

Darwin

The Standard in Diode-Pumped Nd:YLF Lasers

Diode-Pumped Nd:YLF



DARWIN FEATURES & BENEFITS

- > 30 mJ pulse energy at 1 kHz
- Average power >40 W
- Repetition rates up to 10 kHz
- Compact and hermetically sealed laser head
- Exceptional beam-pointing and power stability
- Quickly changed, user-serviceable pump diodes
- Optimized for ultrafast amplifier pumping

DARWIN SERIES SPECIFICATIONS ^{1,2}	1053-30-M	1053-15-0	527-50-M	527-40-M	527-30-M	527-20-M	527-15-0
Wavelength (nm)	1053	1053	527	527	527	527	527
Transverse Mode	MM	TEM ₀₀	MM	MM	MM	MM	TEM ₀₀
Pulse Energy (mJ) ¹	20	10	30	25	20	15	10
Pulse Repetition Rate (kHz) ³	0.1-10	0.1-10	0.1-10	0.1-10	0.1-10	0.1-10	0.1-10
Average Power @ 3 kHz (W)	30	15	40	35	30	20	15
Pulse Width (ns) ⁴	150	150	150	150	150	150	150
Energy Stability (% rms)	0.5	1.5	0.5	0.5	0.5	0.5	1.5
Beam Pointing Stability (μrad) ⁴	25	20	25	25	25	25	20
Beam Diameter at Output (mm) ⁵	3	1	2.5	2.5	2.5	2.5	1
Beam Quality (M ²) ⁴	25	1.2	<16	<16	<16	<16	1.2
Beam Divergence (mrad) ⁴	12	1.8	8	8	8	8	1.8
Polarization (horizontal/vertical)	V	V	H	H	H	H	H

The Darwin series of high repetition rate Nd:YLF lasers features the smallest laser head of any system in its class. It produces high average power (>40 W) at kilohertz repetition rates. Our proprietary intracavity frequency doubling results in high conversion efficiency, without resorting to tight focusing (and possible optical damage) in the doubling crystal as would be necessary in an extracavity design. Our patented** pumping chamber design further increases the overall efficiency. High pulse energy, excellent beam quality, and long component lifetime are all available in this extremely compact diode-pumped package.

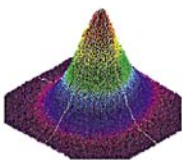
Proprietary pump diode fabrication techniques allow for extended diode lifetime. Quantronix offers a 10,000-hour/2-year* diode warranty on every Darwin diode module. The Darwin also has a user-friendly interface (*Laser Commander*) for complete control of all laser functions and parameters.

NOTES

1. All specifications at 1 kHz unless otherwise noted
2. Due to continuous improvement of our products, all specifications are subject to change without notice
3. Single shot to 1 kHz available with external trigger
4. Typical measurement
5. Measured at 1/e² points of Gaussian fit to beam profile

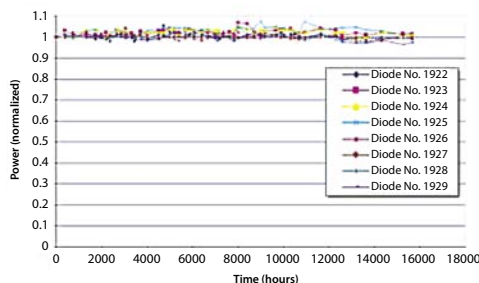
DARWIN 3D BEAM PROFILE

Uniform spatial profile is optimized for Ti:sapphire pumping.



DARWIN DIODE LIFETIME TEST

Proprietary Quantronix packaging process ensures long-term performance.



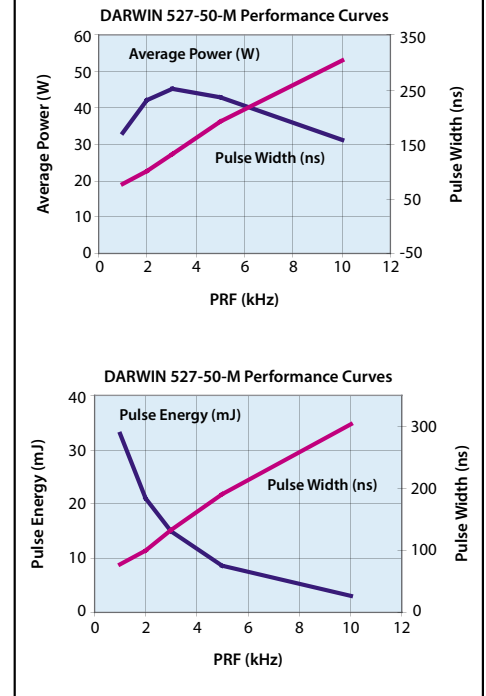
*2-years or 10,000 hours whichever comes first
**US Patent # 6,075,803

Darwin's smooth output profile makes it the ideal choice for pumping regenerative and multipass Ti:sapphire amplifiers, as a light source for particle image velocimetry (PIV), materials processing, cutting, marking and etching, fluorescence measurements, dye laser pumping, mobile imaging, and LIDAR.

MECHANICAL & UTILITIES REQUIREMENTS

Size	Optical Head (LxWxH)	A) 20 x 4 x 5 in (51 x 10.2 x 12.7 cm)-mm models B) 23 x 4 x 5 in (58.4 x 10.2 x 12.7 cm)-TEM ₀₀ model
	Power Supply (LxWxH)	21 x 32 x 40 in (53 x 81 x 102 cm)
Weight	Optical Head	A) 20 lbs. (9 kg) B) 23 lbs. (10.5 kg)
	Power Supply	250 lbs. (113 kg)
Water	Service External	No external cooling required for standard models External water to water cooling available as option
Electrical	Service	230V +/-10% AC, 50/60 Hz, 30A
Consumption	Nominal	<2.5 kW
Controls	User Interface	Full-featured front panel controls
	Serial Interface	RS - 232
	Control Software	Windows-based <i>Laser Commander™</i> software
Umbilical Length	Optical Head to Power Supply	10.0 ft (3 m)
Environmental Requirements	Operating Temperature Range	15° - 35° C
	Storage Temperature Range	-20° - +50° C
	Relative Humidity	8 - 80% non-condensing

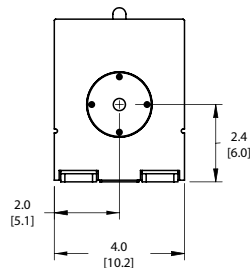
Laser System Output Characteristics



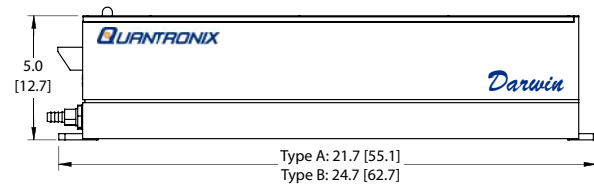
DARWIN PHYSICAL LAYOUT (unless otherwise noted, dimensions apply to both enclosure types)

All dimensions are in inches (cm)

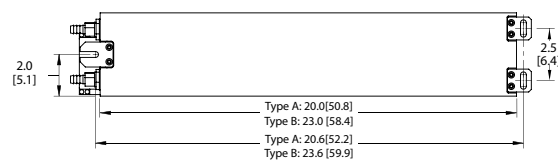
FRONT VIEW



SIDE VIEW

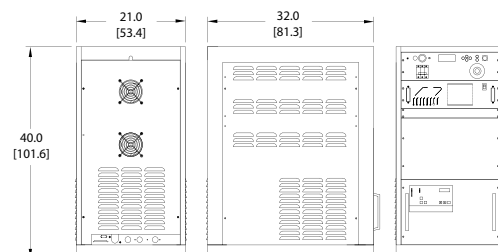


BOTTOM VIEW



POWER SUPPLY

All dimensions are in Inches (cm)



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Due to continuous improvement, all specifications subject to change.

