

## Compact Semiconductor IR 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

- Advanced research
- Spectroscopy

## Key Feature Highlights

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

# Technical Specification

## OPTICAL PARAMETERS

|                                                   |                    |
|---------------------------------------------------|--------------------|
| Center Wavelength                                 | 1030 nm $\pm$ 1 nm |
| Operating Mode                                    | Continuous Wave    |
| Output Power                                      | 1 – 500 mW         |
| Power Stability (rms, 4 hours $\pm$ 3°C)          | < 1%               |
| Transverse Mode                                   | TEM <sub>00</sub>  |
| Beam Quality (M <sup>2</sup> )                    | < 1.1              |
| Ellipticity                                       | > 0.95             |
| Beam Divergence (full angle)                      | < 1.5 mrad         |
| Beam Diameter at the aperture (1/e <sup>2</sup> ) | ~ 1.0 mm           |

## ELECTRICAL PARAMETERS

|                         |                                                                              |                                                     |
|-------------------------|------------------------------------------------------------------------------|-----------------------------------------------------|
| Compatible 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      | DC-1kHz, 1kHz-10kHz, 10kHz-30kHz, 30kHz-100kHz optional, TTL/Analog optional |                                                     |

## MECHANICAL PARAMETERS

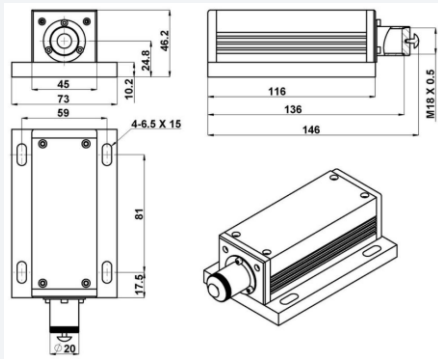
|                             |                                                        |
|-----------------------------|--------------------------------------------------------|
| Dimensions                  | 146(L) $\times$ 73(W) $\times$ 46.2(H) mm <sup>3</sup> |
| Weight                      | 0.7 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 |

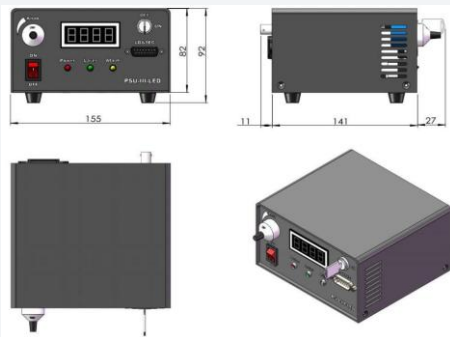
# Mechanical Drawings

## Laser Head



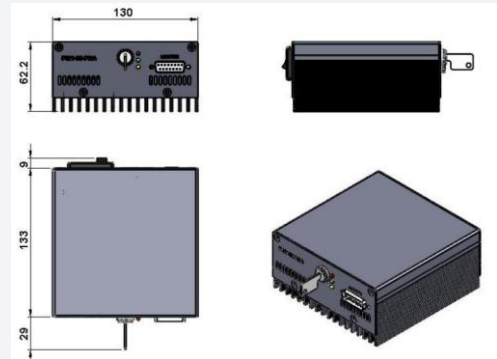
146(L) × 73(W) × 46.2(H) mm<sup>3</sup>, 0.7kg

## Compatible Power Supply (LPS-II<sup>2</sup>)



179(L) × 155(W) × 92(H) mm<sup>3</sup>, 1.5kg

## Compatible Power Supply (LPS-I<sup>1</sup>)



171(L) × 130(W) × 62.2(H) mm<sup>3</sup>, 1.2kg

## Compatible Power Supply (LPS-III<sup>3</sup>)



162(L) × 144(W) × 70(H) mm<sup>3</sup>, 1.0kg

## Product Certifications



<sup>1,2,3</sup>: Sold separately.



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