

Photon PRO

Laser Diode Modules



Uniquely Engineered for Your System's Reliability

The new IP67 Photon PRO laser has been designed to deliver robust, reliable, high-performance output in harsh environments or difficult to access locations. This unique laser module combines an IP67 stainless steel threaded housing and innovative near-end-of-life monitoring, delivering a compact, robust, waterproof and dustproof laser solution that ensures reliability in your system.

The Photon PRO features advanced near end-of-life monitoring making it an ideal solution for environments where laser replacement is costly or difficult in industrial applications such as food processing and sorting, particle analysis, or medical applications such as patient alignment. The innovative near-end-of-life feature also enables predictive maintenance.

The Photon PRO laser also incorporates digital control and monitoring via a user-friendly GUI, allowing you to precisely adjust laser power, modulation frequency, and other key parameters via a simple digital interface.

The compact Photon PRO is available with wavelengths at 520nm, 635nm, 650nm, and 785nm, and output powers up to 20mW. Spot and line modules are available.

Key Features

- Robust, Reliable IP67 Laser Module
- Unique Near-End-of-Life Indication
- Intelligent Control & Monitoring
- Threaded for Ease of Mounting
- Wavelengths: 520nm, 635nm, 650nm, and 785nm

Key Applications

- Food Sorting & Processing
- Industrial Alignment
- Particle Analysis
- Patient Alignment
- Laboratory Systems

Product Characteristics

Product Characteristics		
Power Stability	+/-5% at 25°C	
Beam pointing stability	<0.2mrad/°C	
Bore sight accuracy	<1.0° off axis	
Operating voltage	635nm, 650nm, 785nm	+4 V_dc to +6 V_dc
	520nm	+8 V_dc to +10 V_dc
Operating current	150mA max	
Operating temperature	+10°C to +50°C	
Storage temperature	-10°C to +85°C	
Housing material	Stainless steel	
Mounting thread	M12 X 0.5mm	

Line Module Characteristics

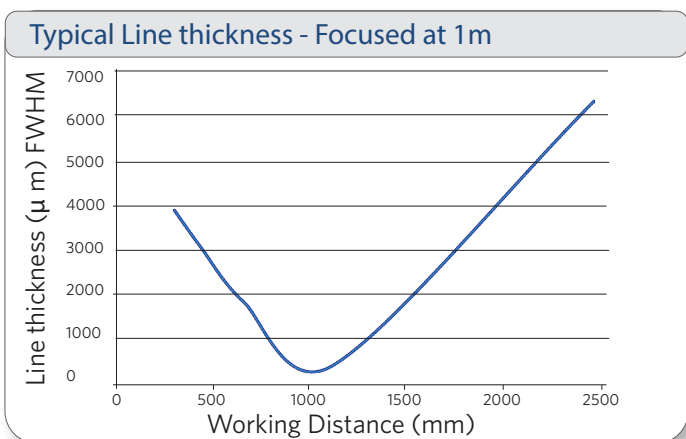
Wavelength (nm)	Maximum Optical Output Power (mW)
520	1
	5
	20
635nm	1
	5
	20
650nm	1
	5
	20
785nm	1
	5
	20
Collimated Line Thickness (typ @1m): 2mm	

Elliptical Output Beam

Wavelength (nm)	Maximum Optical Output Power (mW)
520	1
	5
	20
635nm	1
	5
	20
650nm	1
	5
	20
785nm	1
	5
	20
Collimated Beam Size (typ @ 1m) : 4 x 2mm	
Beam Divergence (typ @ 1m) : 0.6 x 0.3 mrad	

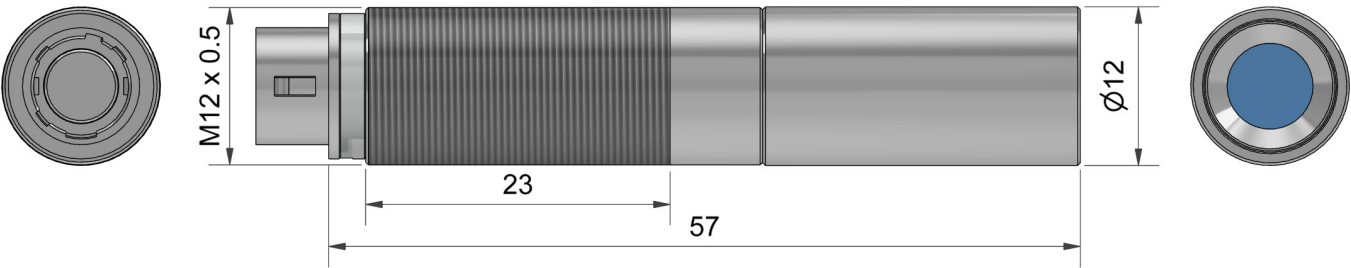
Optics

Beam Shape Options
Elliptical spot, 30° line
Focus Options
Collimated beam, focused at 1m

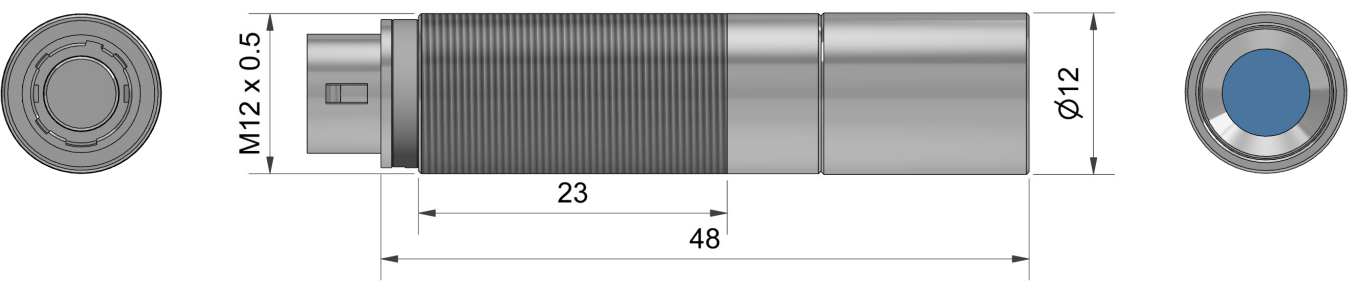


Minimum line thickness 1700um at 1m working distance

Photon PRO Line Module Diagram

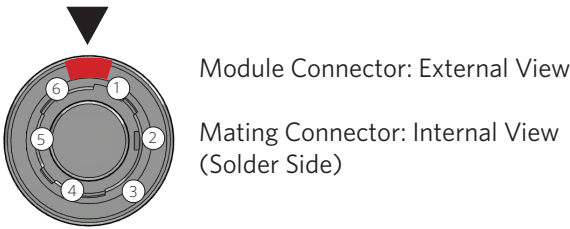


Photon PRO Spot Module Diagram



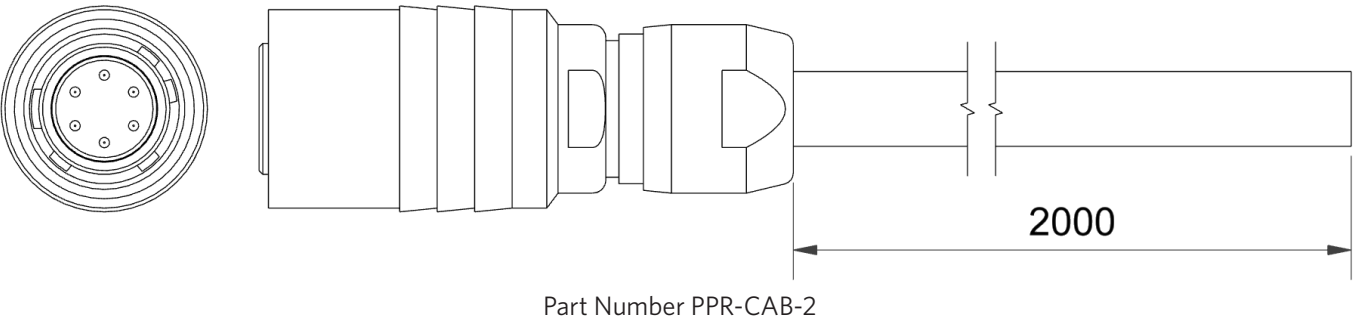
Connector Pin-out/ Flying Lead Color Code

Pin Number	Function	Colour
1	RS232 TXD	White
2	Reserved - do not connect	Not connected
3	Modulation	Yellow
4	Power 0V	Black
5	Power V+	Red
6	RS232 RXD	Purple



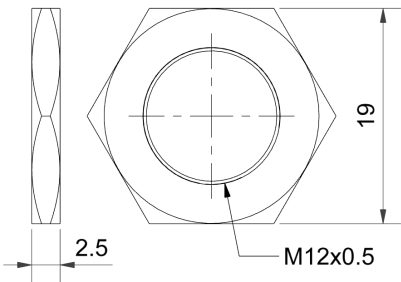
Accessories

Mating Connector with 2m Flying Lead



Part Number PPR-CAB-2

M12 Flange Nut



Each Photon PRO is supplied with two mounting nuts

Communications and Control Features

Features	Benefits
RS232 ⁽¹⁾ digital communications interface option with discrete modulation input.	Laser output control and laser performance monitoring. Laser pulse frequency and duration control.
Commands for on/off control and power level.	Simple, remote control of laser output.
Fast-start operation.	Rapid response to start-up command.
Comprehensive numerical data, fault and control flags. Numerical monitoring data set (10 parameters) including laser diode current and temperature, and operating power (peak and average).	Real-time information about laser operation.
Control flags indicate mode of operation.	Indicate whether the laser is on or off, operating in CW or pulse mode.
Internal storage of unit information including part number, part revision, serial number and build date, with an additional, user configurable parameter.	Easy identification of individual laser modules.
Operation and operating limits fully configured.	Ensures laser module operates within safe limits.
Capable of being configured to operate without connection to the RS232 ⁽¹⁾ communication interface.	Laser module does not have to be operated using the RS232 ⁽¹⁾ interface if required.
Visual indication of end-of-life status.	Instant visual confirmation when the module needs to be changed.
Ten individual fault flags including module over-temperature, laser diode over-current and modulation input out of range	Easy investigation of operating conditions that may limit or stop operation.

1. This is a reduced voltage interface. Adapter recommendations available on request.

Electrical and Environmental Specifications

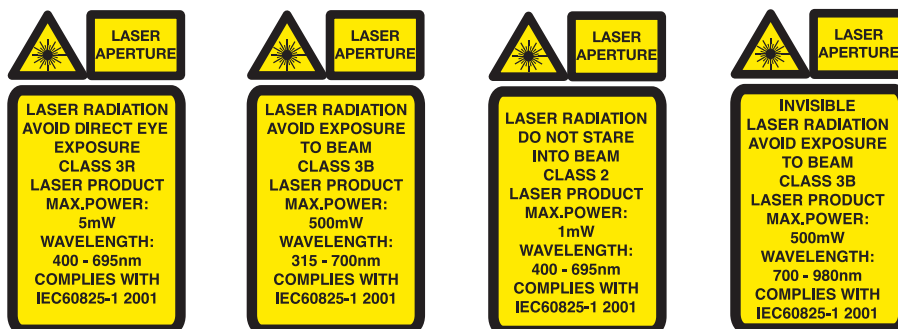
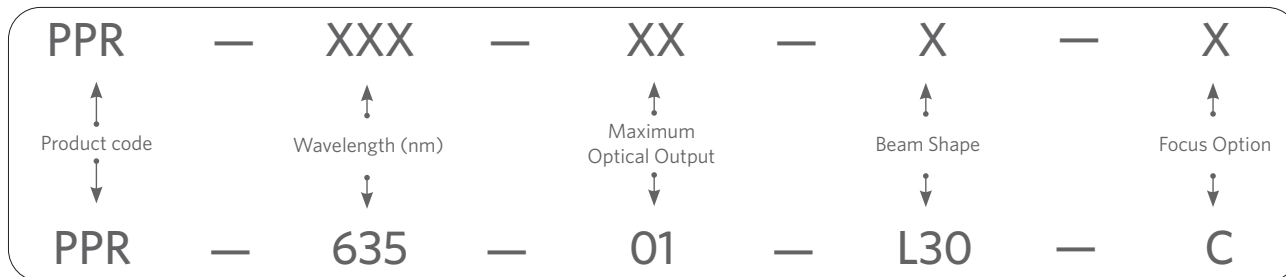
		Min	Max
Input Voltage	635nm, 650nm, 785nm	+4V _{dc}	+6V _{dc}
	520nm	+8V _{dc}	+10V _{dc}
Input Current			150mA
Mode Of Operation		Automatic Power Control (APC) CW or pulsed	
Optical Power Stability		±5%	
Operating temperature		+10°C	+50°C ⁽²⁾
Storage Temperature		-10°C	+85°C
Reverse Voltage Protection			110% of maximum input voltage
Digital Modulation		Factory configured. Active high (Optical output on for high level) V _{IH} >3.8V _{dc} , <6.0V _{dc} V _{IL} <1.5V _{dc} , >0.0V _{dc} 5µs minimum pulse width 0-40kHz (dependent on laser diode type, power and duty)	
Power Control		0 to 100% of module rating. Controlled via digital interface	
RS232 ⁽¹⁾ interface RXD input		V _{IL} <0.9V _{dc} , >0.0V _{dc}	V _{IH} >2.4V _{dc} , <3.3V _{dc}
RS232 ⁽¹⁾ interface TXD output		0V	3.3V

2. Operating power is dependent on external cooling provided for the laser module, and will affect operating temperature range.

Part Numbers

To order your Photon PRO laser diode module use the product code PPR – select wavelength (XXX) – select maximum optical output (XX) – select beam shape (E- elliptical spot/L30 – 30° fan angle line) - select focus option (f -focused at 1m/C - collimated)

Eg PPR – 635 – 01 – L30 – C



Laser Safety

The light emitted from these devices has been set in accordance with IEC60825. However, staring into the beam, whether directly or indirectly, must be avoided. IEC60825 classifies laser products into three different categories depending on light emitted, wavelength and eye safety.

CLASS II

“Caution”, visible laser light less than 1.0mW. Considered eye safe. Normal exposure to this type of beam will not cause permanent damage to the retina.

CLASS IIIR

“Danger”, visible laser light between 1.0mW and 5.0mW. Considered eye safe with caution. Focusing of this light into the eye could cause some damage.

CLASS IIIB

“Danger”, infrared (IR), and high power visible lasers considered dangerous to the retina if exposed.

NB: It is important to note that while complying with the above classifications, unless otherwise stated, our laser diode products are not certified and are designed solely for use in OEM products. The way in which the device is used in the final product may alter its original design classification, and it is the responsibility of the OEM to ensure compliance with the relevant standards.

NB. Without the inclusion of laser drive circuits, the output powers cannot be set in accordance with EN60825 since they are designed for OEM use and not certified devices as defined in the specification. The manufacturer of the complete laser product is responsible for complying with the requirements of EN60825. If the case temperature of the laser diode exceeds its maximum specification, premature or catastrophic failure may occur. To ensure the maximum life of the laser diode, it is recommended that an additional electrically insulated heatsink, of at least 35sq. cm. be used. Thermal transfer paste can be used to improve contact and heat dissipation. Do not restrict air circulation around the device. Specifications subject to change without notice.

Errors & Omissions Excepted. The information describes the type of product and shall not be considered as assured characteristics.

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