Offered by
LASER LAB SOURCE

manufactured by AeroDIODE

4 Amp Pulsed Laser Diode Driver with TEC Controller and Butterfly Mounting Socket

CCS-HPP / Control and Mount Module

- User Set Pulse Widths from 0.5 ns to 8 µs
- 4 Amp Current Range; 24 V Voltage Range
- 1 Hz to 250 MHz Repetition Rate
- Integrated Pre-Configured Butterfly Mounting Socket & TEC Temperature Controller
- Models Available for Type 1 and Type 2 Butterfly Laser Pin Configurations
- USB Interface, Includes Programming Tools Software Suite, DLL Library and GUI

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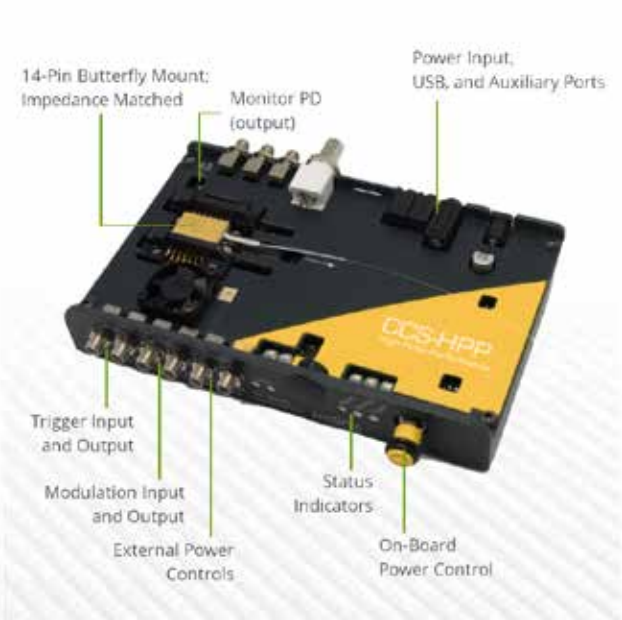
HIGH PERFORMANCE PULSED DRIVER FOR SEED PUMPING APPLICATIONS

This laser diode pulse control electronics and mounting modules is optimized for high performance, high power pulsing, with pulse width from 0.5 ns to 8 µs. These complete control and mounting modules deliver precision pulses which are generated internally by an on-board pulse generator, or on demand from your external TTL signal generator.



LASER DIODE CONTROL FEATURES AND SAFETY DEVICES

These pulse drivers provide comprehensive laser diode protection. They include an efficient TEC controller which keeps the laser temperature stable and protects it from thermal damage. The USB interface and graphical user interface offers the user complete control of the operating and safety / limit parameters. The user controls pulse width, amplitude, rep. rate, temperature set point, current / temperature limits and more.

FLEXIBLE LASER DIODE PULSE GENERATION AND OUTPUT SYNCHRONIZATION

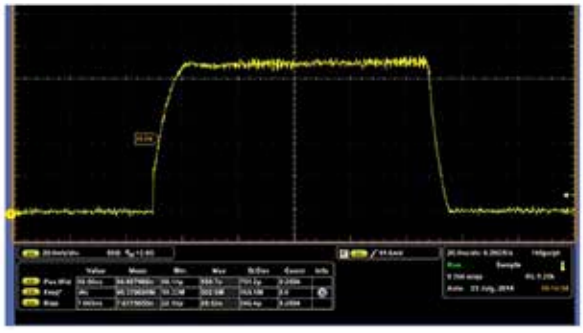
These drivers offer the user three different pulse generation sources. The internal pulse generator; an external trigger source; or an external trigger source can be used to activate the internal pulse generator.

When using an external trigger source, the input pulse trigger is a TTL/LVTTL input voltage. The input voltage range for the external trigger is 0 ~ 3.3 Volts. These units also provide the user with a sync-out port which allows synchronization of the driver to related test equipment. This SMA output port delivers an LVTTL copy of the CC-S logical driving signal.

CLEAN HIGH SPEED PULSE PERFORMANCE

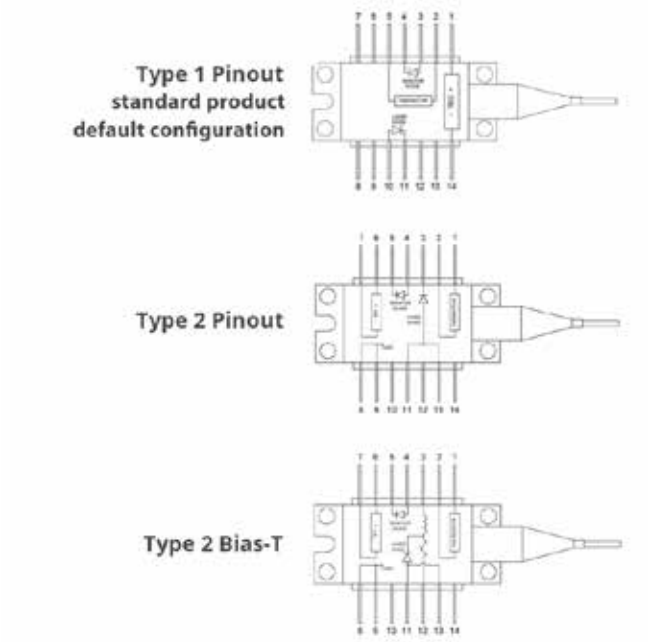
Matching the impedance of the butterfly packaged laser diode load to the impedance of the current source transmission path improves the qualify of the laser diode pulse shape.

CCS IMPEDANCE MATCHING PROVIDES CLEAN PUSE PERFORMANCE



PIN CONFIGURATIONS

The CCS-HPP is available for industry-standard butterfly package pin configurations. Because impedance matching is a critical factor in delivering clean high speed pulse performance, the CCS-HPP unit is pre-set for your laser diode's pin configuration.



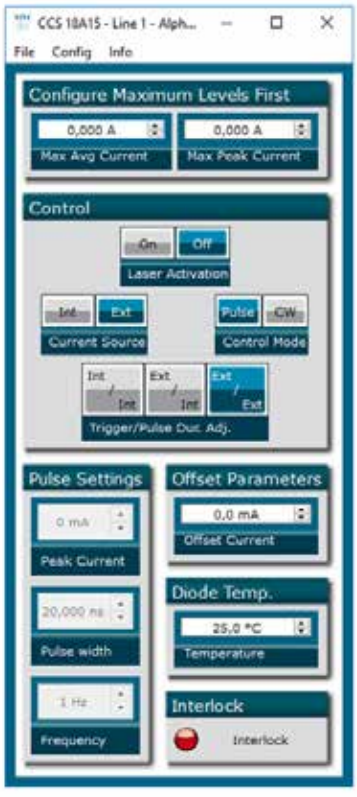
The standard model is for a type 1 pin configuration.

PRE-SET IMPEDANCE MATCHING IMPROVES THE LASER DIODE PULSE PERFORMANCE

When the impedance from the pulsed current source PCB is not properly matched to the butterfly package pins, significant pulse degradation can occur. This is often seen as distortion of the laser output pulses and/or overshoot of the pulses. Current sources inherently have a high output impedance and laser diodes have very low impedance. The most important requirement of proper impedance matching is matching the impedance of the load to the impedance of the transmission line. The inductance of laser diodes ranges from a few nanohenries to tens of nanohenries. From inductance theory, *di/dt* is the rate of change in current over a specific period in amperes per second. The voltage increases with the inductance and with the rate of the change of the current. Energy stored in the inductor's magnetic fields during the pulse has to be released when the pulse ends. This creates a voltage, which in turn creates a new current, which in turn creates a new magnetic field on the transmission path. This creates a "loop" which manifests as "ringing" on the pulse waveform and on other distortions to the pulse shape. The CCS unit is designed to reduce and/or eliminate this pulse degradation by matching the nominal impedance of the butterfly packaged laser diode with the pulse transmission line.

GRAPHICAL USER INTERFACE INCLUDED

Configuration and operation of the controller is streamlined and simplified by providing control over the critical operating parameters of the controller: peak pulse current, pulse width, frequency, triggering, and other driver parameters are available.



The GUI also provides control over laser diode temperature, and includes operational safety limits to help protect the laser diode from damage.

In addition to providing real-time control over the laser diode, the GUI displays real-time operating status of the controller and laser diode operating parameters.

CCS-HPP / Control and Mount Module Performance Specifications

PULSED OUTPUT CURRENT & VOLTAGE SPECIFICATIONS

- Pulsed Output Current Range: 0 Amps ~ 4 Amps
- Adjustable Pulse Width Range: 0.5 nsec - 8 µsec
- Typical Minimum Pulse Duration: 1 ns
- Internal Pulse Generator Repetition Rate Range: 1 Hz to 250 MHz
- Typ. Rise/Fall Time: 0.5 / 1 / 0.5 ns (TO / Butterfly / VCSEL)
- Output Current CW (continuous) Mode: 0 Amps ~ 2 A
- Output Voltage Maximum: 24 Volts
- Temporal Jitter (rms): < 8 ps
- Back-Facet Power Monitor Connector

TEMPERATURE CONTROLLER & BUTTERFLY MOUNTING SOCKET

- TEC Current (max): 1.5 Amps
- TEC Voltage (max): 3.8 Volts
- Zero Insertion Force Mounting Socket for 14-Pin Butterfly
- TEC Controller Compatible with NTC Thermistors: 1 kΩ - 100 kΩ
- Laser Diode Temp. Range: 15 - 50°C

LASER DIODE PROTECTION

- User set Over-Current Limit Shut Down
- Over-Temperature Limit Shut Down
- Safety Interlock Shut-Down
- Soft-Start Ramp to Current Set-Point (CW mode)
- Transient and ESD Surge Protection
- Fast Error Detection and Shut Down Feedback

CCS-HPP / Control and Mount Module Performance Specifications

USER INTERFACE, POWER INPUT & DIMENSIONS (ALL MODELS)

- Remote: USB with Control Software GUI
- DLL Library for C Programming and Hexadecimal Protocol are Available at No Charge
- Analog (0-3.3V) Remote Signal Peak Power Adjustment
- Input Power Supply: 12 VDC (220V / 110V Adapter Included)
- 170 mm (W) x 107 mm (L) x 27.5 mm(H)

PULSE GENERATION MECHANISMS (3 MODES)

- Internal Pulse Generator: On-board pulse generator
- External Trigger to Internal Pulse Generator: User supplied LVTTL signal triggers (on the rising edge) the internal generator to deliver the pulse. The pulse parameters are set in the internal pulse generator and the pulse is delivered from the internal generator.
- External Trigger Pulse Generator: Pulse duration is the same as the external trigger pulse duration

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. It is manufactured by AeroDIODE, Talence, France.

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. The warranty does not cover damage to the to the product due to mishandling or use of the product outside of its specified maximum ratings.

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