

Precision Photonics

Cutting Edge Engineering at the Speed of Light



Compact Semiconductor Red Laser

AIMPICO compact diode laser systems deliver stable, high-quality coherent output across ultraviolet, visible, and near-infrared wavelengths — engineered for laboratory, clinical, and OEM environments where wavelength accuracy, power stability, and long-term reliability are essential.

Built on direct-emission semiconductor technology, AIMPICO lasers require no optical pumping, harmonic conversion, or consumables, offering exceptional wall-plug efficiency and a significantly simplified thermal footprint compared to gas or lamp-pumped alternatives. The laser source, drive electronics, and thermal management are integrated into a single compact platform, with active closed-loop stabilization maintaining output power within $\pm 1\%$ RMS across the full operating temperature range.



Applications

- Spectroscopy
- Advanced research
- Laser light show

Key Feature Highlights

• Compact, Integration-Ready Design	Fits standard optical breadboards and cage systems; Compact design enables direct drop-in to instrument assemblies
• Stable Output ($\pm 1\%$ RMS)	Active closed-loop control ensures consistent power across the full operating range
• 30 kHz TTL/Analog Modulation	Hardware-level synchronization with cameras, lock-in amplifiers, and instrument timing systems
• Efficient Thermal Management	Low thermal load and passive heat dissipation reduce the need for active cooling, simplifying optical table layouts
• Long Operational Lifetime	Semiconductor gain medium with no consumables, no gas fill, and no electrodes — operate without scheduled maintenance interventions



Technical Specification

OPTICAL PARAMETERS

Center Wavelength	640 nm \pm 5 nm
Operating Mode	Continuous Wave
Output Power	1 – 200 mW
Power Stability (rms, 4 hours \pm 3°C)	< 1%
Transverse Mode	Near TEM ₀₀
Beam Quality (M ²)	< 1.5 (< 1.2 optional)
Beam Divergence (full angle)	< 1.0 mrad
Beam Diameter at the aperture (1/e ²)	~ 3.0 mm
Polarization Ratio	> 50:1 (> 100:1 optional) horizontal (vertical optional)
Pointing Stability after Warm up	< 0.05 mrad

ELECTRICAL PARAMETERS

Power Supply	85-264 VAC	LPS-I/LPS-II (modulation frequency range 1Hz-30kHz)
	100-240 VAC	LPS-III (modulation frequency range 30kHz-100kHz)
Modulation Options		TTL or analog at 1Hz – 1kHz, 1kHz-10kHz, 10kHz-30kHz, 30kHz-100kHz optional

MECHANICAL PARAMETERS

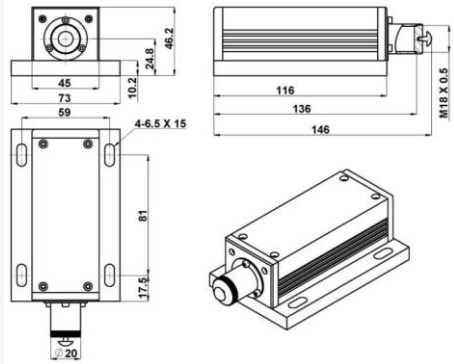
Dimensions	143.5(L) \times 73(W) \times 46.2(H) mm ³
Weight	0.7 kg
Cooling Method	Conduction
Beam Height from Base Plate	24.8 mm

ENVIRONMENTAL

Operating Temperature	10 – 35 °C
Laser Warmup Time	< 5 min
Expected Lifetime	> 10,000 hours

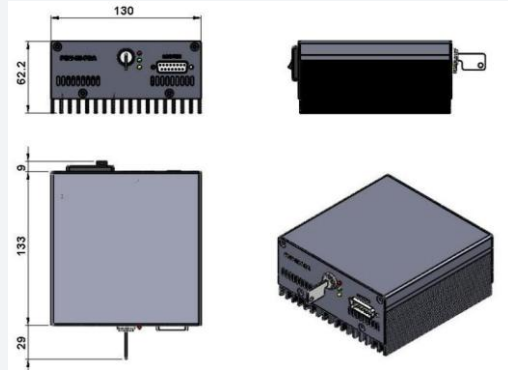
Mechanical Drawings

Laser Head



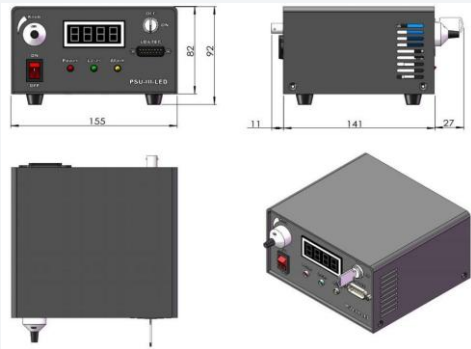
146 (L) x 73 (W) x 46.2 (H) mm³, 0.7kg

Compatible Power Supply (LPS-I¹)



171(L)x130(W)x62.2(H) mm³, 1.2kg

Compatible Power Supply (LPS-II²)



188.6(L) x 155(W) x 92(H) mm³, 1.5kg

Compatible Power Supply (LPS-III³)



162(L)x144(W)x70(H) mm³, 1.0kg

Product Certifications



1,2,3: Sold separately



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