repetition rates
- high Peak Power
- pulse on demand
- high reliability for 24/7 operation
- ports for TTL, analog and RS 232 control
- cost-effective operation

Applications:

- rapid prototyping
- micro-machining
- thin film solar cell scribing
- marking, structuring, trimming
- glass engraving

Specifications of Series CP400

Model	CP400-1064	CP400-532	CP400-355
Wavelength	1064 nm	532 nm	355 nm
Power	4W @ 4 kHz	2W @ 4 kHz	1W @ 4 kHz
Pulse Repetition Rate	1 - 4 kHz	1 - 4 kHz	1 - 4 kHz
Pulse Width	10 ns @ 4 kHz	8 ns @ 4 kHz	8 ns @ 4 kHz
Pulse Energy	1000 µJ @ 4 kHz	500 µJ @ 4 kHz	250 µJ @ 4 kHz
Peak Power	100 kW @4kHz	60 kW @ 4kHz	30 kW @ 4kHz
Beam Quality	$M^2 < 1.3$	$M^2 < 1.3$	$M^2 < 1.3$
Polarization	linear	linear	linear
Dimension Laser Head (W/H/L)	125x129x410mm	125x129x410mm	125x129x410mm
Dimension Power Supply (W/H/L)	280x130x240mm	280x130x240mm	280x130x240mm
Power Consumption	24 V DC, 300 W	24 V DC, 300 W	24 V DC, 300 W
Operating Temperature	15 - 35°	15 - 35°	15 - 35°

Specification of Series CP600

Model	CP600-1064	CP600-532
Wavelength	1064 nm	532 nm
Power	7.5W @ 10 kHz	3W @ 10 kHz
Pulse Repetition Rate	1 - 10 kHz	1 - 10 kHz
Pulse Width	4 ns @ 10 kHz	3.5 ns @ 10 kHz
Pulse Energy	750 µJ @ 10 kHz	300 µJ @ 10 kHz
Peak Power	180 kW @ 10kHz	75 kW @ 10 kHz

Beam Quality	$M^2 < 1.4$	$M^2 < 1.6$
Polarization	linear	linear
Dimension Laser Head (W/H/L)	125 x 119 x 300 mm	125 x 119 x 300 mm
Dimension Power Supply (W/H/L)	19”, 3U	19”, 3U
Power Consumption	110-240V, 50-60 Hz, 300W	110-240V, 50-60 Hz, 300W
Operating Temperature	15 - 35°	15 - 35°

Amplifiers

- ultra compact DPSS amplifiers
- fundamental wavelength 1064 nm
- Peltier-cooled
- high amplification
- easy to integrate
- version CA40 sealed design
- developed for amplification of short pulse lasers

Model	CA30-YAG	CA40-YAG
Wavelength	1064 nm	1064 nm
Amplification @ 50 µJ 1kHz Input	20	20
Amplification @ 150 µJ 5kHz Input	8	8
Input Beam Diameter	350 - 400 µm	350 - 400 µm
Angle of Incidence	18.6°	18.6°
Diode Current	0 - 60 A	0 - 60 A
TEC Cooling Requirement	120 W	120 W
Dimension	55 x 35 x 22 mm	70 x 40 x 28 mm
Operating Temperature	15 - 35°	15 - 35°