Precision Pulse Control
The PCX-7420 is an air-cooled, high-powered CW/QCW current source designed to drive diode lasers, bars, and arrays. The pulsed output current is adjustable from 3.0 A to 21.5 A. The pulse width is adjustable from 50 ns to 500 ms, and the rise time is under 25 ns. The pulse repetition rate is selectable from 40 to 100,000 Hz when using the internal pulse source, and from single-shot to 1 MHz when using an external source.

The PX-7420 provides both QCW (pulsed) and CW (DC) outputs. It can serve as a CW driver at currents from 3.0 A to 5.8 A, and as a pulsed/QCW driver at currents from 3.0 A to 21.5 A. Furthermore, the output may be biased to any CW current from 0.050 A to 5.8 A, then pulsed above this bias current up to 15.7 A maximum. A new feature allows the bias current to be pulsed and triggered independently from the main current.

Ease of Setup and Operation
The PCX-7420 may be operated through its intuitive front panel controls. The color QVGA LCD provides immediate visual confirmation of all operating parameters, including bias and pulsed current set points, internal trigger pulse width, internal trigger frequency, and error/fault messages.

Complete System Integration
For automated applications, complete control of the driver is provided through RS-232, USB and Ethernet computer interfaces. Up to four system configurations may be stored in internal non-volatile memory, providing instant recall of frequently-used configurations.

Low Inductance Output Cable
Connection to the laser diode is made through an innovative rear panel, low impedance stripline cable, designed to preserve the fidelity of high-speed, large amplitude current pulses. The output connector is interlocked, so that the PCX-7420 is disabled when the connector is removed.

Output Protection
The PCX-7420 features advanced circuitry to protect both the diode and driver. At turn-on, and at any time the output is not enabled, the PCX-7420’s output is electronically shorted to ground, ensuring that no current flows through the diode. Safety features include a separate enable keyswitch, an output cable safety interlock, and a remote interlock.

Ordering Information
PCX-7420 Precision Pulsed Current Source
6045-0003 Output Stripline Cable
6045-0097 Laser Output PCBA
PCA-9410 BNC Shorting Connector
Each PCX-7420 is delivered with an output stripline cable and BNC shorting connector.

Internal trigger: 1 kHz frequency, 75 µs bias and 50 µs pulse width, 6 A bias current, 16 A main current.

External trigger: 1 MHz, 50 ns pulse width, 22 A output current (6 A bias current plus 16 A main current).
### PCX-7420 Laser Diode Driver Module Datasheet

#### Pulse Amplitude
- **Main current output range**: 3.0 A to 15.7 A
- **Setpoint resolution**: 1 mA
- **Compliance voltage**: 24 V

#### Bias Amplitude
- **Bias current output range**: 50 mA to 5.8 A
- **Setpoint bias resolution**: 1 mA

#### Output Parameters
- **Pulse width range**: 100 ns to 500 ms
- **Rise time**: < 25 ns
- **Polarity**: Positive

#### Internal Trigger
- **Frequency range**: 40 Hz to 100 kHz
- **Frequency resolution**: 40 Hz to 300 Hz: 1 Hz, 300 Hz to 5000 Hz: 100 Hz, 5 kHz to 100 kHz: 1000 Hz

#### Trigger Sync Output
- **Termination**: 50 Ω
- **Connector**: BNC
- **Output voltage levels**: 0 V to 2.7 V

#### External Trigger
- **Frequency range**: ≤ 1 MHz
- **Minimum pulse width**: 50 ns
- **Maximum pulse width**: 100% duty cycle
- **Termination**: 50 Ω
- **Connector**: BNC
- **Input voltage levels**: 0 V to 5.0 V
- **High = output to load, Low = no output to load**

#### Computer Interface
- **RS232, Ethernet, USB**
- **USB driver support**: Windows 7—10, Windows XP, Linux, and MAC OS X

### General
- **Power requirements**: 47 Hz to 63 Hz, 100 V AC to 120 V AC ± 10%, 220 V AC to 240 V AC ± 10%
- **AC connector type**: NEMA C-14
- **Size (H x W x D)**: 10.66 cm x 29.21 cm x 54.86 cm
- **Weight**: 9.8 kg
- **Operating temperature**: 15° C to 40° C
- **Air cooled, flow from front to the rear of unit**

### Notes
- **Warranty**: One-year parts and labor on defects in materials and workmanship.
- The PCX-7420 current source meets or exceeds these specifications. All specifications are measured with a low inductance stripline interconnect cable to a load with less than 4 nH total inductance. Specifications information subject to change without notice.
- Laser diode drivers are current sources. The compliance voltage is the maximum voltage available to maintain the programmed current.

### Laser Output PCBA
- **Top view**
- **Bottom view**

On the laser output PCBA above, the current monitor (J1) has a ratio of 125 mV/A, with a 50 Ω termination.

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**Safe Operating Area PCX-7420**

![Safe Operating Area](image-url)

For more information: **970.493.1901** or **sales@directedenergy.com**

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