

Single-Frequency Tethered Head H-Type & L-Type

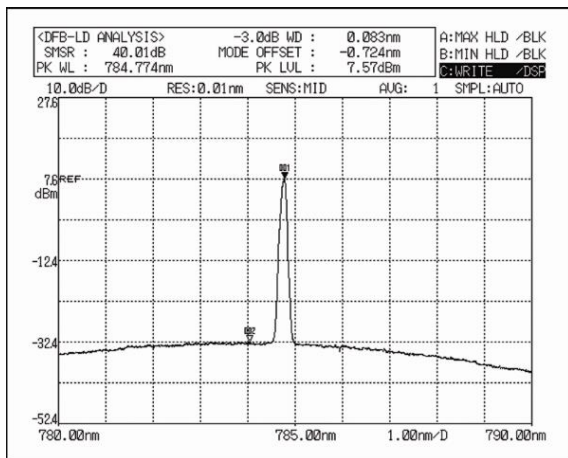


Innovative Photonic Solutions' Tethered Head H-type module is a fully turn-key, UL/CE and IEC certified laser module perfect for lab use. It comes complete with an internal wavelength stabilized laser module, a laser enable switch for safety, an LED readout, an output power control dial, a safety key lockout, a remote interlock, and an emergency shut-off switch (EMO).

The 'Tethered Head' offers ease of use and flexibility for different setups, and allows the user to bring the open beam laser output to the sample.

IPS's proprietary Wavelength Stabilized Laser features high output power with narrow spectral bandwidth. The laser's stabilized peak wavelength remains "locked" regardless of case temperature (10 to +35 deg. C) – making this source an ideal choice for the most demanding applications.

Devices can be spectrally tailored to suit application needs and offer side mode suppression ratio (SMSR) better than 40 dB, making these sources ideal for high resolution Raman spectroscopy, confocal microscopy, and interferometry applications.



Typical 785 nm Stabilized Laser Spectrum



Features

- Wavelength Stabilized Spectrum
- Narrow Spectral Linewidth (< 100 MHz FWHM)
- High Power Single-mode Open Beam Output
- TEM₀₀, Single-Spatial and Single-Longitudinal Mode (SLM) Circularized & Collimated Output Beam
- Integral Laser Line Filters¹
- Temperature Stabilized Spectrum (< 0.007 nm/OC)
- 50 dB SMSR Typical
- UL/CE and IEC Certified & Fully "turn-key"

Standard Wavelengths

- 633 nm
- 638 nm
- 780 nm
- 785 nm
- 808 nm
- 830 nm
- 976 nm
- 1030 nm
- 1053 nm
- 1064 nm

Additional wavelengths available upon request

General Optical Specifications

Wavelength Tolerance	+/- 0.5 nm
Spectral Linewidth ($\Delta\lambda$)	< 100 MHz
Wavelength Stability Range	10 C - 35 C
SMSR (no laser line filter)	35 -45 dB
SMSR (w/laser line filter)	70 dB typical
Polarization Orientation	Perpendicular to the plane of the base mounting plate of optical head
Polarization Extinction Ratio (PER)	>17 dB
Beam Quality	M ² <1.5
Spot Size ² (H-type)	~1.5 mm with beam expander
Spot Size ² (L-type)	~ 0.5-0.7 mm without beam expander
Divergence ³ (H-type)	< 1 mrad typ with beam expander
Divergence (L-type)	~ 3-4 mrad without beam expander
Output Power Stability	1% typical
Modulation Rate	CW to 10 kHz at 50% duty cycle or CW to 1 kHz at 10-100% duty cycle
Warm-Up Time	10 sec from cold start to < 1 wavenumber
	1.5 sec from warm start to < 1 wavenumber
	3 sec from warm start to < 0.1 wavenumber

1- Integral laser line filter at 633 nm, 638 nm, 785 nm, 808 nm, 830 nm, and 1064 nm

2 - H-type comes standard with beam expander, add -NBE to part number for no beam expander. Spot size measured at 500 mm

3 - For 785 nm, Beam Divergence is ~ 3-4 mrad without beam expander

Standard Tethered Head H-type and L-type			
Wavelength (nm)	Min. Power (mW)	Part number	Type
633	15	I0633SH0015B-TH-L	H
633	35	I0633SH0035B-TH-L	H
633	50	I0633SH0050-TH-L	H
638	35	I0638SH0035B-TH-L	H
638	60	I0638SH0060B-TH-L	H
780	100	I0780SH0100B-TH-L	H
785	100	I0785SH0100B-TH-L	H
808	100	I0808SH0100B-TH-L	H
830	100	I0830SH0100B-TH-L	H
976	200	I0976SH0200B-TH-L	H
	450	I0976SL0450B-TH	L
1030	300	I1030SL0300B-TH	L
1053	150	I1053SH0150B-TH-L	H
	500	I1053SL0500B-TH	L
1064	150	I1064SH0150B-TH-L	H
	500	I1064SL0500B-TH	L

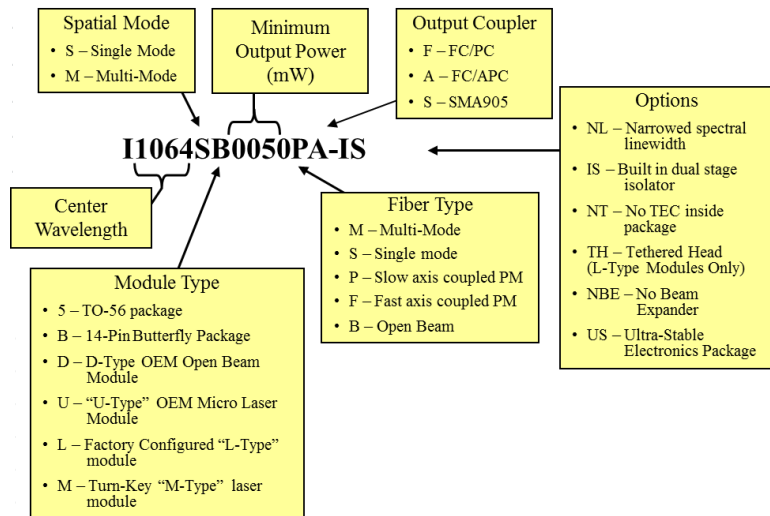
Tethered Head H-type with Isolator			
Wavelength (nm)	Min. Power (mW)	Part number	Type
633	10	I0633SH0010B-ISTH-L	H
633	30	I0633SH0030B-ISTH-L	H
638	20	I0638SH0020B-ISTH-L	H
638	35	I0638SH0035B-ISTH-L	H
780	90	I0780SH0090B-ISTH-L	H
785	90	I0785SH0090B-ISTH-L	H

NOTE: H-type Tethered Head comes standard with beam expander. If no beam expander is required, add "-NBE" to part number. L-type Tethered Head comes standard without beam expander and is not available for L-type Tethered Head.

Physical Specifications	
Module Dimensions	9.48" x 6.94" x 4.14", 48 ounces
L-type Head Dimensions	3.5" x 2.28" x 2", 11 ounces
H-type Head Dimensions	3.82" x 1.2" x 1", 10 ounces
Case Material	Anodized Aluminum
Operating Temperature	10 to 35 degrees C
Environment	0-80% Humidity, non condensing
Storage Temperature	-10 to + 55 degrees C

Electrical Requirements	
Input Power	100 – 240 VAC, 50 – 60 Hz, 0.4 A
Fuse Rating	250 V, 1 A, Fast Blow, 5 mm x 20 mm, 2 each

Part Numbering Schema

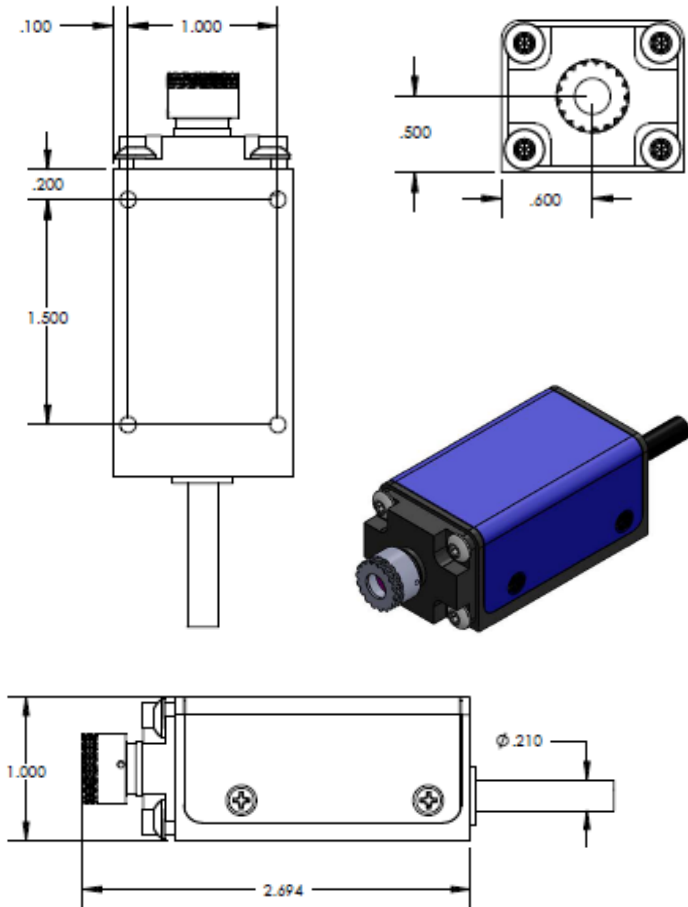


Operational Notes

- Do not retro-reflect beam (unless you have selected a version with integral optical isolator)! This can cause Catastrophic Optical Damage (COD) and is not covered under warranty.
- To adjust power output, IPS recommends using Pulse Width Modulation (PWM) to adjust average power or using an external Neutral Density Filter. See Note 3.
- By using PWM, user can adjust average power from 10% to 100% in digital increments by setting pulse width and duty cycle. For example, if a 50% duty cycle is selected, the laser will be on 50% of the time, and off 50% of the time, making the average power equal to 50% of the CW output power. The sample will experience a lower average power (equal to % duty cycle). Rise/fall time is approximately 20 microseconds.
- IPS can supply our Laser Control Unit (LCU-M) for pulse width modulation which includes software and hardware interface for digital USB control. Please ask about this product
- See Operation Manual for full operating and safety instructions. This document is meant to offer a product overview.



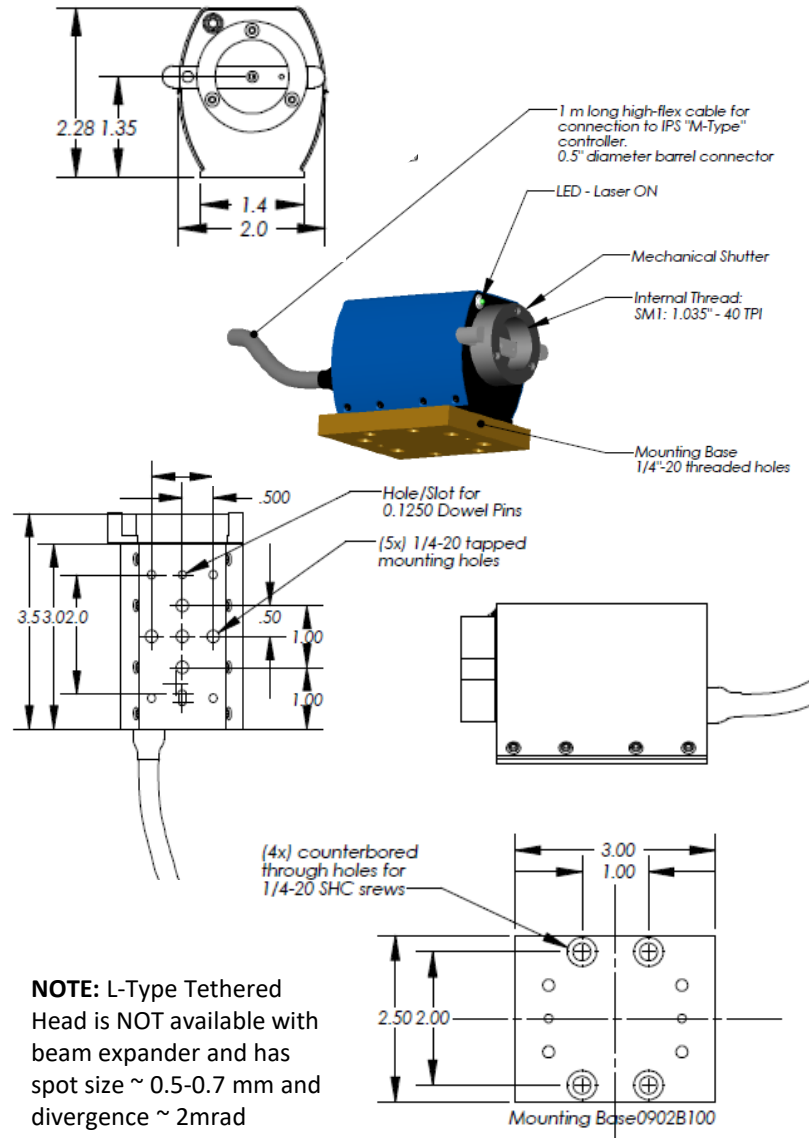
Mechanical Specifications H-Type Head



NOTE: H-Type Tethered Head comes standard with beam expander for spot size ~ 1.5 mm and divergence < 1 mrad

Cable Length to Controller
 1. 1.5 m
 2. 2.0 m

Mechanical Specifications L-Type Head



NOTE: L-Type Tethered Head is NOT available with beam expander and has spot size ~ 0.5-0.7 mm and divergence ~ 2mrad

Mechanical Specifications – Controller for L-Type and H-Type

Front View

Side View

Back

Bottom

