



Pavilion Integration Corporation

Solid State Lasers for Demanding Applications

WhisperIT[®] SE Series Custom Beam Shape



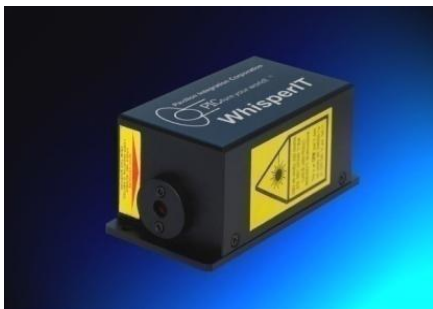
Features and Benefits

Compact
Efficient
Stable

Optics and Electronics in one small package
Power Consumption and heat load < 10W
WhisperIT[®] technology provides low noise output under all operating conditions

Power on Demand

Fast warm-up and turn on
Modulation up to 1 MHz
Variable output power

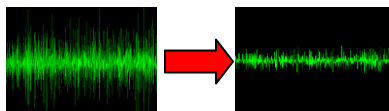


Applications

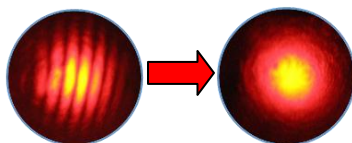
Biotechnology

Flow Cytometry
DNA Sequencing
Medical Imaging
Confocal Microscopy

Semiconductor Metrology



Low Noise



Low Coherence

WhisperIT[®] Standard, Compact, and Mini lasers are laser diode based continuous-wave solid-state lasers. Laser architecture based on laser diodes offers significantly increased lifetime, and improved efficiency (<4 W) over DPSS, HeCd or Argon lasers. Laser diodes can exhibit mode hops which can result in increased optical noise. The WhisperIT[®] technology eliminates such mode hops and turns laser diode light into highly stable light output. Whisper lasers have low coherence and speckle, near immunity to damage from back reflected light, and have the lowest noise available from a commercially available diode laser. The WSE series lasers have elliptical beams that are tailored to match customer requirements. The output power can be adjusted and the lasers can be modulated.

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SPECIFICATIONS

System

RMS noise (20 Hz to 20 MHz)	< 0.2 %
Power Stability over 24 hours	<2% over 15-45°C Temperature Range
Beam Diameter ¹	Per Customer Requirements (Range of the beam sizes: Fast Axis 0.6-1.5mm, Slow Axis 1.1-3.0mm)
Beam Divergence	<1.2mrad for 0.7mm Beam Diameter
M-squared (M ²)	< 1.2
Pointing Stability	<6 μrad/°C
Beam Static Alignment Tolerance	Position +/- 0.5mm; Angle +/- 2.5 mrad
Warm-up Time	<1min (typical 10 sec)
Polarization	>100:1; vertical +/- 3°, other extinction ratios and orientations available

Environmental & Operating

Base Plate Temperature	10 to 45°C Operating; -10 to 65°C Non-operating
Shock (11ms duration)	1g Operating; 25g Non-operating
Vibration	0.3g Operating; 2g Non-operating
Humidity	5% - 95% Non-condensing
Altitude	< 3,000m Operating; < 20,000m Non-operating
Safety Certification	IEC60825-1
DC Power Supply ²	9V +/- 10%, 0.2 Amp and 5V +/- 10%, 2 Amp (12V and 15V versions available)
Optional Interface	Remote On (Low) and Off (Hi); Power Monitoring 0 – 2.5 V; External Power Adjustment 0 – 2.5 V
Optional AC Power Supply	CDRH compliant control box available with built-in AC power supply
ESD Protection	Level 4 (IEC 1000-4-2, 1995)
Mounting Surface Flatness	0.05mm
Dimensions	Standard Whisper: 86mm (L) x 40 mm (W) x 36 mm (H) Compact Whisper: 70mm (L) x 40 mm (W) x 45 mm (H) Mini Whisper: 55mm (L) x 20 mm (W) x 40 mm (H)
Laser Drive Options	CW, Analog Modulation, Digital Modulation, USB Computer Control



SPECIFICATIONS
Wavelength Options

Wavelength (nm)	Output Power ³ (mW)
375 +/- 5	50
405 +/- 5	200
420 +/- 5	80
445 +/- 5	80
458 +/- 3	80
473 +/- 5	80
488 +/- 2	150
505 +/- 5	30
514 +/- 5	50
520 +/- 5	50
638 +/- 5	120
658 +/- 5	100
680 +/- 10	40
705 +/- 10	35
730 +/- 10	35
750 +/- 5	80
785 +/- 10	150
810 +/- 10	120
830 +/- 10	230
850 +/- 10	40
1064 +/- 10	100

¹Measured at 1/e², elliptical and round beams available.

²Dual voltage supply is preferred for better noise performance.

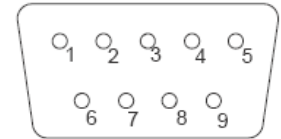
³Variable output power available.



Electrical Interface

Modulation Option (Typical Values)

Modulation Signal	TTL
Modulation Rate ¹	Up to 1 MHz
Modulation Depth	>1,000:1
Overshoot / Undershoot	< 1.0%
Modulated Pulse Power Variation	< 1%
Modulation Duty Cycle	10% - 90%
Rise/Fall Times (90-10%)	<200nsec/50nsec



1. +5VDC or +9VDC to Laser to Laser
2. Power Monitor
3. +5VDC to TEC
4. Current Monitor
5. GND to TEC
6. Power Adjust
7. Laser Enable/Disable
8. N/C
9. GND to Laser

Fiber Coupled Option

Fiber Type	PM Fiber (SM and MM available)
Fiber Termination	FC/APC (Collimator available)
Fiber Length / Jacketing	2.2 m / 3 mm
Fiber N.A.	0.12 (Typical)
Warm-up Time	<1min (typical 10 sec)
M-squared (M ²) with Collimator	< 1.1

¹Tested values shown, other modulation rates available.

This is an OEM Product. CDRH Control box is available for samples or Laboratory use

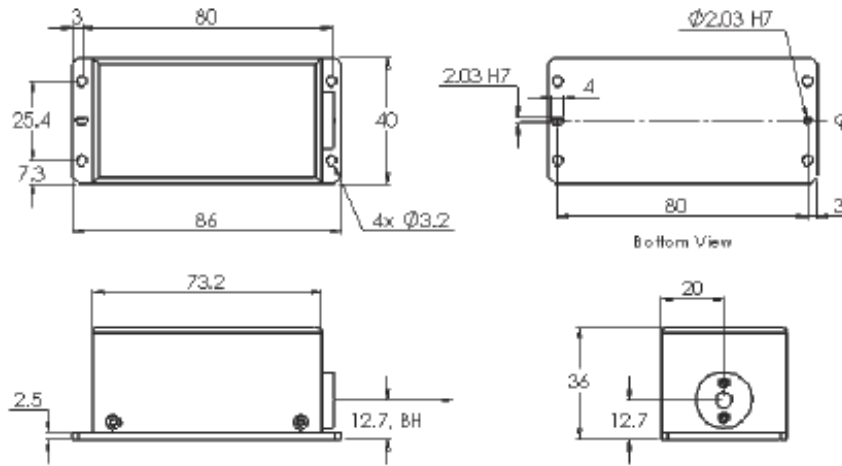
Invisible or visible radiation is dangerous to humans and should not be viewed directly or indirectly with or without optical instruments. Please refer to IEC 825-1 "Safety of Laser Products" and 21 CFR 1040.10-1040.11 "Performance Standards for Light Emitting Products" for additional information



Pavilion Integration Corporation follows a continuous improvement program. Specifications subject to change without notice. Pavilion Integration Corporation offers a 1 year limited warranty.

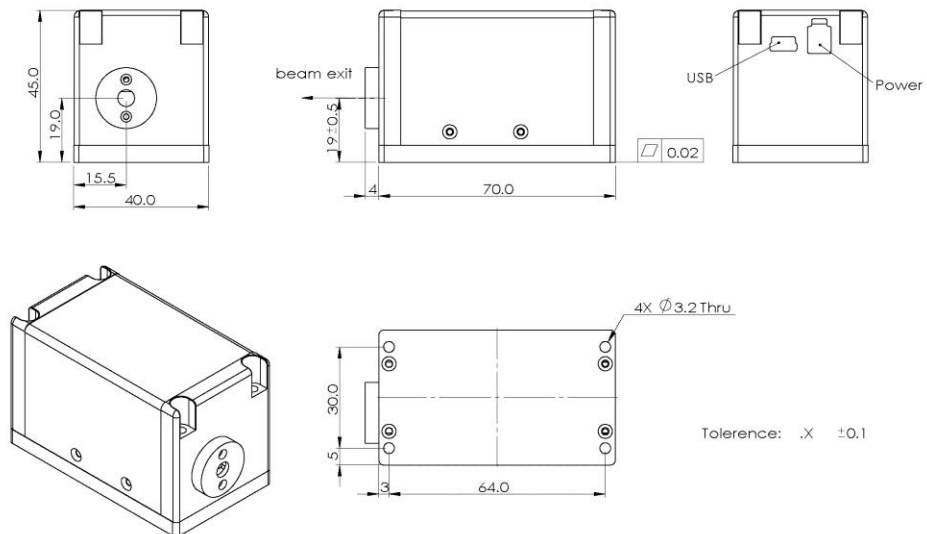


Standard Whisper Laser Dimensions* (mm)



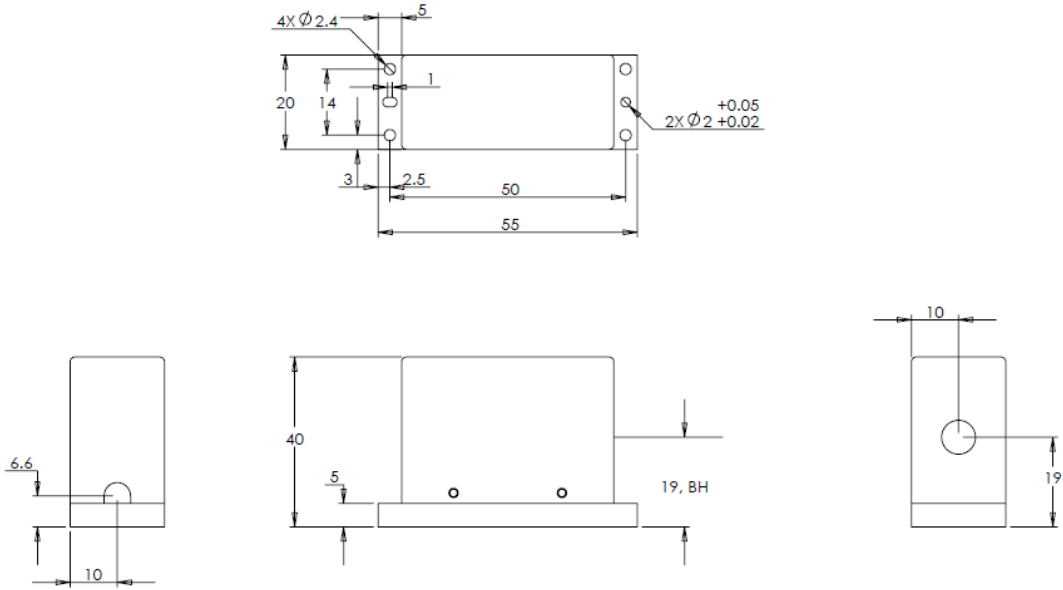
* Laser height is 43mm with Computer Control or Fiber Coupled option.

Compact Whisper Dimensions (mm)





Mini Whisper Laser Dimensions (mm)



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