

Digital Compact

Laser Diode Modules

Digital



From just 8mm in diameter, the Digital Compact Laser Modules offer an exceptional level of control and monitoring functionality where space is at a premium.

The RS232 interface provides ease of integration as well as in-service control and system monitoring.

Designed for applications where space is a key consideration, these laser modules provide an extremely compact, and highly reliable solution. This laser platform offers excellent boresighting for improved accuracy and ease of installation.

The Digital Compact Laser Modules are ideally suited to a wide range of OEM medical, analytical, and alignment applications, barcode scanning, targeting, and 3D measurement. In addition, the low current requirements of these modules mean the lasers can be battery-operated in handheld devices.

The Digital Compact range of laser modules is available with a collimated or focused elliptical spot output, or line or cross optics at 520nm, 635nm, or 650nm. CW optical output power options at 0.9mW or 4mW as standard. Other wavelengths and powers are available on request.

Key Features

- Exceptionally Compact, High Performance, Digital Laser Module
- RS232 Intelligent Control and Monitoring
- Elliptical Beam, Line & Cross Generating Optics Available
- CW or Modulation Capability
- Excellent Boresighting $<0.5^\circ$
- High Reliability
- Range of wavelengths, output powers, and mechanical options available.

Options

- Wavelengths: 520nm, 635nm and 650nm
- Optical Output Powers from 0.9mW to 4mW
- Hard Anodized Aluminum Housing for Electrical Isolation Available.

Key Applications

- Precision Industrial Alignment
- Patient Positioning
- Particle Detection and Measurement
- Targeting
- 3D Measurement
- High-Speed Automated Inspection
- Barcode Scanning

Typical Characteristics

Wavelength	635nm, 650nm	520nm
Power Stability	<5%	
Operating Voltage	5.0V _{dc} ±1V _{dc}	9.0V _{dc} ±0.5V _{dc}
Operating Temperature (non-condensing)	-10°C to +40°C	
Storage Temperature	-40°C to +85°C	
Lead Length	300mm	
Optical Output Power	0.9mW, 4.0mW	
Max. Operating Current (dependent on optical configuration)	100mA max	
Housing	Brass or Hard-Anodized Aluminum	
Boresighting	<0.5° half angle	

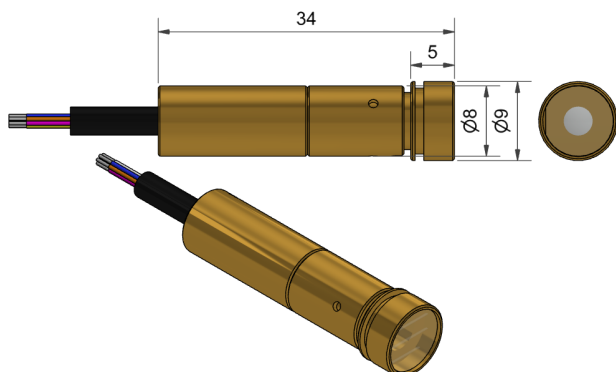
Electrical and Environmental Specifications

	Min.	Max.
Mode Of Operation	Automatic Power Control (APC) CW or pulsed	
Reverse Voltage Protection		110% of maximum input voltage
Digital Modulation	Active high (optical output on for high level). $V_{IH} > 3.8V_{dc}$, $< 6.0V_{dc}$ $V_{IL} < 1.5V_{dc}$, $> 0.0V_{dc}$ 10μs minimum pulse width 100kHz maximum (dependent on laser diode type, power and duty)	
Analog Power Level Control	0V _{dc} to 3.3V _{dc}	Absolute maximum voltage (damage threshold) is 6.5V. (see note 1)
Interlock	Active high (high level enables laser). $V_{IH} > 3.8V_{dc}$, $< 6.0V_{dc}$ $V_{IL} < 1.5V_{dc}$, $> 0.0V_{dc}$	
RS232 ⁽²⁾ interface: RXD input	$V_{IL} < 0.9V_{dc}$, $> 0.0V_{dc}$	$V_{IH} > 2.4V_{dc}$, $< 3.3V_{dc}$
RS232 ⁽²⁾ interface: TXD output	0V	3.3V

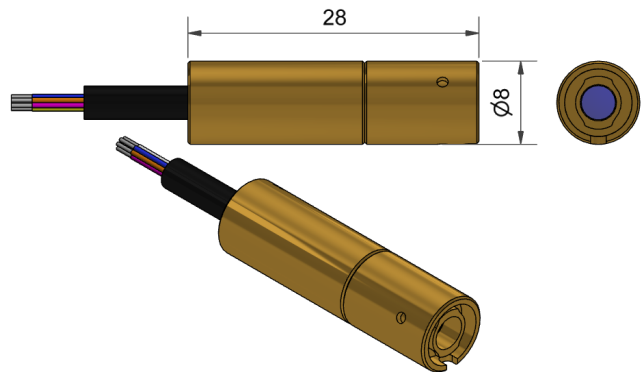
Note 1: Power level control is user configurable for adjustment via the RS232 or the Analog power level control input.

Note 2: This is a reduced voltage interface (see Electrical and Environmental Specifications). Adapter recommendations available on request.

Line and Cross Modules



Elliptical Beam Modules



Communication and Control

Features	Benefits
RS232 ⁽²⁾ 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 configurable.	Ensures laser module operates within safe limits.
Capable of being configured to operate without connection to the RS232 ⁽²⁾ communication interface.	Laser module does not have to be operated using the RS232 ⁽²⁾ interface if required.
Ten individual fault flags including module over temperature, laser diode over current and modulation input out of range (full list available on request).	Easy investigation of operating conditions that may limit or stop operation.

Laser Module Range

Features	Benefits
From 8mm in Diameter	Ideally suited where space is a key consideration.
TTL Modulation Options	Strobing option now available to suit application requirements.
Excellent Bore-Sighting <0.5° half angle	Improved accuracy and ease of installation
High Reliability	Repeatable results and maximum system uptime.
Three Wavelengths	Laser configured to your application's needs.
Elliptical Beam, Line & Cross Generating Optics Available	Output can be configured for a range of application needs.
Hard Anodized Aluminum Housing Option	For Electrical Isolation and a more durable module.

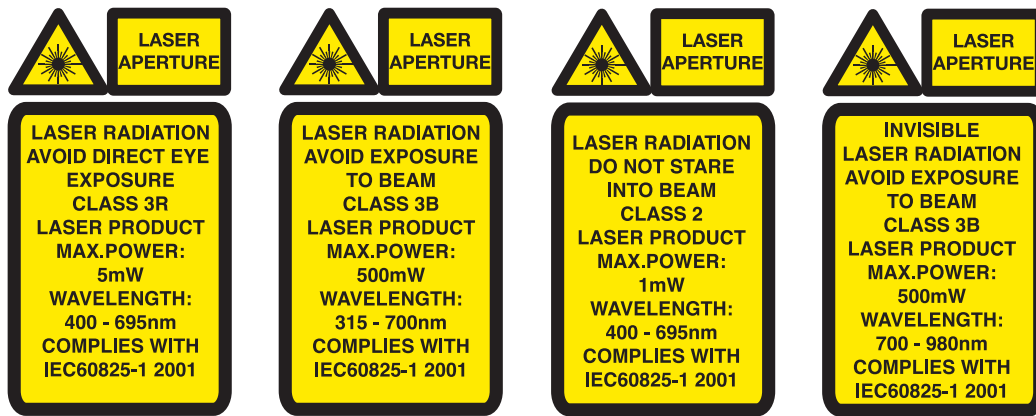
Part Numbers

To order your Compact Laser Diode Module use the product Code DC – Select Housing (B - Brass/H - Hard Anodized) – Select Wavelength (635, 655 or 520) – Select Output Power (0.9 or 4) – Select Beam Shape and Fan Angle (EXX - Elliptical, L58 - Line with 58° Fan Angle, L88 - Line with 88° Fan Angle or C70 - Cross with 70° Fan Angle), Select Focus Option - Focused at 1m or Collimated (F or C)

e.g DC-B-635-4-EXX-C

DC	—	B/H	—	XXX	—	0.9 / 4	—	EXX/L58/L88/C70	—	F/C
↑		↑		↑		↑		↑		↑
Product code		Housing		Wavelength (nm)		Output Power (mW)		Beam Shape and Fan Angle		Focus Option
↓		↓		↓		↓		↓		↓
DC	—	B	—	635	—	0.9	—	EXX	—	C

Focused elliptical beam, line and cross-generating Compact Lasers are focused at 1m. Other focus distance options are available on request.



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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