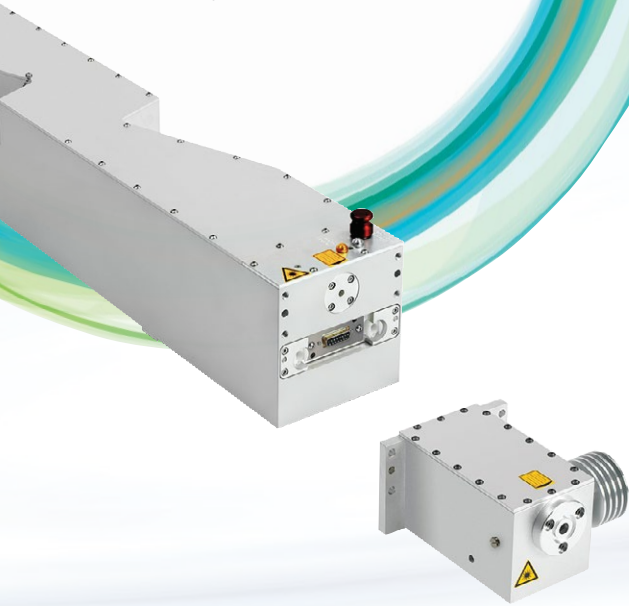


Navigator™

VERSATILE DIODE-PUMPED SOLID STATE LASERS

The Navigator Advantage

- Modular design can be configured to meet a range of requirements
- High uptime
- Boresighted IR beam for easy integration
- Modular design easy to service in the field
- Lower cost of ownership
- Excellent pulse-to-pulse stability
- User friendly



The versatile Navigator™ family of laser products has a unique modular design that allows you to combine interchangeable harmonic modules with a variety of DPSS infrared laser sources. This ensures quick configuration of the laser to exactly match your process requirements by specifying power, pulse width, wavelength, and repetition rate.

Spectra-Physics® Navigator lasers deliver excellent beam quality and high intensity pulses over a wide range of operating conditions. Their end-pumped technology produces a Gaussian beam profile that can be focused to very small spot sizes. Navigator models come in both water- and air-cooled versions.

The Navigator lasers' reliable, field-proven design make it the ideal tool for many micromachining manufacturing applications. The Navigator offers easy serviceability with:

- Field replaceable diodes which last up to double the industry average.
- Field replaceable fibers, eliminating the need to rebuild the laser because of a bad fiber.
- Field replaceable harmonic module for 532 nm which ensures fewer spares, lower cost of ownership and shorter meantime to repair (MTTR).

There are Navigator models available with pulse widths as low as 8 ns. Short pulse widths and high repetition rates enable processing materials at higher speeds with smaller heat-affected zones. Longer pulse Navigator models (up to 105 ns) are also available for applications such as drilling or rapid material ablation.

Designed for industrial (OEM) applications, Navigator lasers have a robust and compact design that enables stable, reliable and hands-free operation in 24/7 industrial environments. Navigator lasers deliver excellent performance for many years.

Applications

- Resistor trimming
- Ablating material on PCBs and PCB structuring
- Cutting PCBs and films
- Ceramic scribing
- Diamond processing
- IC package marking
- Marking on various metals and plastics
- Scribing of thin film solar cells
- Wafer marking
- LIDAR

Power	1064 nm		532 nm	
	Short Pulse	Long Pulse	Short Pulse	Long Pulse
3 W				Navigator 532-3Y
4 W			Navigator 532-4	Navigator 532-4Y
5 W	Navigator 1064-5			
6 W		Navigator 1064-6Y		
7 W		Navigator 1064-7Y		
9 W			Navigator 532-9	
12 W		Navigator 1064-12Y		

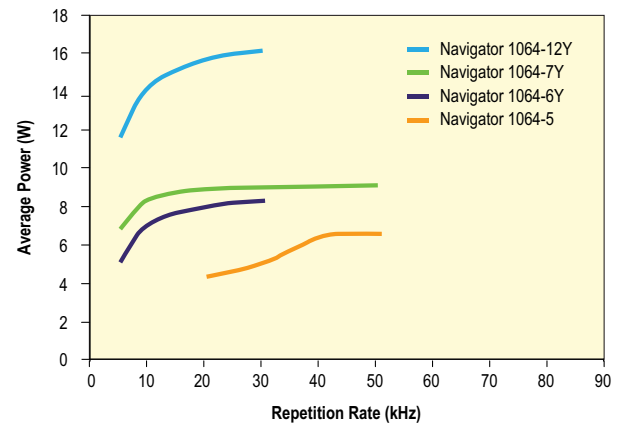
Navigator™ 1064 nm Lasers

The Navigator 1064 nm lasers are offered with short or long cavity (for a range of pulse widths), Nd:YAG or Nd:YVO₄ (for a large range of operating repetition rates), and high or low power. When combined with the Spectra-Physics 532 nm harmonic module, the Navigator can be configured to meet a range of process requirements.

The Navigator 1064 nm laser family's advantages are:

- Boresighted infrared beam provides tight positional and angular tolerances for ease of integration
- Excellent beam pointing stability means higher accuracy material processing
- Lower cost of ownership, ease of service, and field proven reliability

Typical Power Curve¹



1. Typically measured performance; not a guaranteed or warranted specification.

Specifications^{1,2}

	Navigator 1064-12Y	Navigator 1064-7Y	Navigator 1064-6Y	Navigator 1064-5
Output Characteristics				
Part Number	J80-YHP70-106Q	J40-Y70SC-106Q	J40-X30SC-106Q	J40-BL6-106Q
Wavelength	1064 nm			
Average Power	12 W	6.5 W	6 W	5 W
M ²	<1.15			
Repetition Rate, nominal	10 kHz	10 kHz	10 kHz	35 kHz
Pulse Width	<80 ns	70–110 ns	30–40 ns	<8.5 ns
Spatial Mode	TEM ₀₀			
Polarization	>100:1, vertical			
Beam Diameter (1/e ²)	0.6 mm, nominal	0.65 mm, nominal	0.45 mm, nominal	0.28 mm, nominal
Beam Divergence, full angle	2.3 mrad, nominal	2.4 mrad, nominal	3.4 mrad, nominal	5.5 mrad, nominal
Beam Roundness	90%			
Beam Pointing Stability ³	<20 μrads/°C			
Pulse-to-Pulse Stability	<1.5% 1 σ	<2% 1 σ	<1.5% 1 σ	<1.5% 1 σ
Operating Temperature Range	18–35°C			
Relative Humidity, Operating	8–90%, non-condensing			
Operating Voltage	100–240 V / 50/60 Hz			
Physical Characteristics				
Laser Dimensions (L x W x H)	27.19 x 4.95 x 6.04 in (690.6 x 125.7 x 153.3 mm)	27.25 x 4.95 x 6.04 in (692.2 x 125.7 x 153.3 mm)	16.34 x 4.95 x 6.04 in (415.1 x 125.7 x 153.3 mm)	6.64 x 2.30 x 1.60 in (168.7 x 58.4 x 40.6 mm)
Laser Weight	24.8 lbs (11.3 kg)	26.2 lbs (11.8 kg)	17.5 lbs (7.9 kg)	1.9 lbs (0.9 kg)
Power Supply Dimensions (L x W x H)	17.79 x 19 x 6.94 in (451.9 x 482.6 x 176.3 mm)			
Power Supply Weight	68.5 lbs (29.8 kg)	48.6 lbs (22 kg)	48.6 lbs (22 kg)	48.6 lbs (22 kg)

1. Due to our continuous product improvement program, all specifications are subject to change without notice.

2. All specifications are at the nominal repetition rate.

3. Pointing stability applies after 2 hour warm-up.

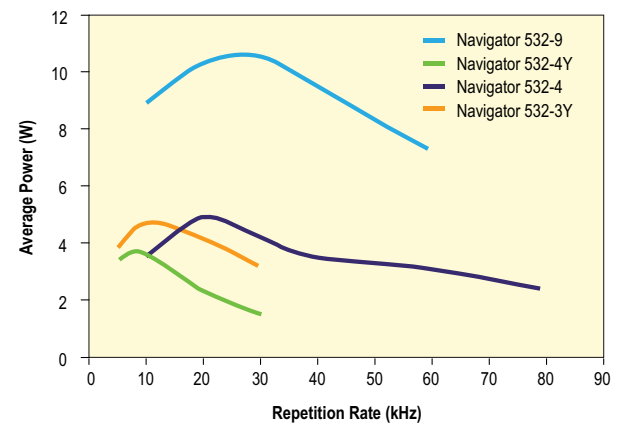
Navigator™ 532 nm Lasers

The rugged, field proven reliability and stability over time make the Navigator family of lasers a popular choice among thin film photovoltaic manufacturers. The Navigator 532 nm family of lasers offers superior value with several pulse widths, pulse repetition rates and power levels to meet your process requirements.

The Navigator 532 nm lasers offer:

- Lower cost of ownership, ease of service, and field proven reliability
- Field replaceable 532 nm harmonic module for lower service inventory and shorter MTTR

Typical Power Curve¹



1. Typically measured performance; not a guaranteed or warranted specification.

Specifications^{1,2}

	Navigator 532-9	Navigator 532-4	Navigator 532-4Y	Navigator 532-3Y
Output Characteristics				
Part Number	J80-YHP40-532Q	J40-X15SC-532Q	J40-Y70SC-532Q	J40-X30SC-532Q
Wavelength	532 nm			
Average Power	9 W	4 W	3.5 W	3 W
M ²	<1.2			
Repetition Rate (nominal)	20 kHz	20 kHz	7.5 kHz	10 kHz
Pulse Width	<35 ns	<15 ns	70–90 ns	25–35 ns
Spatial Mode	TEM ₀₀			
Polarization	>100:1, horizontal			
Beam Diameter (1/e ²)	0.85 mm, nominal	0.9 mm, nominal	0.85 mm, nominal	0.68 mm, nominal
Beam Divergence, full angle	0.7 mrad, nominal	1 mrad, nominal	0.9 mrad, nominal	1.2 mrad, nominal
Beam Roundness	90%			
Beam Pointing Stability ³	<20 μrads/°C			
Pulse-to-Pulse Stability	<3% 1 σ	<3.5% 1 σ	<3% 1 σ	<3.5% 1 σ
Operating Temperature Range	18–35°C			
Relative Humidity, Operating	8–90%, non-condensing			
Operating Voltage	100–240 V / 50/60 Hz			
Physical Characteristics				
Laser Dimensions (L x W x H)	33.31 x 5.17 x 6.04 in (846 x 131.3 x 153.3 mm)	22.46 x 5.17 x 6.04 in (570.6 x 131.3 x 153.3 mm)	33.37 x 5.17 x 6.04 in (847.6 x 131.3 x 153.3 mm)	22.46 x 5.17 x 6.04 in (570.6 x 131.3 x 153.3 mm)
Laser Weight	28.9 lbs (13.1 kg)	20.9 lbs (9.6 kg)	30.0 lbs (13.6 kg)	20.9 lbs (9.6 kg)
Power Supply Dimensions (L x W x H)	17.79 x 19 x 6.94 in (451.9 x 482.6 x 176.3 mm)			
Power Supply Weight	68.5 lbs (29.8 kg)	48.6 lbs (22 kg)	48.6 lbs (22 kg)	48.6 lbs (22 kg)

1. Due to our continuous product improvement program, all specifications are subject to change without notice.

2. All specifications are at the nominal repetition rate.

3. Pointing stability applies after 2 hour warm-up.



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