

Multimode Digital U-Type Module



Innovative Photonic Solutions' proprietary multi-mode wavelength stabilized laser diode features high output power with ultra-narrow spectral bandwidth. Designed to replace expensive DFB, DBR, fiber, and external cavity lasers, the multi-mode Spectrum Stabilized Laser offers superior wavelength stability over time, temperature, and vibration; and is manufactured to meet the most demanding wavelength requirements. The laser's stabilized peak wavelength remains "locked" within a wide case temperature range. Devices can be spectrally tailored to suit application needs and offer side mode suppression ratios (SMSR) better than 40dB, providing extremely high signal-to-noise ratio and making these sources ideal for Raman spectroscopy.

Standard Wavelengths

All specified wavelengths are measured "in-vacuum"

Applications

This laser package is designed for OEM Integration and is ideal for:

- High Resolution Raman Spectroscopy
 - Portable Raman
 - Process Raman
- Direct-Diode Frequency Doubling
- Fiber Laser Seeding
- Remote Sensing
- Fiber Laser Pumping

Key Features

- High Power Fiber Coupled Output (Up to 800 mW)
- Digital and Analog I/O Options: USB/I²C standard, RS-232 available
- Ultra-Narrow Spectral Bandwidth (<0.1 nm FWHM)
- "Ultra-track" Linear Tracking Photodiode
- 40dB SMSR Typical
- Compact by design: 3" x 2.5" x 0.69"
Package Weight < 4 oz.
- Internal fiber utilizes a standard 105 μ m core
- External fiber patch cord sold separately

638nm	785nm	860nm
660nm	808nm	976nm
680nm	830nm	1064nm

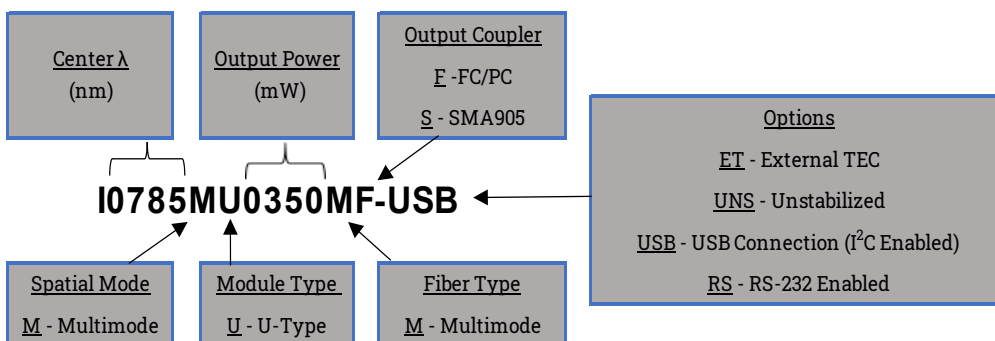
Specifications



Wavelength Tolerance	+/- 0.5nm
Spectral Linewidth	<0.1nm (0.08nm typical)
Wavelength Stability Range	15 - 45 °C
Output Power Stability	<1% at constant Tcase (sample rate of 1 per 1 second.)
Modulation Rate	Digital Modulation: 25KHz External Modulation: CW to 10KHz at 50% duty cycle or CW to 1kHz at 10% - 100% duty cycle.
Warm-Up Time	10 seconds from cold start
	1.5 seconds from warm start

λ (nm)	Output Power (mW)	Base Part Number
638	350	I0638MU0350MF-USB
660	250	I0660MU0250MF-USB
680	300	I0680MU0300MF-USB
785	350	I0785MU0350MF-USB
	500	I0785MU0500MF-USB
	800	I0785MU0800MF-USB
808	350	I0808MU0350MF-USB
	500	I0808MU0500MF-USB
	800	I0808MU0800MF-USB
830	350	I0830MU0350MF-USB
	500	I0830MU0500MF-USB
	800	I0830MU0800MF-USB
860	350	I0860MU0350MF-USB
	500	I0860MU0500MF-USB
976	350	I0976MU0350MF-USB
	500	I0976MU0500MF-USB
	800	I0976MU0800MF-USB
1064	350	I1064MU0350MF-USB
	500	I1064MU0500MF-USB
	800	I1064MU0800MF-USB

Part Schema

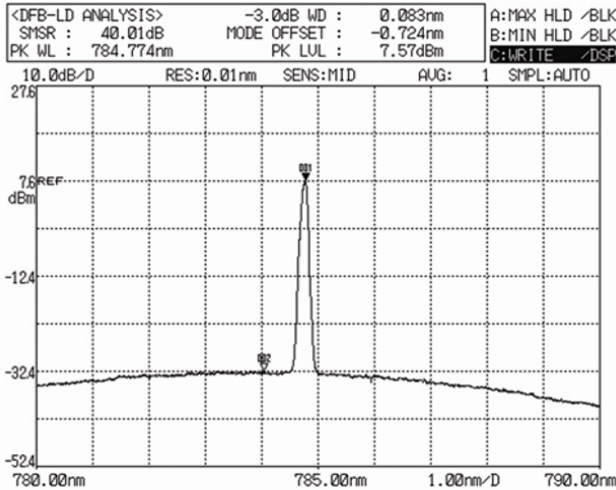


Selected Data



Supply Voltage	5V min - 14V max
Power Consumption	3W - 5W Typical
	15W Maximum

Optical Fiber	105/125 micron multimode fiber, 0.22NA
Connector	FC/PC or SMA905
Electrical Connector	10-pin, Molex #53014-1010 (mating connector: 51004-1000) USB mini B
Module Dimensions	3.0 x 2.5 x 0.69 inches
Module Weight	100 grams (3.5 ounces)
Case Material	Anodized Aluminum
Operating Temperature	-10 to 45 °C
Cooling air flow (internal)	100 LFM with attached heat sink
Environment	0-80% Humidity, non-condensing
Storage Temperature	-50 to 90 °C



Custom Capability

- Custom wavelengths available upon request
- FC/PC or SMA output coupler
- Various diameter output fibers available
- External TEC (e.g. No TEC inside of package optional)

Electrical Specs

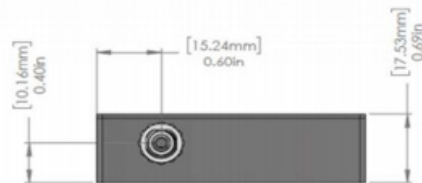
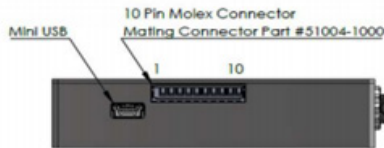
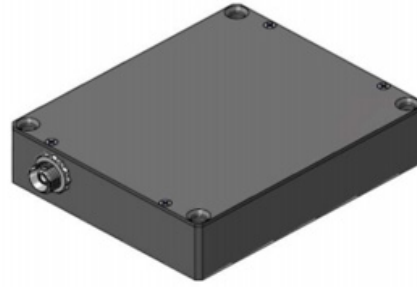
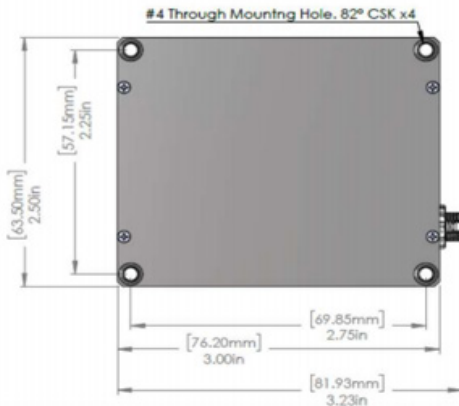
Pin	Pin Label	Function
1*	V+	Power Supply: 5V-12V. For lasers operating <600mW, a 5V minimum is required. For lasers operating >600mW, a minimum of 9V is required, 12V recommended
2^	VBIAS ENABLE (Set Enable)	For analog control: Enable external laser power control through pin 8 (LD VBIAS): High (>3.6V up to V+ supply voltage) = Enable Low (GND) = Disable The same functionality is emulated via software as a replacement for this analog control.
3	SCL/TX	I ² C: SCL standard (RS-232: TX; board by request)
4	SDA/RX	I ² C: SDA standard (RS-232: RX; board by request)
5**	GND	Ground
6*	V+	See Pin 1
7	Enable	Laser Enable: TTL High (>3.6V up to V+ supply voltage) = Enable TTL Low (GND) = Disable Pin may also be used for PW modulation at a rate of 1kHz.
8^	LD VBIAS (LD Set)	Laser power setpoint - Enables analog external control of laser drive current. Drive VBIAS Enable (pin 2) high to enable this option. Drive voltage between 0V and 1V. The voltage bias will be a 1:1 ratio to the laser drive current.
9^	PD+	For analog readout. Connect voltmeter to PD+ (pin 9) and GND for photodiode V output (0V-3.3V). The same functionality is emulated via software as a replacement for this analog control.
10**	GND	Ground

Pins 1, 2, 6, 7 and 10 are required for laser operation

Notes: *Power must be supplied to both V+ pins (pin 1 and pin 6), **GND must be supplied to both GND pins

(pin 5 and pin 10). ^ Pins 2, 8, and 9 are optional for analog control/readout

Mechanical Drawings



- Connector Options:
1. FC/PC (M8 Thread)
 2. SMA 905 (1/4"-36 Thread)

Operational Notes

1. Switch box, heat sink, and power supply are not included with module. These items are available as accessories.
2. Module must be attached to a suitable heat sink for proper operation.
3. User must supply DC power and TTL or serial communication to operate.
4. Please see IPS Digital U-Type [user guide](#) and [quick start guide](#) for additional information.

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