

WhisperIT[®]

Whisper Standard Laser – Free Space (W-FS series)

WhisperIT[®] W-FS Series are laser diode-based continuous-wave solid-state lasers that offer significantly reduced footprint, increased lifetime, and improved efficiency over DPSS, HeCd, HeNe and Argon lasers. The proprietary WhisperIT[®] technology eliminates mode hops and delivers lasers with extremely low optical noise.

WhisperIT[®] W-FS Series lasers have low coherence and reduced speckle, near immunity to damage from back reflected light and the lowest noise available among all commercially available diode lasers.

WhisperIT[®] W-FS Series lasers benefit from Pavilion's extensive experience in the design of rugged, low-footprint, user friendly lasers for demanding OEM applications. Utilizing long life and highly reliable laser diodes enables first-class quality laser products with great simplicity and robustness.

WhisperIT[®] W-FS Series lasers offer the best value for broad applications with the smallest form factors on the market today. The lasers are available with round or customized beam shape that are tailored to match specific application requirements. Ellipse and focused beam shape are also available.



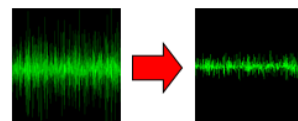
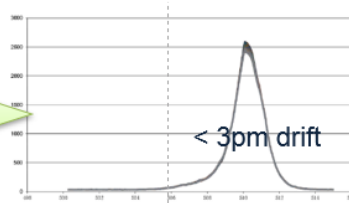
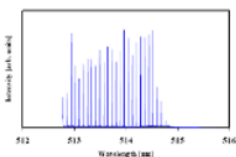
FEATURES

- Ultra-Low Noise
- Low Coherence
- Mode-hop Free
- Integrated Control Electronics
- Digital, Analog Modulation

APPLICATIONS

- Flow Cytometry
- DNA Sequencing
- Medical Imaging
- Confocal Microscopy
- Optogenetics
- Metrology
- Semiconductor Instrumentation

Laser diode and mode hop



Low Noise

Table 1. Optical Specification

SPECIFICATIONS	W405	W488	W505	W515
Wavelength (nm)*	405±5	488±5	505±5	515±5
Output Power (mW)**	20,50,80, 100,150,200,250	20,50,80, 100,150,200	20,50,80	20,50,80, 100,150
RMS Noise (20Hz to 20 MHz) (%)	≤0.1	≤0.1	≤0.1	≤0.1
Peak to Peak Noise (20Hz to 20kHz) (%)	<0.5	<0.5	<0.5	<0.5
Long-Term Power Stability (8hrs, ±3°C) (%)	<2	<2	<2	<2
Spatial Mode (TEM00) M ²	<1.3	<1.3	<1.3	<1.3
Beam Symmetry	≥90%	≥90%	≥90%	≥90%
Beam Diameter at 1/e ² (mm) @150mm	0.85±0.1	0.7±0.1	0.7±0.1	0.7±0.1
Beam Divergence Angle (mrad, full angle)	<1.2	<1.2	<1.4	<1.4
Pointing Stability (μrad) (over 2 hours after warm up and ±3°C)	<30	<30	<30	<30
Pointing Stability Over Temperature (μrad/°C)	<5	<5	<5	<5
Warm-Up Time (from cold start) (minutes)	<5	<5	<5	<5
Polarization Ratio (dB)	>100:1 Vertical ±5°	>100:1 Vertical ±5°	>100:1 Vertical ±5°	>100:1 Vertical ±5°

SPECIFICATIONS	W532	W561	W638	W785
Wavelength (nm)*	532±5	561±1	638±5	785±5
Output Power (mW)**	20,50,80,100	20,45	20,50,80, 100,150	20,50,80,100
RMS Noise (20Hz to 20 MHz) (%)	≤0.25	≤0.25	≤0.1	≤0.1
Peak to Peak Noise (20Hz to 20kHz) (%)	<1	<1	<0.5	<0.5
Long-Term Power Stability (8hrs, ±3°C) (%)	<2	<2	<2	<2
Spatial Mode (TEM00) M ²	≤1.1	<1.3	<1.3	<1.3
Beam Symmetry	≥90%	≥90%	≥90%	≥90%
Beam Diameter at 1/e ² (mm) @150mm	0.7±0.1	0.7±0.1	0.8±0.1	0.75±0.1
Beam Divergence Angle (mrad, full angle)	<1.2	<1.5	<1.6	<1.8
Pointing Stability (μrad) (over 2 hours after warmup and ±3°C)	<30	<30	<30	<30
Pointing Stability Over Temperature (μrad/°C)	<5	<5	<5	<5
Warm-Up Time (from cold start) (minutes)	<5	<5	<5	<5
Polarization Ratio (dB)	>100:1 Vertical ±5°	>100:1 Vertical ±5°	>100:1 Vertical ±5°	>100:1 Vertical ±5°

*Other wavelengths are available

**Output power is variable in CW mode from 10% to 100% of rated power. Specifications are valid for 100% power.

Table 2. Mechanical and Environmental Specification

Static Alignment Tolerances	All Wavelengths
Beam Position from Reference (mm)	±0.5
Beam Angle (mrad)	±2.5
Beam Waist Position from Exit Window (mm)	±200
Dimensions (L x W x H) (mm)*	86x40x44
Power Consumption (W)	≤12
Laser Head Baseplate Temperature (Max. °C)	40
Heat Dissipation of Laser Head (W)	≤12
Operating Temperature (°C)	10 to 40
Storage Temperature (°C)	-20 to 60
Humidity (%) (Non-condensing)	10 to 90
Shock (11ms duration) (Operating) (g)	1
Shock (11ms duration) (Non-operating) (g)	30
Vibration (5Hz – 500Hz) (Operating) (g)	0.3
Vibration (5Hz – 500Hz) (Non-operating) (g)	3
Laser Safety Classification	3b

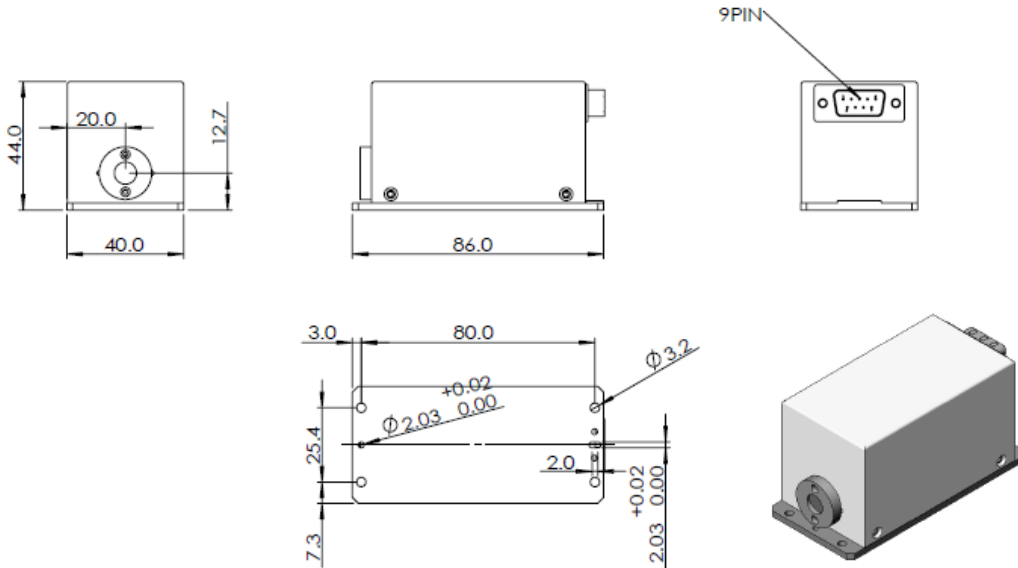
Note: * 561nm: 100x43.2x40mm

Table 3: Electrical Specifications

DB 9 Connector PIN Assignment	Digital Interface	Analog Interface
1*	LD_5V or 9V or 12V	LD_5V or 9V or 12V
2	Rx for RS232	NC
3	TEC_5V	TEC_5V
4	Tx for RS232	NC
5	TEC_GND	TEC_GND
6	NC	ADJ
7	NC	Enable
8	GND for RS232	NC
9	LD_GND	LD_GND

*405/488/505/515nm LD driving voltage: 9V or 12V ;532/561/638/785nm LD driving voltage: 5V

MECHANICAL SPECIFICATIONS



Order Code

WhisperIT®

Package type (e.g. W)

Wavelength (e.g. 488nm = 488)

Output Power (e.g. 10mW = 10)

Delivery (e.g. Free Space = FS, Fiber Coupled = FC)

Assigned Code (e.g. 000)

Example: W488-10FS-000

This OEM laser does not comply with 21 CFR 1040.10 and 1040.11 without appropriate integration. Please contact Pavilion Integration Corp. for additional support or questions.

