VENUSLAB
OPTOELECTRONICS

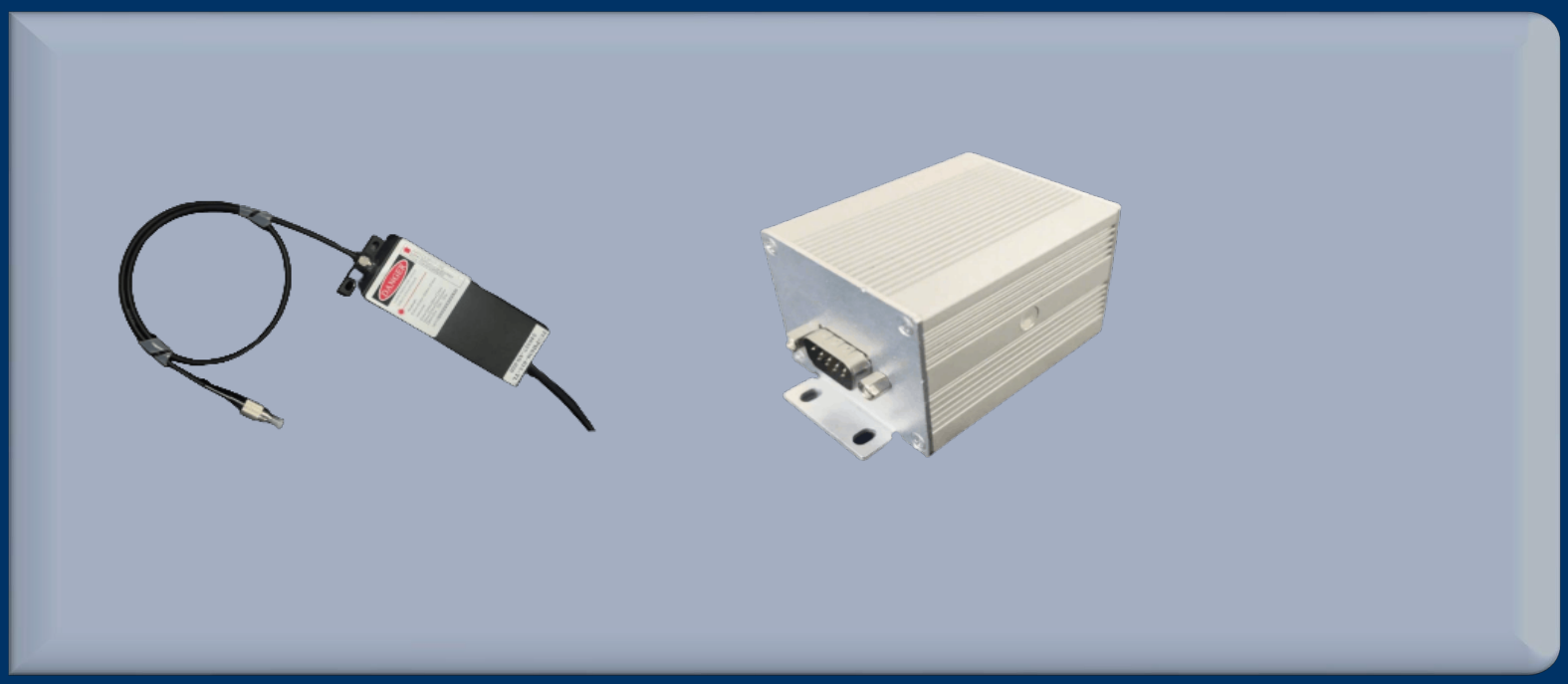
Precision Meets Simplicity

Laser Modules

VLFL-SF-T Split-Type Single-Mode Laser Module

Modular optical device that stably outputs high-purity single-mode laser

- High precision, low interference
- Split-type flexible deployment
- Ultra-high wavelength stability
- Full-function integration, safety and reliability



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VLFL-SF-T Split-Type Single-Mode Laser Module

Overview

Introduction:

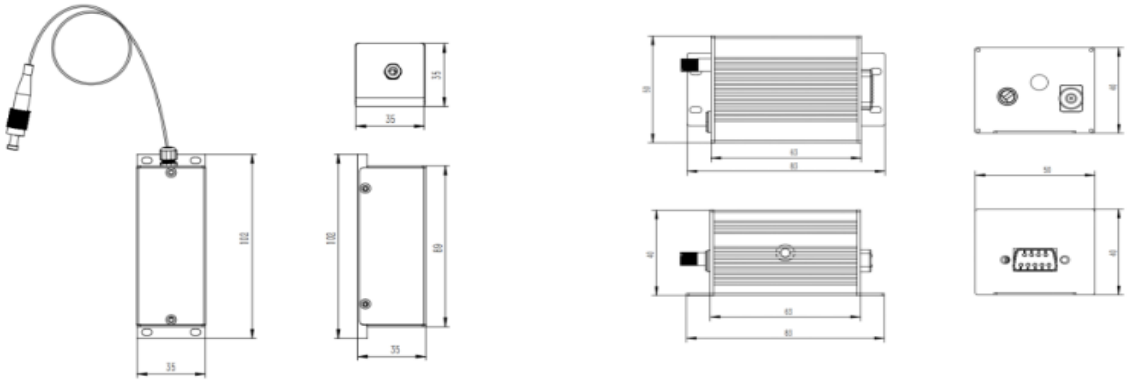
The LFL-SF-T adopts an advanced single longitudinal mode (SLM) resonator design, which can stably output pure single-mode lasers with a high-order mode suppression ratio of >40dB. The beam quality factor M^2 is ≤1.2, approaching the diffraction limit of an ideal Gaussian beam (M^2=1). Its spectral linewidth is extremely narrow (<1MHz FWHM). Within the ambient temperature range of 10~35℃, the peak wavelength drift can be controlled within ±0.05nm, achieving ppm-level wavelength stability, which far exceeds the performance indicators of ordinary industrial lasers. This high-purity beam features concentrated energy density and uniform transverse mode distribution. After focusing, it can form a tiny spot with a diameter of <5μm, providing an optical foundation for high-precision detection.

Thanks to the high beam quality with M^2 ≤ 1.2, in semiconductor wafer defect detection, a resolution of 0.1μm level can be achieved, and the detection efficiency is improved by more than 40% compared with traditional multimode laser systems. The extremely narrow spectral linewidth (< 1MHz) makes it an ideal light source for Raman spectroscopy analysis, increasing the signal-to-noise ratio of characteristic peaks by 3 times and effectively shortening the time for material composition identification. In holographic interferometry, wavelength stability ensures the repeatability of nanoscale displacement measurement, and the confidence level of experimental data is increased to 99.9%.

Features:

- High-precision single-mode laser output characteristics
- Innovative split structure design
- Intelligent temperature control and stability guarantee system
- Full-dimensional safety protection mechanism

Dimension:



Specifications

Common Parameter Specification Table

Parameter Item	Parameter Value
Beam Quality (M^2)	≤1.2
Temperature Control Method	TEC Temperature Control
Customization Support	Customized Products Available
Typical Application Fields	Fluorescence Spectroscopy, Photoelectric Detection, Optical Measurement, etc.
Continuous Output Power (CW) - Typical Value	20 mW
Spectral Linewidth (FWHM) - Typical Value	1 nm
Spectral Linewidth (FWHM) - Max Value	2 nm
Warm-up Time (Tw) - Max Value	5 min
Noise (RMS, 10Hz-100MHz) - Max Value	1 %
Fiber Specification	SM Fiber (Single-Mode Fiber)
Fiber Length (L) - Typical Value	1.0 m
Fiber Numerical Aperture (NA) - Typical Value	0.12
Fiber Connector Type	FC-PC/FC-APC

Operating Voltage (Vin) - Range	90~245 V
TTL Modulation Frequency - Max Value	100 KHz
Service Life (MTTF, @PO/Room Temperature) - Min Value	10,000 Hrs
Operating Temperature (Tstg) - Range	0~40 ℃
Storage Temperature (Topr) - Range	-20~65 ℃
Laser Dimension (L×W×H)	102×35×35 mm
Driver Power Supply Dimension (L×W×H)	83×50×40 mm

Explore Series

Model	Typical Center Wavelength (nm)	Min Center Wavelength (nm)	Max Center Wavelength (nm)	Fiber Type
VLFL-638-SF-T	638	633	643	SM Fiber
VLFL-660-SF-T	660	652	666	SM Fiber
VLFL-670-SF-T	670	665	675	SM Fiber
VLFL-685-SF-T	685	680	690	SM Fiber
VLFL-785-SF-T	785	780	790	SM Fiber
VLFL-808-SF-T	808	803	813	SM Fiber
VLFL-830-SF-T	830	825	835	SM Fiber
VLFL-850-SF-T	850	845	855	SM Fiber
VLFL-905-SF-T	905	900	910	SM Fiber
VLFL-940-SF-T	940	935	945	SM Fiber
VLFL-980-SF-T	980	975	985	SM Fiber
VLFL-1064-SF-T	1064	1059	1069	SM Fiber

📩 Get in touch with our team to explore configurations,request a quote,or learn more about customized solutions tailored to your needs.

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