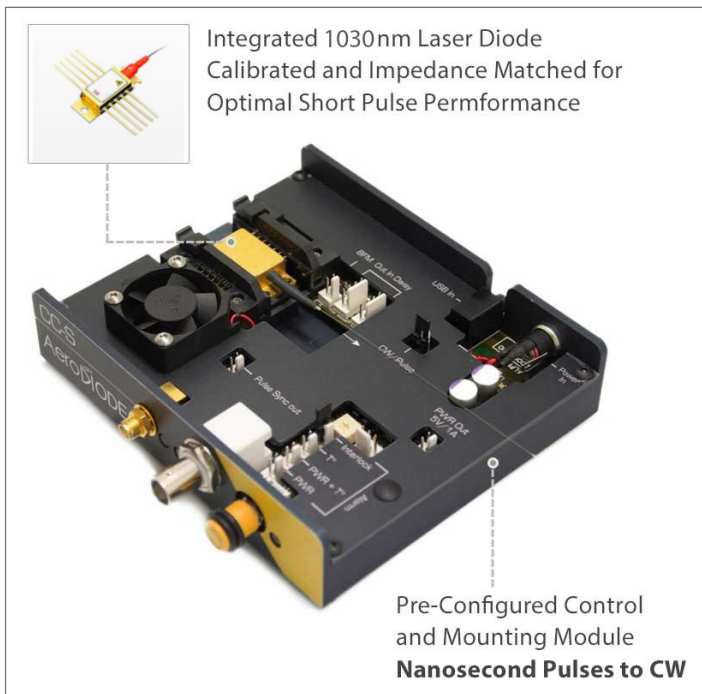




# 1030nm Nanosecond Pulsed Laser Diode Source System

## Single-Frequency DFB Laser, 500mW Pulse Power

### 1030LD-2-3-1 / LASER-DIODE / CCS-PULSE



- o Nanosecond Pulse Capable, up to CW Output
- o 200 kHz Spectral Line Width
- o PM Fiber SM98-PS-U25D-H
- o FC/APC Connector, PM Aligned to Slow Axis
- o Integrated TE Cooler, Thermistor, Monitor PD
- o Hermetically Sealed 10-Pin Butterfly Package

### 1030NM NANOSECOND PULSE LASER DIODE SOURCE

The 1030nm pulsed source system is built around a wavelength stabilized DFB butterfly laser diode, in a preconfigured, pre-tested precision pulsed source system delivering up to 200mW CW power and 500mW pulsed output power.

The laser is mounted in the controller and mounting module, configured for safe operation, and tested to ensure long-running reliable operation.

The CCS-PULSED controller system provides wide-ranging control over the pulse operating parameters, laser drive current, and laser temperature.

The source system is easily operated using the included graphical user interface over USB interface, and multiple systems can be operated together by the same computer.



## 1030NM SINGLE-FREQUENCY DFB SPECIFICATIONS

### LASER OPTICAL AND ELECTRICAL SPECIFICATIONS

- Wavelength: 1030 nm ( $\pm 2$  nm)
- CW Output Power (typ): 200 mW
- Pulsed Peak Output Power: 500 mW
- Threshold Current: 40 mA
- Maximum Operating Current: 400 mA (CW)
- Operating Voltage: 2 V (typ)
- Spectral Width (FWHM @ 100ns Pulse Width): 200 kHz (typical)
- SMSR: > 30 dB
- Wavelength Shift with Temperature:  $\sim 0.06$  nm/ $^{\circ}$ C
- Wavelength Shift with Current:  $\sim 0.0025$  nm/mA
- ---- **SHORT-PULSE MODE (1 - 20 Nanoseconds)**
- Short-Pulse Mode: 1 - 20 nanoseconds
- Short-Pulse Mode Current: 1,600 mA (max)
- Short-Pulse Mode Peak Output Power: 500 mW (typ)
- Short-Pulse Mode Duty Cycle Limit: 1%  
*(repetition rate max 50 MHz w/ HP option; max rep rate is determined by the pulse width and duty cycle)*
- ---- **STANDARD PULSE MODE (20 - 200 nanoseconds)**
- Standard Pulse Mode Range: 20 nsec to 200 nsec
- Standard Pulse Mode Current: 800 mA (max)
- Standard Pulse Mode Peak Output Power: 400 mW (typ)
- Standard Pulse Mode Duty Cycle Limit: 5%  
*(repetition rate max 50 MHz w/ HP option; max rep rate is determined by the pulse width and duty cycle)*

### LASER DIODE FIBER AND CONNECTOR

- Fiber Type: PM, Polarization Maintaining Nufern PM980-HP or equivalent
- Mode Field Diameter: 6  $\mu$ m
- Buffer Diameter: 250  $\mu$ m
- Fiber Length: 1 meter
- Connector: FC/APC, PM Aligned to Slow Axis



## 1030NM PULSED LASER DIODE DRIVER SPECIFICATIONS

### PULSED CONTROLLER OUTPUT SPECIFICATIONS

- On-Board Generator Pulse Width Range: 0.5 ns to 500 ns
- External Trigger Pulse Width Range: 0.5 ns to CW
- Internal Pulse Generator Adjustment Precision: 10 ps
- Optical Pulse Jitter: < 25 ps
- On-Board Pulse Generator Repetition Rate Range: 1 Hz - 4 MHz (std) (up to 250 MHz w/ HP Option)
- Output Current Pulsed Mode: 0.00 mA - 1.50 Amps
- Output Current CW Mode: 0.00 mA - 500.00 mA
- Output Voltage Maximum: 4.8 Volts
- Current Noise and Ripple (100Hz to 10 MHz): < 0.03% of Full Scale
- Current Set-point Resolution @ 500 mA: <0.1 mA
- Current Set-point Resolution @ 1000 mA: <0.3 mA

### TEMPERATURE CONTROL AND MOUNTING CONFIGURATION

- Laser diode chip temperature tuning range : 20°C - 50°C
- TEC Controller Compatible with NTC Thermistors: 1 kΩ - 100 kΩ
- Mounting Socket Base Material: Anodized Aluminum
- Mounting Socket Technology<sup>2</sup>: Zero Insertion Force Socket

### USER INTERFACE , DIMENSIONS AND POWER INPUT

- Interface: USB
- OS Compatibility: Windows XP / Windows 7
- Control Software: Control Software - Windows GUI Included
- Input Power Supply: 12VDC (220V/110V adapter included)
- Module Dimensions: 146mm (W) x 130mm (L) x 37mm(H)
- Libraries: DLLs - Hexa/Linux - Labview - Python
- Analog Interface (0-3.3V): Peak Power Adjustment



## Pre-Configured 1030nmDFB Source for Ultra-Short Pulses

These pulsed and CW 1064 nm DFB laser source & control modules provide a pre-configured, calibrated solution for fast pulse seed and sensing applications. These modules deliver pulse widths as narrow as 1 to 3 nanoseconds (limitation of a DFB source). The butterfly packaged laser diode has been impedance matched to the pulse current PCB in the mounting socket to ensure clean pulse performance with almost no ring or overshoot. To achieve the shortest possible pulses, the customer has the option to request that the butterfly package be soldered into the mounting socket.

## Integrated DFB Laser Diode Source

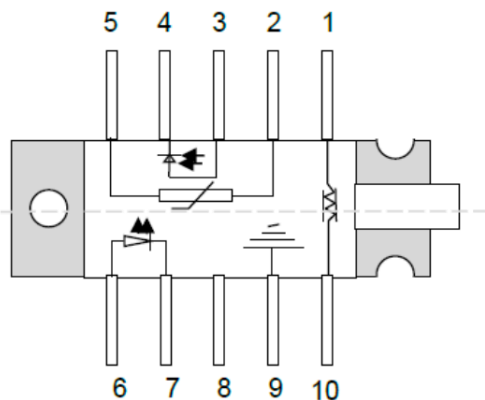
The integrated 1064nm laser diode source is a fiber coupled DFB laser. The distributed feedback grating located in the laser cavity provides the wavelength stabilization. Both the chip in the butterfly package and the package itself were designed and optimized to provide nanosecond and sub-nanosecond pulses. The coupling of the laser light into the fiber is based on proprietary techniques and manufacturing processes that provide

high peak output power. The power is very stable over time and over temperature.

## Pulsed Laser Diode Control Electronics and Butterfly Mounting Module

The control electronics and mounting module delivers high stability current pulses which can be generated internally by an on-board pulse generator, or on demand from an external TTL signal. The external trigger source can be used to trigger the pulse parameters which are preset in the control module.

These control modules offer multiple mechanical, thermal and electronic protection features for the DFB source. They ensure that your laser diode is protected and operated safely. The on-board TEC controller incorporates a fast feedback PID control loop to provide high temperature set-point stability. A user-set temperature limit keeps the source from thermal damage. Additionally, multiple bias current / voltage protection features are designed to keep the source safe from ESD, power outages and reverse voltage. A user controlled current limit clamps the current in both Pulsed and CW mode.



Pin	Description	Pin	Description
1	TEC (+)	6	Laser anode (+)
2	Thermistor	7	Laser cathode (-)
3	Monitor anode (-)	8	NC
4	Monitor cathode (+)	9	Package ground
5	Thermistor	10	TEC (-)



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## USB and Control Software

The user can set and monitor all of the control parameters of the 1064nm source laser using the USB input and the supplied GUI software. These units ship with the USB cable to connect your PC to the connector on the side panel. A simple to use single page menu graphical user interface allows you to control all of the pulse or CW parameters as well as set current and temperature limits.

Other features of these control modules include a daisy chain output, sync output, alarm monitor and back facet monitor output to monitor the DFB laser's power.

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## PRODUCT SALES AND SERVICE:

Unlimited phone and email support is provided for products purchased through Laser Lab Source. Orders for this product are fulfilled by Laser Lab Source in North America and select international regions.

## PRODUCT WARRANTY:

This product is sold with a full one-year warranty. It is warrantied to be free from defects in material and/or workmanship for a period of one year from the date of shipment.



**AeroDIODE**

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