Power Technology Incorporated

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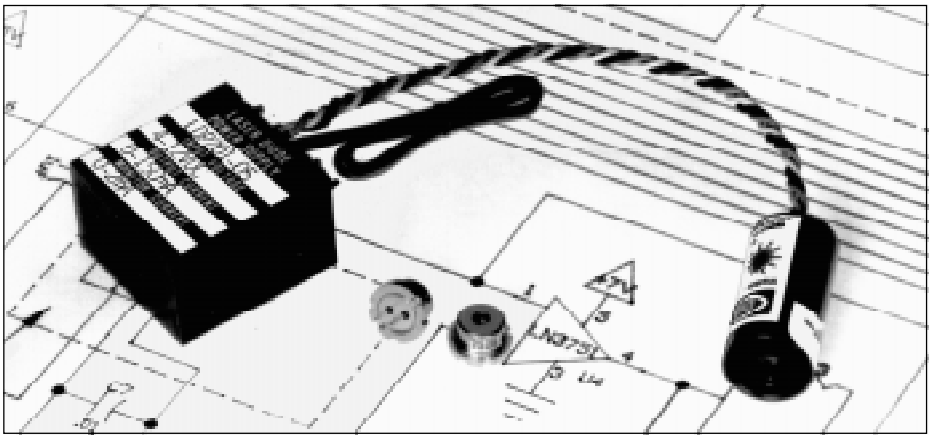


Key Features

Quasi-Collimating Optics

Separated Laser Head/Drive Electronics

Constant Optical Output Power
or
Constant Drive Current Modes

CW Systems with Separated Geometry

As with the "Self-Contained CW Power Systems" these systems incorporate a basic single-element aspheric lens to produce a quasi-collimated beam. However, instead of a single encapsulated unit, the diode and lens are separated from the drive electronics into their own "laser head" assembly. Also, some models are capable of either "Constant Optical Output Power" or "Constant Drive Current" operating mode. This system configuration offers several advantages over the Basic Systems. One is that a model can be configured from a variety of laser heads and/or drive electronic capabilities to precisely match the design and operational constraints of your application.

Another advantage of the separated geometry is the thermal isolation of the laser from the drive electronics. This allows a wider range of laser power capability[1] and ambient operating temperatures.

SPM Series Standard Features [3]

Optical:

- Single-element Aspheric Quasi-Collimating Lens [2]
- Adjustable Focus Thread Resolution (factory focused at 3.05m) 60 TPI

Mechanical:

- Laser Head Case Material: Aluminum, Black Anodized
- Head-Drive Cable Length (hard-wired): 304.8mm (±12.7mm)
- Max. Head-Drive Cable Length (shielded) [3]: 1200mm
- Input Wire Length: 304.8mm (±12.7mm)

Notes:

1 *See Laser/Price Brochure for Specifications* Detailed optical and laser characteristics are presented in this separate document. It will also list the lasers compatible with each system.

2 *See Options Page for Specifications of lenses compatible with each system.*

3 *See Options Page for Specifications.*

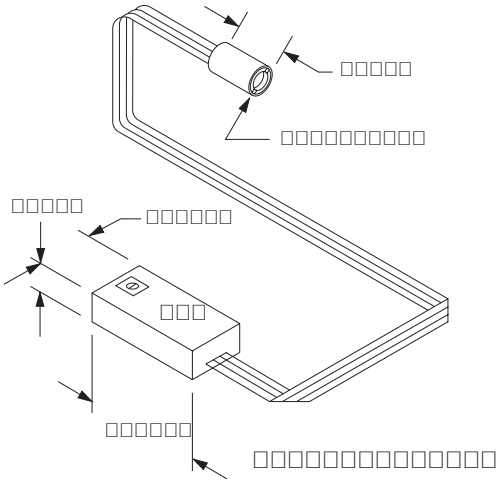
4 *"CP" - Constant Optical Output Power*
"CC" - Constant Drive Current

5 *Minimum Operating Voltage:* Will be determined by the laser diode selected. Contact factory for specific details.

Maximum Operating Voltage: recomended input voltage of 4.5 V from batteries, or 5 V from power supply.Use additional heat sinking above 75% or max.rated input voltage.

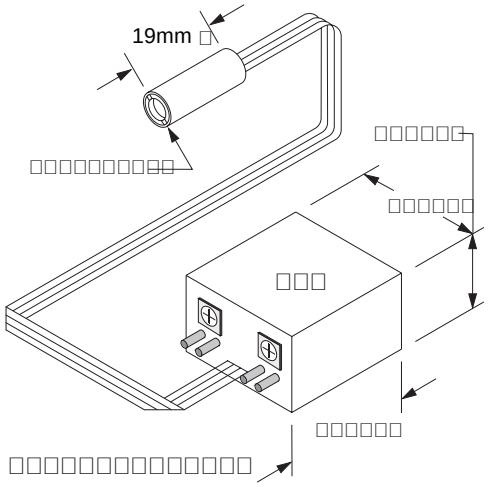
6 Laser Drive Current: The max. laser drive current on a SPM with a 214 power supply is 120 mA and 170 mA with a 201 power supply.

Laser Head Specifications [1]		SPM	SPMB	SPMC	SPMD	SPME	SPMF
Max. Output Power (adjustable)	mW	--	5	1	5	5	5
Max. Laser Drive Current	mA	120/170[6]	120/170[6]	60	60	60	60
Laser Head Dimensions (Ø x L)	mm	12.6 x 16.5	6.99 x 19.0	5.8 x 9.0	6.99 x 9.2	9.5 x 15.5	9.5 x 10.5
Lens Compatibility [2]		G1/G2/G3/G7	G1/G7	G1	G1	G1/G7	G1
Standard Lens [2]		G3	G7	G1	G1	G7	G1
Beam Size at Exit	mm	3.9 x 1.1	3.9 x 1.1	3.9 x 1.1	3.9 x 1.1	3.9 x 1.1	3.9 x 1.1
Case Isolated	Yes/No	No	No	No	No	No	No
Options: [3]							
Beam Centering Capable	Yes/No	Yes	No	No	No	No	No
Line Generating Lense Capable	Yes/No	Yes	No	No	No	No	No



Example System Configurations

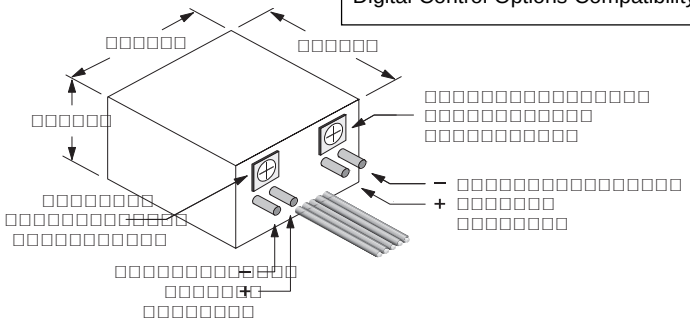
(see p.ii How To Order)



Drive Electronics

There are three choices of drive electronic components for the SPM Series. The appropriate choice will depend upon your design requirements. The size of the unit or, its operating features could be the deciding factor. The choice of laser diode can also determine the choice of drive electronics.

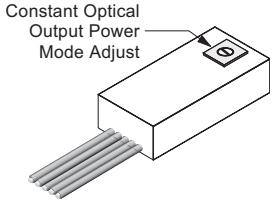
Drive Electronic Specifications [1]		201	214	251
Operating Mode [4]		CP or CC	CP only	CP or CC
Operating Voltage Range [5]	VDC	4 - 12.0	2.8 - 9.0	4 - 12.0
Operating Current (max.)	mA	150mA	120mA	1000mA
Dimensions	mm	16.8 x 26.9 x 27.9	7.0 x 12.1 x 25.5	25.3 x 38.4 x 101.6
Case Material		Plastic	Plastic	Plastic
Mounting		None	None	Aluminum Bracket
Options: [3]				
Option "03" 12-Turn Potentiometers	Yes/No	Yes	Yes	Yes
Option "90" External Potentiometers	Yes/No	Yes	Yes	Yes
Digital Control Options Compatibility [3]		D1, D2	D1	D1, D2



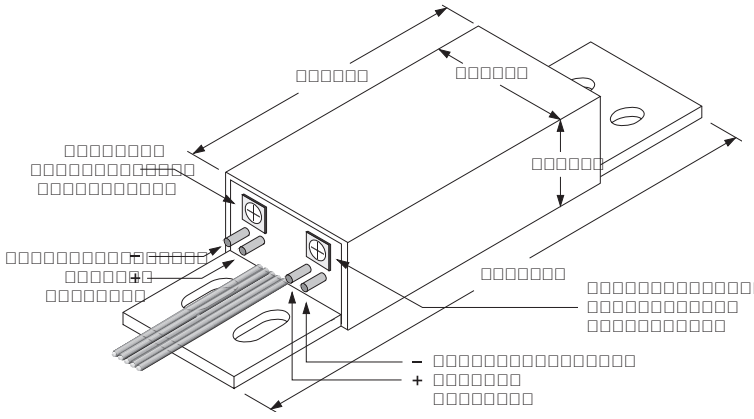
The **201** drive electronic component has the controls and circuitry to either operate in a "Constant Optical Output Power" mode, as in the 214, or to operate in a "Constant Drive Current" mode.

Built-in 3/4 turn potentiometers enable the laser power, or the drive current if operating in that mode, to be adjusted from zero to the maximum setting of the system. There are also DVM compatible test points that allow the monitoring of the laser drive current or the photodiode feedback current during operation.

The unit has larger filtering components than the 214 and can dissipate more heat. For this reason, it is suggested that the 201 be used whenever possible for models that do not require the 251.



The **214** drive electronic component is small and compact. The unit's operates in "Constant Optical Output Power" mode only. So, The system adjusts to environmental changes to maintain a constant output power from the laser. A built-in 3/4 turn potentiometer enables the laser power to be adjusted from zero to the maximum setting of the system.



The **251** drive electronic component is designed for high power laser diodes. It also has the controls and circuitry to either operate in a "Constant Optical Output Power" mode, or to operate in a "Constant Drive Current" mode, as in the 201.

Built-in 3/4 turn potentiometers enable the laser power, or the drive current if operating in that mode, to be adjusted from zero to the maximum setting of the system. There are also DVM compatible test points that allow the monitoring of the laser drive current or the photodiode feedback current during operation.

The unit includes heatsinking, with mounting bracket, along with larger filtering components for added heat dissipation.

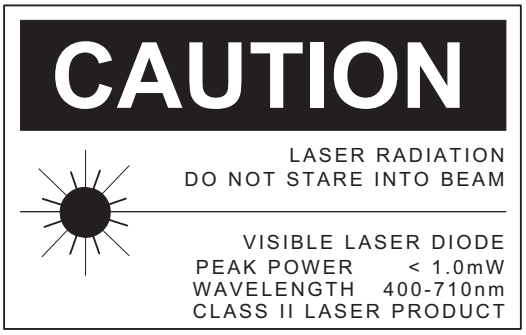
Handling and Safety

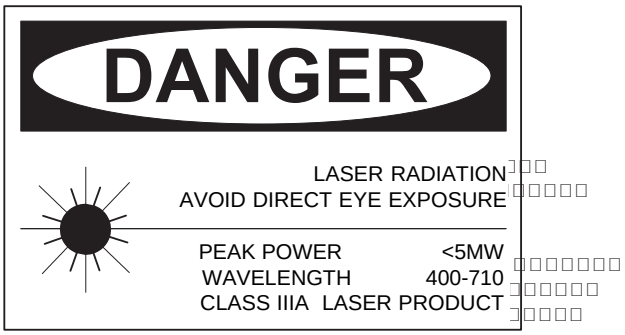
Safety Precautions

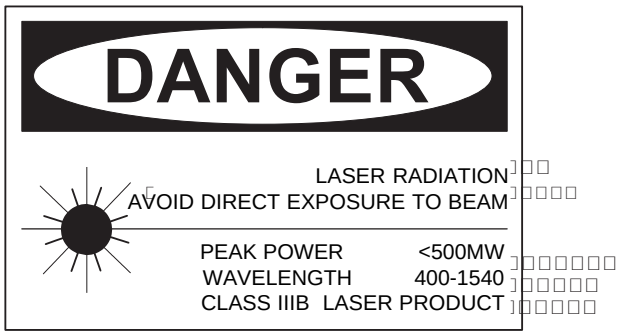
These Laser Diode Systems are visible and infrared laser sources. The energy emitted may be invisible to the human eye. These systems emit radiation anywhere in the 630 to 2100 nm wavelength range, depending on the model ordered. Use CAUTION to avoid hazardous exposure from the laser system beam.

Never look directly into the beam from the laser system under any conditions, and take precautions to eliminate exposure to a direct or reflected laser beam. Make sure to turn on laser systems in a safe and controlled area.

All of the laser systems, which Power Technology manufacturers, emit sufficient optical power to constitute a possible hazard to the human eye.







Handling/Operation Precautions

Power Technology Incorporated Laser Diode Systems are very reliable under normal operating conditions. However, if not properly handled or operated the diode can easily be damaged or destroyed. The following precautions should be taken to ensure that the laser is protected.

1. Do not adjust the focus, on systems that operate in Constant Optical Output Power Mode, while operating at full power. The photodiode feedback circuit relies on the reflections off the lens to monitor the laser power. Adjusting the focus changes these reflections which could result in laser burn-out.
2. Do not operate equipment near the laser diode which may generate high frequency electrical surges. The laser diode leads can pick up electrical surges which may destroy the diode in the induced electric field.
3. Avoid touching the laser system lens. Contamination and scratches on the lens may result in decreased optical output power and distorted far-field patterns. If the lens becomes contaminated, clean using a cotton swab with ethanol.

Most of the systems in this catalog are designated solely as OEM components for incorporation into the customer's end products. Therefore, they do not comply with the appropriate requirements of FDA 21 CFR, Section 1040.10 and 1040.11 for complete laser products.

The complete laser product manufacturer is responsible for complying with these requirements (see above for the appropriate warning labels).

Power Technology Inc. will supply labeled systems or, upon written request, loose labels for use by the customer. Retaining this safety label does not guarantee the final product will fully comply with FDA requirements.

These systems have been registered but not certified as per FDA 21 CFR, Section 1040.10(a)(3)(i).
For further information call CDRH (301) 427-1172.

The CPM and RS systems are certified as a complete laser products. However, this certification is void if the unit is enclosed or otherwise inaccessible, or if the labels are modified or removed. Refer to the RS specifications for more details on certification of this system.