Precision Pulse Control
The PCM-7140 is a compact pulsed current source designed to drive laser diodes, bars, arrays, or any low-impedance load. The key specifications are output current from 20 A to 200 A, rise and fall times below 10 µs at 200 A, pulse widths from 25 µs to 7.5 ms, pulse repetition rates from single shot to 6500 Hz, and forward voltage from 0 V to 55 V.

System Operation
The PCM-7140 output current may be set with an internal potentiometer or an external analog voltage. The pulse width is controlled with an external trigger source.

The system requires two DC supplies for operation: 12 V for housekeeping and a voltage ≤ 20 V above the laser diode's forward voltage.

Input / Output Cable
The laser or load is connected to the PCM-7140 with a 100 cm length of 18 AWG twisted pair cable (included). This same cable has the DC input connection from the high voltage power supply.

Liquid Cooling
The PCM-7140 module is liquid cooled with a liquid temperature of 11 °C to 22 °C with a flow rate of 6 liters per minute. The connection type is 3/8” tubing.

Ordering Information
PCM-7140  PCM-7140 Pulser
DC Input / Output Cable
Load Board
Control Board
Control Signal Cable

For more information contact us: 970.493.1901 or sales@directedenergy.com
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Pulse Amplitude
Output current range: 20 A to 200 A
Setpoint accuracy: ±1% of full-scale current
Current overshoot: < 1% 
Current rise/fall time:
≤ 20 µs: 5 A to 49 A
≤ 16 µs: 50 A to 99 A
≤ 10 µs: ≥ 100 A

Trigger (J3-Pin 6)
Frequency range:
≤ 6500 Hz * See SOA graphs on next page
100% Duty Cycle:
≤ 20 A * High Voltage = VForward + 5 V
Input voltage levels:
0 V, output off
5 V, output on
Termination impedance:
50 Ω
Trigger pulse width:
25 µs to 7.5 ms
Delay (external to output):
≤ 1 µs (typical)

Current Setpoint Control (J3-Pin 4)
Input voltage levels:
5 V or open: internal potentiometer control
0 V: external control
Termination impedance:
9,000 Ω
Response time on change:
≤ 0.5 µs

Analog Current Setpoint (J3-Pin 5)
Input voltage levels:
0 V to 2.048 V
0.000 V: 0 A output
2.000 V: 200 A output
Termination impedance:
>19 kΩ
Response time on change:
≤ 0.5 µs

Current Monitor (J2)
Current monitor:
0 V to 0.500 V
Current monitor termination:
50 Ω
Current monitor connector:
SMB

Control Signal Connector (J3)
Connector:
Molex #70553-0110
Pin 1: 12 V DC
Pin 2: Return
Pin 3: Return
Pin 4: Current setpoint control
Pin 5: Analog current setpoint
Pin 6: Trigger

Liquid Cooling
Input Temperature:
11 °C to 22 °C
Flow Rate:
6 liters/minute
Connection:
3/8" tubing, McMaster-Carr # 9336T2

12 V Power Specifications (J3-Pin 1)
Voltage requirements:
12 V DC ± 5%
Current requirements:
0.100 A

DC Input / Output Connector (J1)
Connector:
TE AMP Connector 1-770974-0
Output +:
Pins 1, 2, 3, 4
Output –:
Pins 9, 10, 11, 12
DC Input +:
Pins 13, 14, 15, 16
DC Return:
Pins 5, 6, 7, 8

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Safe Operating Area Graphs

Maximum Frequency vs. Output Current

- Frequency (Hz)
- Output Current (A)
- Lines for different pulse widths (50 μs to 300 μs)

Maximum Pulse Width vs. Output Current

- Pulse Width (μs)
- Output Current (A)
- Lines for different frequencies (50 Hz to 200 Hz)