

# Single-Mode Digital L-Type Module with Optical Isolator



The Innovative Photonic Solutions (IPS) Digital L-Type provides the user with a powerful and extremely stable laser source that is ideal for numerous scientific applications. Our proprietary Wavelength Stabilized Laser Diode features high output power with narrow spectral bandwidth. The laser's stabilized peak wavelength remains "locked" regardless of case temperature (15 to 45 deg. C). Devices can be spectrally tailored to suit application needs and offer side mode suppression ratios (SMSRs) better than 40 dB, thereby providing extremely high signal to noise ratio and making these sources ideal for Raman spectroscopy and pump laser applications. The laser power and temperature are "locked" to avoid mode-hops.

## Applications

This laser package is designed for turn-key operation and is ideal for:

- High Resolution Raman Spectroscopy
  - Portable Raman
  - Process Raman
  - Confocal Microscopy
  - Raman Imaging
- Direct-Diode Frequency Doubling
- Fiber Laser Seeding
- Remote Sensing
- Metrology/Interferometry

## Key Features

- High-Power Single-Spatial-Mode, Single-Frequency Output
- Narrow Spectral Linewidth (< 100 MHz FWHM)
- High Power Single-Mode Fiber Coupled Output
- Excellent Beam Quality ( $M^2 < 1.1$ )
- Integral ESD Protection & Thermistor
- Temperature Stabilized Spectrum (< 0.007 nm/°C)
- > 45 dB SMSR Typical
- USB and I<sup>2</sup>C, or RS-232 control of all operational features
- UL/CE and IEC certified
- Turn-key operation
- Integrated single stage optical isolator
- "Ultratrack" Linear Tracking Photodiode

## Standard Wavelengths

All specified wavelengths are measured "in-vacuum"

780nm	852nm
783nm	1030nm
785nm	1053nm
808nm	1064nm

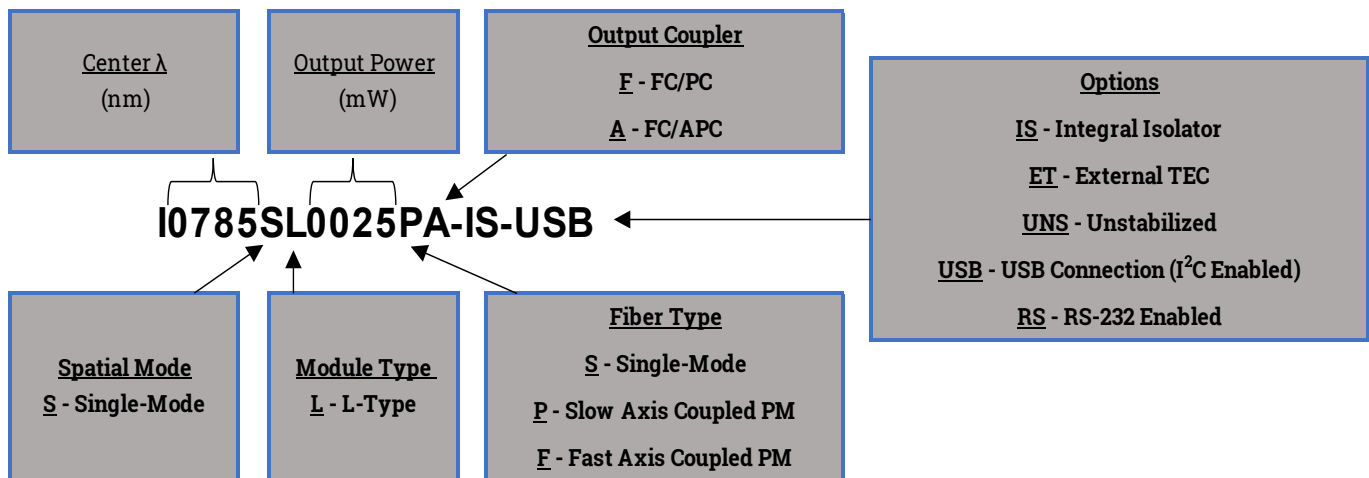
# Specifications



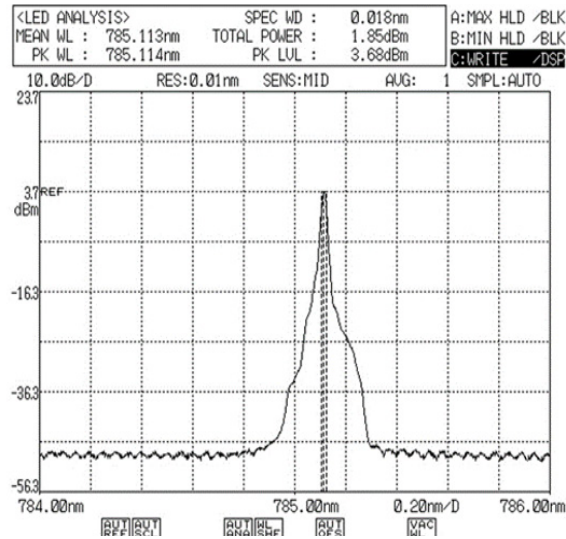
Wavelength Tolerance	+/- 0.5nm
Spectral Linewidth	<100MHz
SMRS	45dB - 55dB
Wavelength Stability Range	15 - 45 °C
Polarization Extinction (PER)	>17 dB (20 dB typical)
Polarization Orientation	Standard is PM Slow Axis
Output Power Stability	1% typical
Modulation Rate	CW to 1KHz (for 10% power to CW) up to 10 KHz for 50% power.
Warm-Up Time	10 seconds from cold start
	1.5 seconds from warm start

$\lambda$ (nm)	Output Power (mW)	Base Part Number
780	25	I0780SL0025PA-IS-USB
783	25	I0783SL0025PA-IS-USB
785	25	I0785SL0025PA-IS-USB
808	25	I0808SL0025PA-IS-USB
852	20	I0852SL0020PA-IS-USB
1030	50	I1030SL0050PA-IS-USB
1053	50	I1053SL0050PA-IS-USB
1064.X	50	I1064.XSL0050PA-IS-USB

# Part Schema



# Selected Data



*Optical Spectrum Analyzer  
Typical Spectrum*

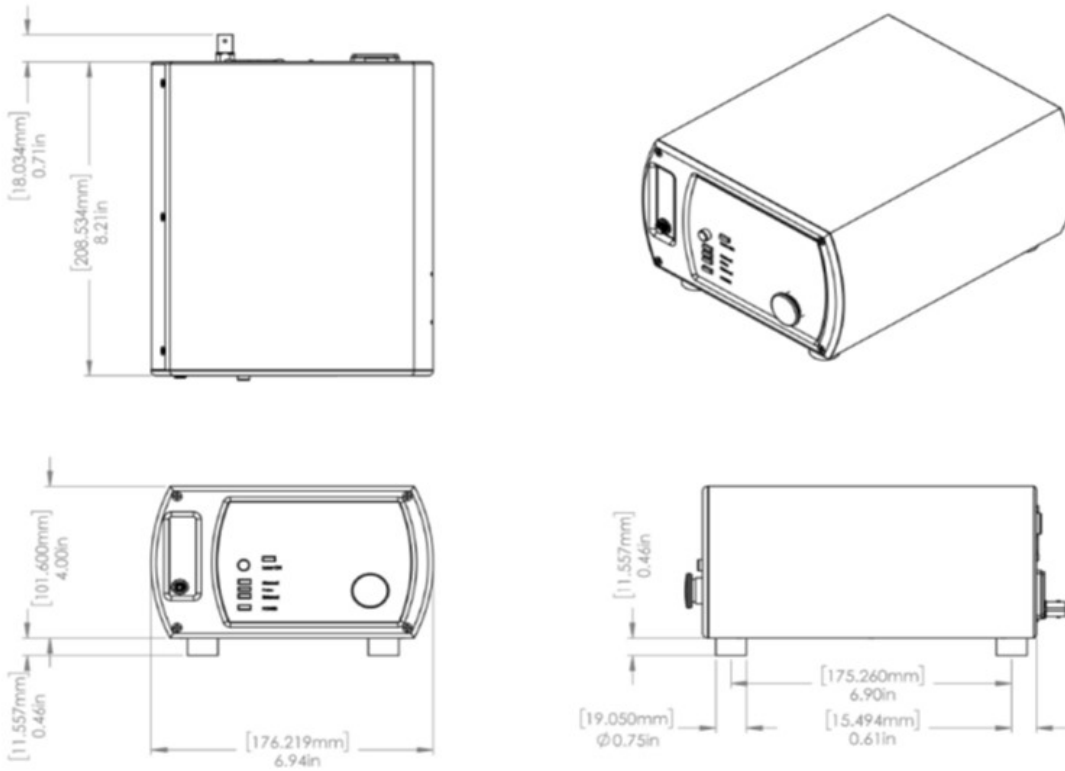
## Custom Capability

- Custom wavelengths available upon request
- FC/PC, FC/APC, or SMA output coupler
- Single-mode or Polarization-maintaining fiber available with orientation in either fast or slow axis
- External TEC (e.g. No TEC inside of package optional)
- IPS' turn-key system comes standard with a US outlet plug. Europe, UK, and Australia outlet plugs are available as accessories upon request

## Electrical Specs

Input Power	100 - 240 VAC 50 - 60Hz, 0.4A
Fuse Rating	250V, 1A, FastBlow 5mm x 20mm, 2 each

# Mechanical Drawings



## Operational Notes

1. Do not retro-reflect beam! This can cause Catastrophic Optical Damage (COD) and is not covered under warranty (unless optical isolator is included).
2. A VBG-locked Single-mode laser will experience mode hops as the temperature and driver current are changed (see [Mode-Hop White Paper](#)). For this reason, IPS profiles and sets both the current and temperature for this module and does not allow user adjustment.
3. To adjust power output, IPS recommends pulse width modulation (PWM) to adjust AVERAGE power rather than changing the laser diode drive current in order to avoid mode-hops.
4. Module includes 2-port USB hub to allow connection to additional USB devices.
5. See the [user guide](#) for full operating, software and safety instructions. This document is meant to offer a product overview.

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