

# Integrated Raman Probe



Innovative Photonic Solutions (IPS) developed the Integrated Raman Probe (IRP) to address excitation fiber coupling losses found on traditional fiber-optic Raman probes. The Integrated Raman Probe utilizes IPS' Multimode Wavelength-Stabilized hybrid external cavity laser (HECL) which offers superior wavelength stability over time, temperature, and vibration. Integration of the laser source into the probe removes excitation coupling losses from the equation while maintaining throughput comparable to typical free-space Raman setups. Elimination of the coupling losses allows the laser to maintain higher output power levels at lower operating drive currents which extends the useful lifetime of the diode.

Specialized Raman filter sets and high efficiency collection optics allow for the generation and collection of quality Raman spectra with a high signal-to-noise ratio. Thanks to its small footprint, the Integrated Raman Probe is ideal for use in the lab or as a component in a new system.

## Applications

This Raman probe comes complete with an integral excitation source and choice of A) An OEM module, which houses the laser driver and temperature control electronics in a compact package or B) UL/CE IEC compliant Turn-Key control box - providing a variety of power control options including modulation capability (TTL & Analog) and USB computer interface. This product is ideal for:

- High Resolution Raman Spectroscopy
  - Portable Raman
  - Process Raman

## Key Features

- Integral Wavelength Stabilized Laser Source.
- Interfaces with any fiber coupled spectrometer simplifying operation and set-up.
- High throughput optical design with low wavenumber cut-on.
- User-friendly ergonomic design.
- Manual shutter option standard on Turn-Key probes.
- Removable distance regular for easy sampling\*.
- 8-32 UNC mounting points allow for ease of system integration.

\* Only Available With 9 mm Working Distance Option

## Standard Wavelength

785nm

Custom Wavelengths Available Upon Request

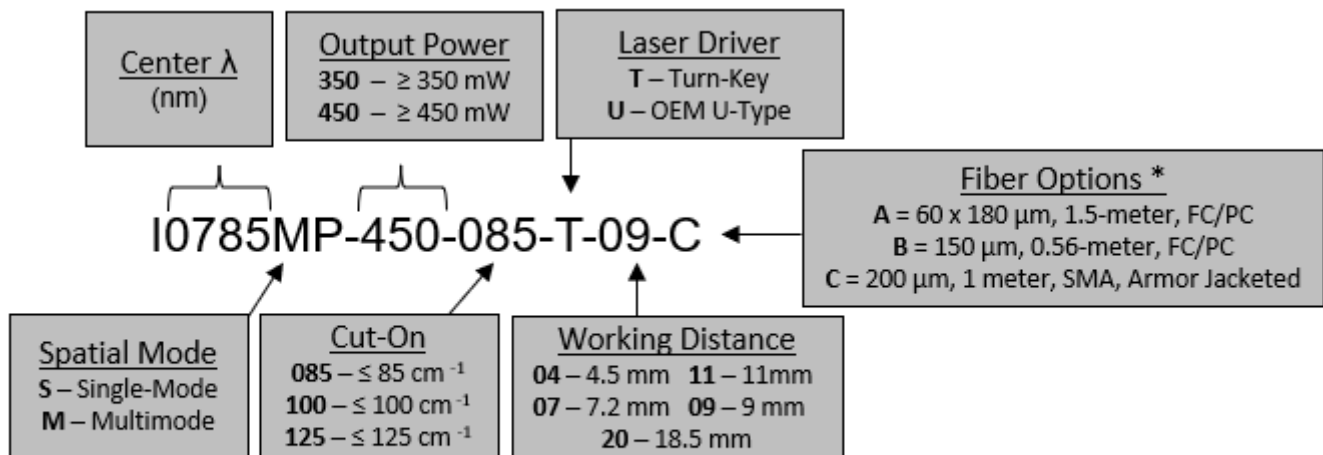
# Specifications



Standard Wavelength	785 nm
Wavelength Tolerance	+/- 0.5 nm
Spectral Linewidth	<0.1 nm (0.08 nm Typical)
Wavelength Stability Range	15°C-45°C
Additional Wavelength Selections	405 nm*, 830 nm, and 1064 nm *Unstabilized
Filter Cut-On Options	$\leq 85 \text{ cm}^{-1}$ , $\leq 100 \text{ cm}^{-1}$ , $\leq 125 \text{ cm}^{-1}$
Collection Fiber Options	A = 60 x 180 $\mu\text{m}$ , 1.5-meter FC/PC B=150 $\mu\text{m}$ , 0.56-meter FC/PC C=200 $\mu\text{m}$ , 1-meter SMA, Armor Jacketed
Working Distance (+/- 0.5 mm)	4.5 mm, 7.2 mm, 9 mm, 11 mm, 18.5 mm. Custom distances available upon request
Fiber Bend Radius	4 inches
Operating Temperature	15°C-45°C
Storage Temperature	-10°C-55°C

$\lambda$ (nm)	Output Power (mW)	Coupler Type	Filter Cut-On ( $\text{cm}^{-1}$ )	Fiber Option	Base Part Number	
785	350	FC/PC	$\leq 125$	A	I0785MP-350-125-T-09-A	
		FC/PC		B	I0785MP-350-125-T-09-B	
		SMA		C	I0785MP-350-125-T-09-C	
		FC/PC	$\leq 100$	A	I0785MP-350-100-T-09-A	
		FC/PC		B	I0785MP-350-100-T-09-B	
		SMA		C	I0785MP-350-100-T-09-C	
	FC/PC	$\leq 85$	A	I0785MP-350-085-T-09-A		
	FC/PC		B	I0785MP-350-085-T-09-B		
	SMA		C	I0785MP-350-085-T-09-C		
	450	350	FC/PC	$\leq 125$	A	I0785MP-450-125-T-09-A
			FC/PC		B	I0785MP-450-125-T-09-B
			SMA		C	I0785MP-450-125-T-09-C
FC/PC		$\leq 100$	A	I0785MP-450-100-T-09-A		
FC/PC			B	I0785MP-450-100-T-09-B		
SMA			C	I0785MP-450-100-T-09-C		
FC/PC		$\leq 85$	A	I0785MP-450-085-T-09-A		
FC/PC			B	I0785MP-450-085-T-09-B		
SMA			C	I0785MP-450-085-T-09-C		

## Part Schema



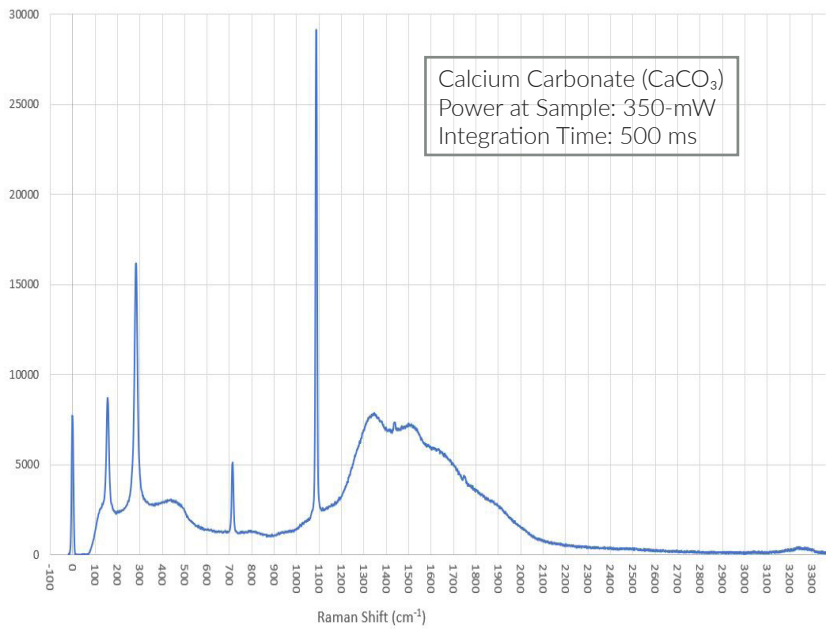
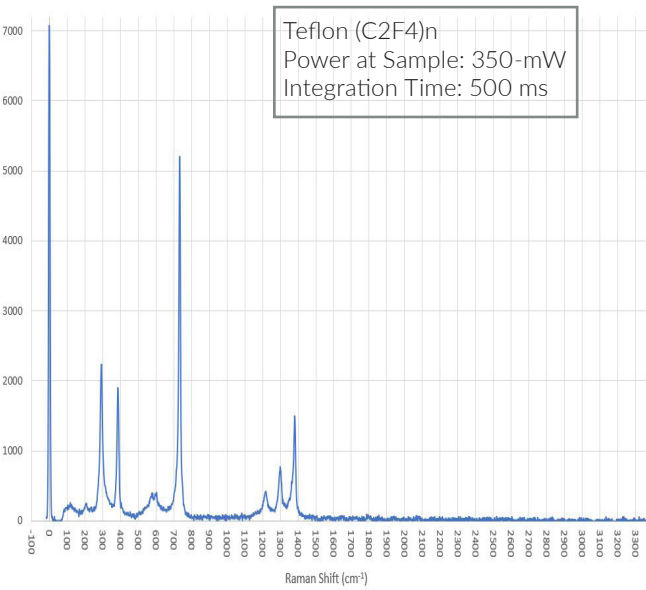
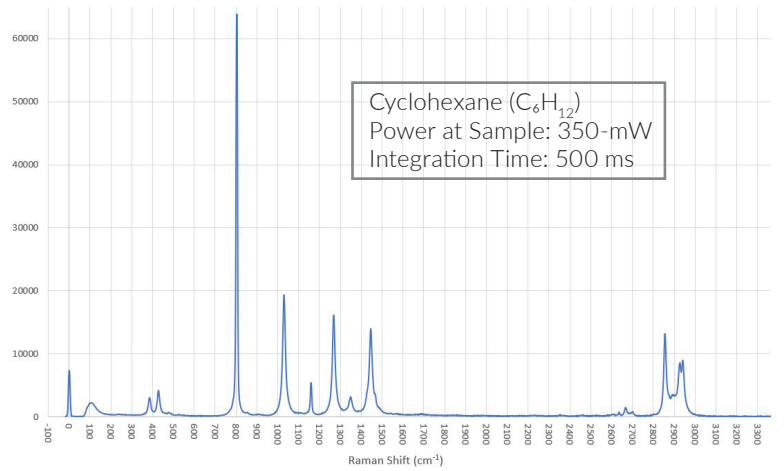
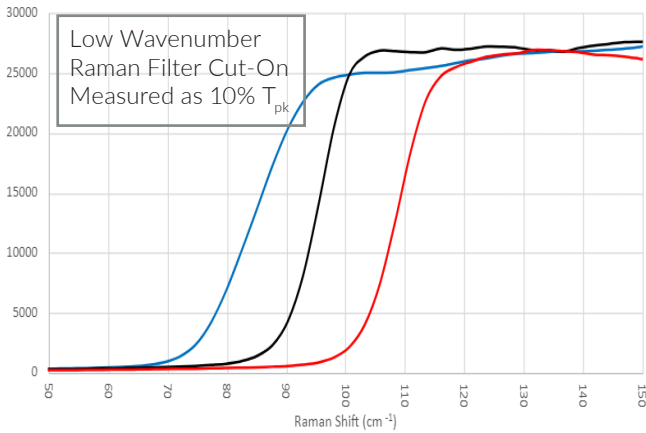
\* Custom fiber patch cords available upon request. NRE, MOQ, and extended lead times may apply.

Ask about our Light Tight Liquid Sample Holder and our XYZ Stage Accessories.

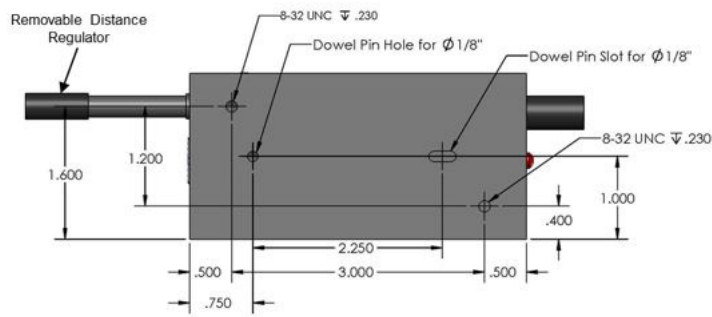
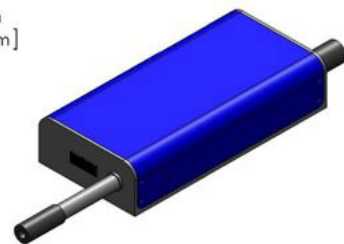
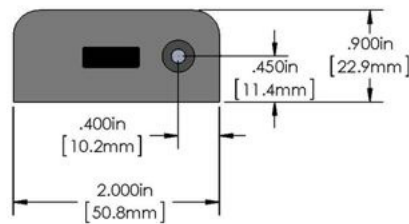
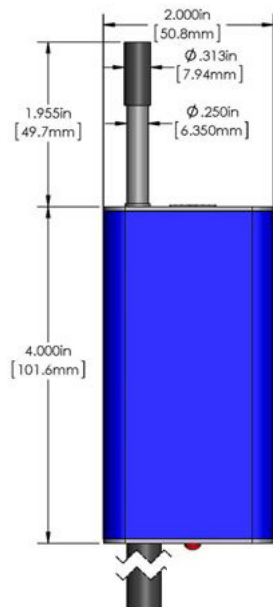
# Spectra

Options

—  $\leq 85 \text{ cm}^{-1}$  Cut-On   
 —  $\leq 100 \text{ cm}^{-1}$  Cut-On   
 —  $\leq 125 \text{ cm}^{-1}$  Cut-On



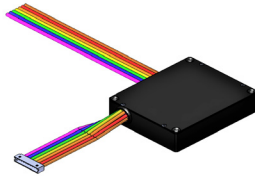
# Mechanical Drawings



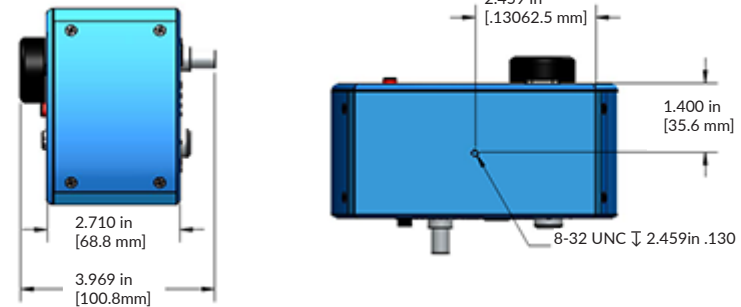
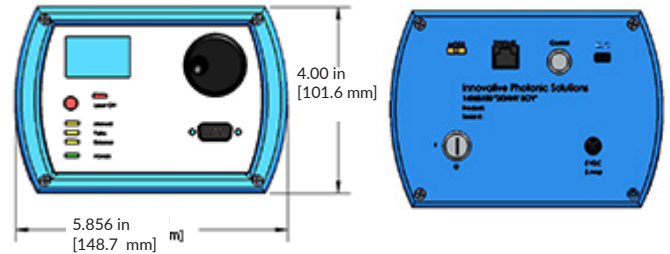
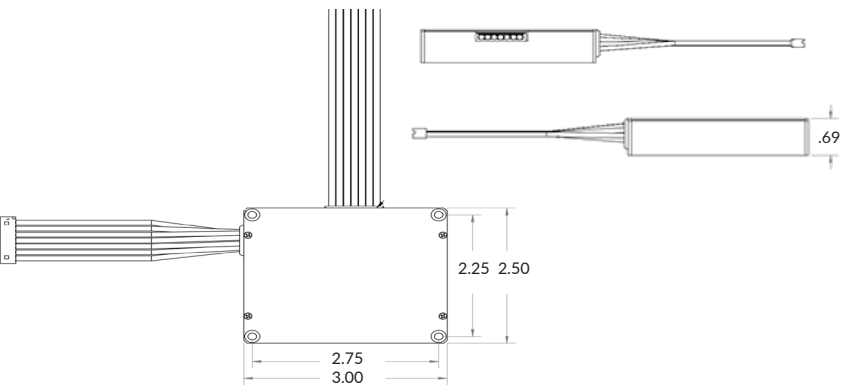
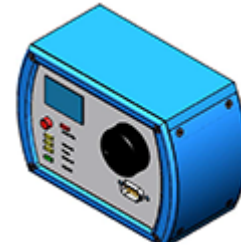
# Control Electronics Options



OEM U-Type



Turn-Key



Pin #	Symbol	Description
1	NC	Not Connected
2	Vset ENABLE	Enables "LD SET" on pin 8 when connected to ground. If left open or set to 3-5 Volt, output power defaults to internally pre-set value.
3	T SENS	Not Connected
4	T SENS	
5	GND	Ground
6	+ 5V	4.9 to 5.1 Volt; 1 Ampere
7	ENABLE	Tie to GND to DISABLE Laser output. Leave not connected or apply 3-5 Volt to enable Laser output.
8	LD SET	Apply 0 to 1 Volt to control optical output power. Pin 2 needs to be grounded to enable this option.
9	PD +	Not Connected
10	PD -	

## Operational Notes

- This OEM U-Type is considered an OEM component. The customer must supply a 5 V DC power source (pins 5&6) and a TTL signal (pin 7) at a minimum to operate laser inside of probe.
- If full system integration of the OEM controller isn't feasible, or the user wishes an alternative method to supply voltage to the device, there are switchbox and power supply accessories available which offer a more plug-and-play experience.

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