Precision CW Control
The PCO-6511 is a compact and economical CW current source designed to drive laser diodes. It features an adjustable output current of 3.0 A to 10.0 A and a compliance voltage of 10 V.

Ease of Setup and Operation
Output current is set by an on-board trim potentiometer or by an external voltage (jumper selectable). Connector JP1, a 2x6 male header, is used for all control signals.

Power Input Connections
Input power is connected via two #6 screw terminals, TERM1 (+) and TERM2 (−), 18 AWG, or via J3, a 3-pin Molex connector. The compatible Molex part numbers are 39-01-4030 (housing) and 5556 (female terminals).

Power Output Connections
The load is connected via two #6 screw terminals, TERM3 (+) and TERM4 (−), 18 AWG, or via J4, a 5-pin Molex connector. The compatible Molex part numbers are 39-01-4050 (housing) and 5556 (female terminals). **NOTE: Do not operate the PCO-6511 without a load unless the crowbar is activated.**

Ordering Information
PCO-6511 CW Current Source

For more information: 970.493.1901 or sales@directedenergy.com
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Amplitude
- Current output range: 3.0 A to 10.0 A
- Setpoint resolution: 1 mA
- Trim potentiometer: JP2 in place
- External voltage control: JP2 removed
- External setpoint: 0 V to 4.095 V
- 5.0 V reference output current: 5 mA maximum
- Diode forward voltage: 10 V maximum
- Maximum output power: 100 W

Output Parameters
- Ripple current: < 70 mA @ 10 A
- Polarity: Positive
- Crowbar (hold low for output): 0 V = operate

Current Monitor
- Current monitor scale factor: 4.06 V = 10 A
- Connector: JP1 (+ pin 10), (ground pin 9)

Input Parameters
- DC input voltage (Vcc): 12 V to 16 V DC
- Shutdown: 0 V to 5.5 V

General
- Size (H x W x D): 3.56 cm x 5.08 cm x 13.97 cm
- Weight: 136.1 g
- Operating temperature: 15° C to 40° C
  (Operation above 8 A requires forced air cooling)

Notes
- Warranty: One-year parts and labor on defects in materials and workmanship.
- The PCO-6511 current source meets or exceeds these specifications. All specifications are measured with a low inductance twisted pair interconnect cable to a 1.016 Ω load. Laser diode not included. Specifications information subject to change without notice.

Theory of Operation
- The heart of the PCO-6511 is a step-down DC/DC converter, consisting of a MOSFET, a diode, an inductor and an output filter. The input/output current ratio is the inverse of the input/output voltage ratio. If losses are disregarded, the input power in watts equals the output power in watts.

- A safety feature referred to as a “crowbar” circuit is added in the form of a power MOSFET in parallel with the load. When the crowbar is on the laser diode is bypassed through the MOSFET.

Signal-to-Noise Ratio
- The signal-to-noise ratio is defined as $(V_{PEAK-TO-PEAK}) / (V_{AVERAGE})$. It is the maximum peak-to-peak voltage of each spike divided by the average voltage.
- Signal-to-Noise Ratio, 3A: ≤ 3.2%
- Signal-to-Noise Ratio, 4 A to 10 A: ≤ 2.0%

JP1 Control Connector
- 2x6 female header socket. Use FCI 65043-031LF housing and FCI 48236-000LF contacts, 22 AWG.
  - Pins 1, 3, 5, 7, 9, 11: Ground
  - Pin 2: Reference voltage output (5 V ±0.5 V)
  - Pin 4: External Control (analog input). If JP2 is removed, 0 V to 4.095 V applied to this input sets the output current amplitude.
  - Pin 6: Vcc output
  - Pin 8: Shutdown
    - No connect = operate
    - 5 V (connect pins 8 and 2) = OFF
  - Pin 10: Current Monitor (IMON)
    - Analog output: 4.06 V = 10 A
  - Pin 12: Crowbar
    - No connect = output load bypassed
    - 0 V (connect pins 12 and 11) = operate

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