



## Precision Pulse Control

The PCM-7700 series of air-cooled, high-power current sources is designed to drive laser diodes, bars, and arrays with up to 200 A of current (load voltage to 25 V). The PCM-7700-48 has a built-in power supply; the PCM-7700-EX connects to an external supply for higher duty cycles. Both models feature pulse widths from 500  $\mu$ s to 50 ms and pulse repetition rates from single shot to 1 kHz.

## System Operation

The PCM-7700 output current may be set with a potentiometer on the included evaluation board or with an analog voltage. The pulse width is controlled by the trigger input.

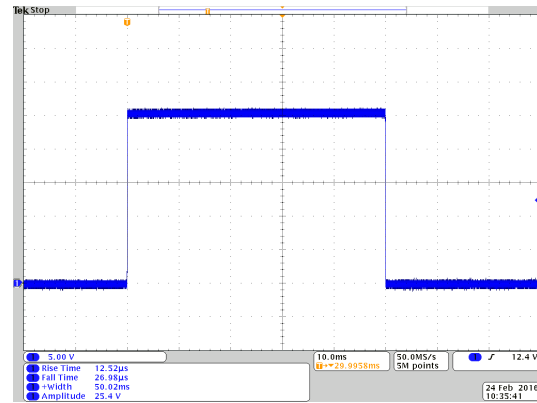
Digital and analog control modes are supported. In digital mode, an input voltage controls the pulse output current and an external trigger signal controls the pulse width. In analog mode, the output current follows the input voltage. Regardless of mode, the instrument must always be operated within the safe operating area (see SOA graphs below).

## Complete System Integration

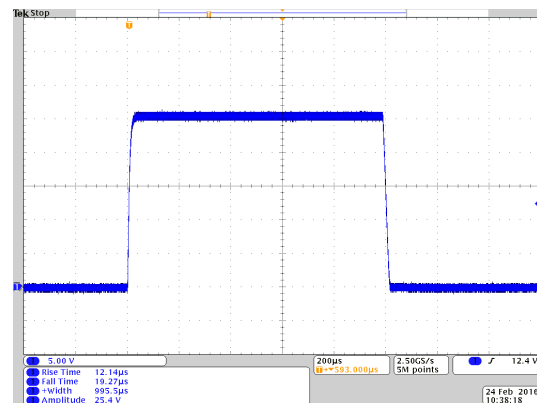
For automated applications, complete control of the instrument is provided through a DB15 male connector.

## Ordering Information

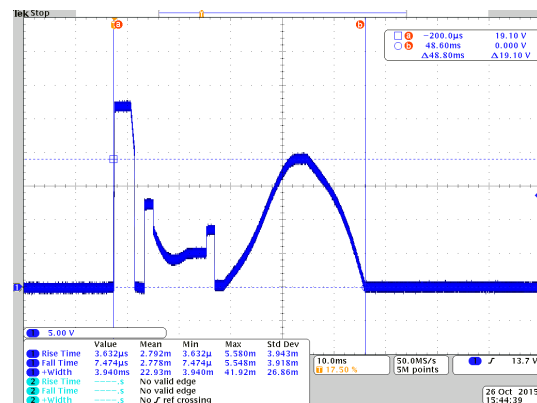
PCM-7700-48 Internal power supply version  
PCM-7700-EX External power supply version



PCM-7700-48, 200 A, 50 ms pulse width, 1 Hz into a HPL-2400-0.126 load, Digital Control Mode.



PCM-7700-48, 200 A, 1 ms pulse width, 1 Hz into a HPL-2400-0.126 load, Digital Control Mode.



PCM-7700-48, 200 A full scale, into a HPL-2400-0.126 load, Analog Control Mode using the arb function of a Tektronix AFG3051C.

### Pulse Amplitude

|                        |                                        |
|------------------------|----------------------------------------|
| Output Current Range   | 5 A to 200 A <sup>1</sup>              |
| Setpoint Resolution    | 0.050 A                                |
| Setpoint Accuracy      | ± 1 % of full scale current            |
| Current Overshoot      | < 0.5 % of full scale current          |
| Current Rise/Fall Time | ≤ 75 μs (with I <sub>OUT</sub> > 10 A) |

Pulse width 500 μs to 50 ms

|                      |                                                                              |
|----------------------|------------------------------------------------------------------------------|
| Polarity             | Positive                                                                     |
| Load Voltage         | 0 V to 25 V PCM-7700-48 <sup>2</sup><br>0 V to 25 V PCM-7700-EX <sup>2</sup> |
| Maximum Output Power | See SOA graphs                                                               |

### Gate

|                       |                                                                           |
|-----------------------|---------------------------------------------------------------------------|
| Frequency Range       | Single-shot to 1 kHz                                                      |
| Input Voltage Levels  | 0 V: output OFF<br>5 V: output ON                                         |
| Gate pulse width      | 500 μs to 50 ms (Digital Control Mode)<br>0 to ∞ ms (Analog Control Mode) |
| Termination Impedance | 50 Ω                                                                      |
| Connector             | DB-15 pin 8                                                               |

### Current Setpoint

|                         |                                                                |
|-------------------------|----------------------------------------------------------------|
| Input Voltage Levels    | 0 V to 10 V<br>0.000 V = 0 A output<br>10.000 V = 200 A output |
| Termination impedance   | 10 kΩ                                                          |
| Response time on change | ≤ 5 μs                                                         |
| Connector               | DB-15 pin 6                                                    |

### Enable Signals

|                         |                                                          |
|-------------------------|----------------------------------------------------------|
| Input Voltage Levels    | 0 V: Enable<br>5 V or open: Disable                      |
| Termination impedance   | 10 kΩ                                                    |
| Response time on change | ≤ 200 ms                                                 |
| Connector               | DB-15 pin 4 (EXT ENABLE 1)<br>DB-15 pin 3 (EXT ENABLE 2) |

### Monitors

|                             |                                              |
|-----------------------------|----------------------------------------------|
| Current monitor             | 5 mV / A<br>200 A output current = 1.000 V   |
| (typical)                   |                                              |
| Current monitor termination | 50 Ω                                         |
| Current monitor connector   | DB-15 pin 2                                  |
| Voltage monitor             | 60 mV / V<br>30 V output = 1.800 V (typical) |
| Voltage monitor termination | 1 MΩ                                         |
| Voltage monitor connector   | DB-15 pin 1                                  |

### Output Connector

|                  |                                                                             |
|------------------|-----------------------------------------------------------------------------|
| Output Connector | 2 x Amp 1-770974-0<br>Pins 1 through 8 = Out –<br>Pins 9 through 16 = Out + |
|------------------|-----------------------------------------------------------------------------|

### Power Specifications

|                      |                                               |
|----------------------|-----------------------------------------------|
| Voltage requirements | 100 V AC to 240 V AC                          |
| Line frequency       | 50 Hz to 60 Hz                                |
| Power requirements   | PCM-7700-48 is 1200 W<br>PCM-7700-EX is 250 W |
| Connector Type       | IEC 320-C14                                   |

### General

|                       |                                             |
|-----------------------|---------------------------------------------|
| Size (HxWxD)          | 27 cm x 27 cm x 39 cm                       |
| Weight                | 15 kg                                       |
| Operating Temperature | 15 °C to 35 °C                              |
| Cooling               | Air cooled<br>(Air flow from rear to front) |

### Notes

<sup>1</sup>Rise and fall time specifications valid from 10 A to 200 A

<sup>2</sup>Operation of instrument outside of the listed load voltage and maximum power limits can cause permanent damage to the instrument and/or load. Please see the SOA graphs in the manual for more information.

Warranty: One year parts and labor on defects in materials and workmanship.

The PCM-7700 current source meets or exceeds these specifications. All specifications are measured using the standard included output cable and a HPL-2400 (low-inductance, high-power resistive load). Load not included. Specifications subject to change without notice.

Included Load Board and Evaluation Board

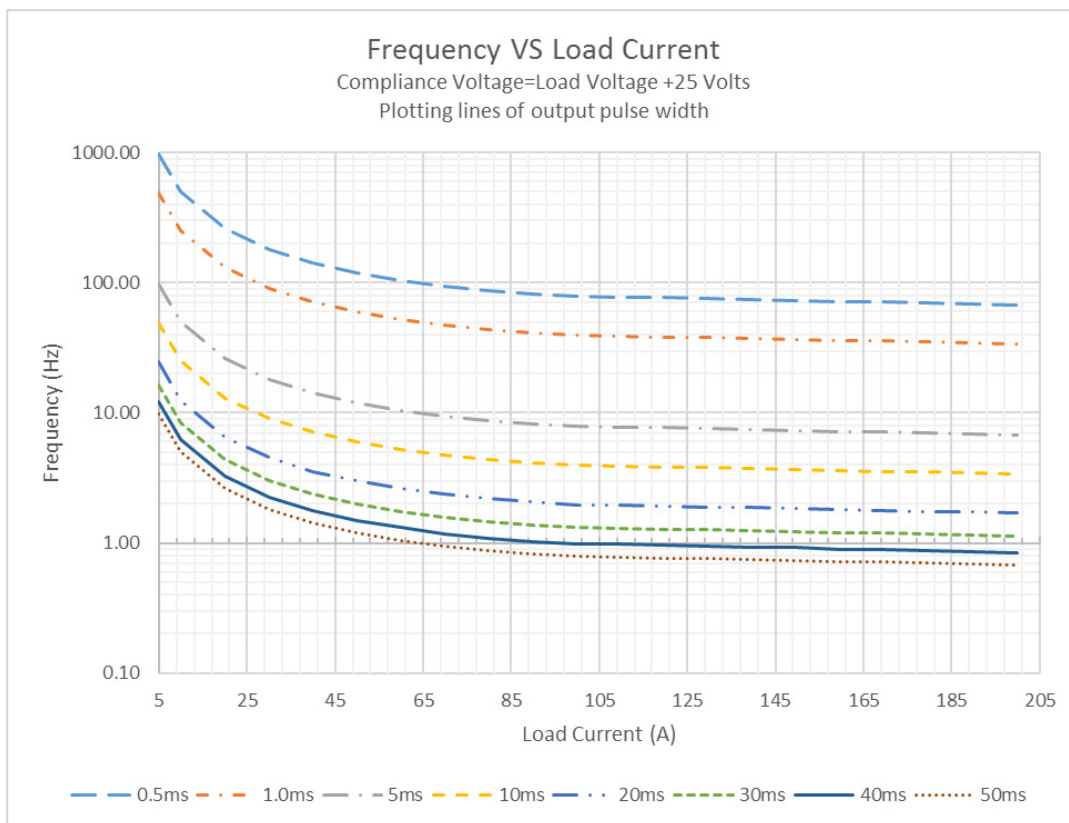


## Safe Operating Area Graphs

**IMPORTANT: Do not operate the instrument outside of the Safe Operating Area!**

Although the PCM-7700's external triggering system allows it to operate outside the Safe Operating Area, such operation will result in permanent damage to the PCM-7700, the laser diode, or both.

The Safe Operating Area is below the line of each graph. Only operate the instrument in this Safe Operating Area.

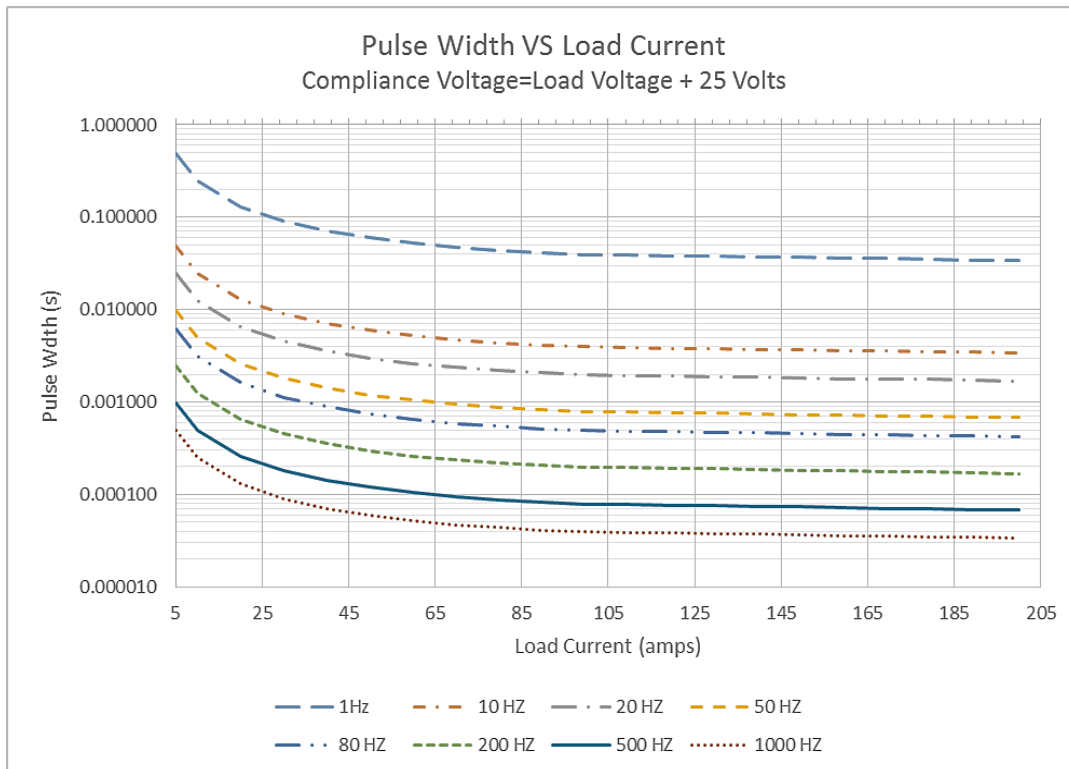


PCM-7700-48

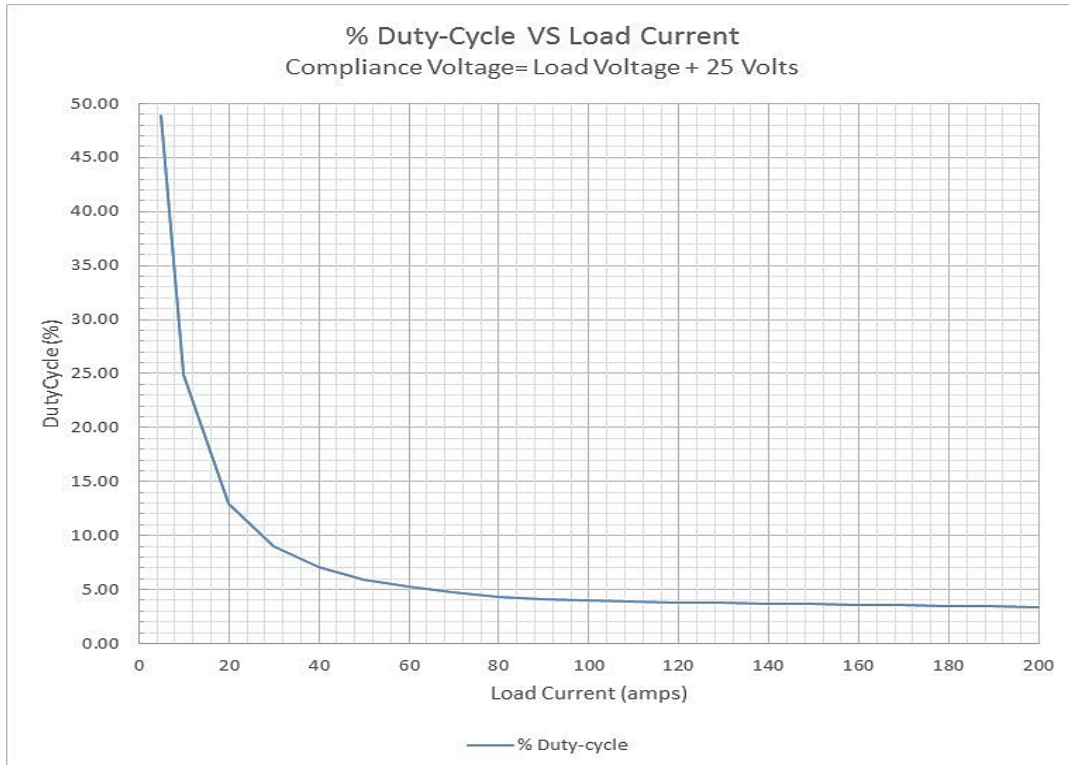
# PCM-7700 Pulsed Current Source — Datasheet



The Safe Operating Area is below the line of each graph. Only operate the instrument in this Safe Operating Area.



PCM-7700-48

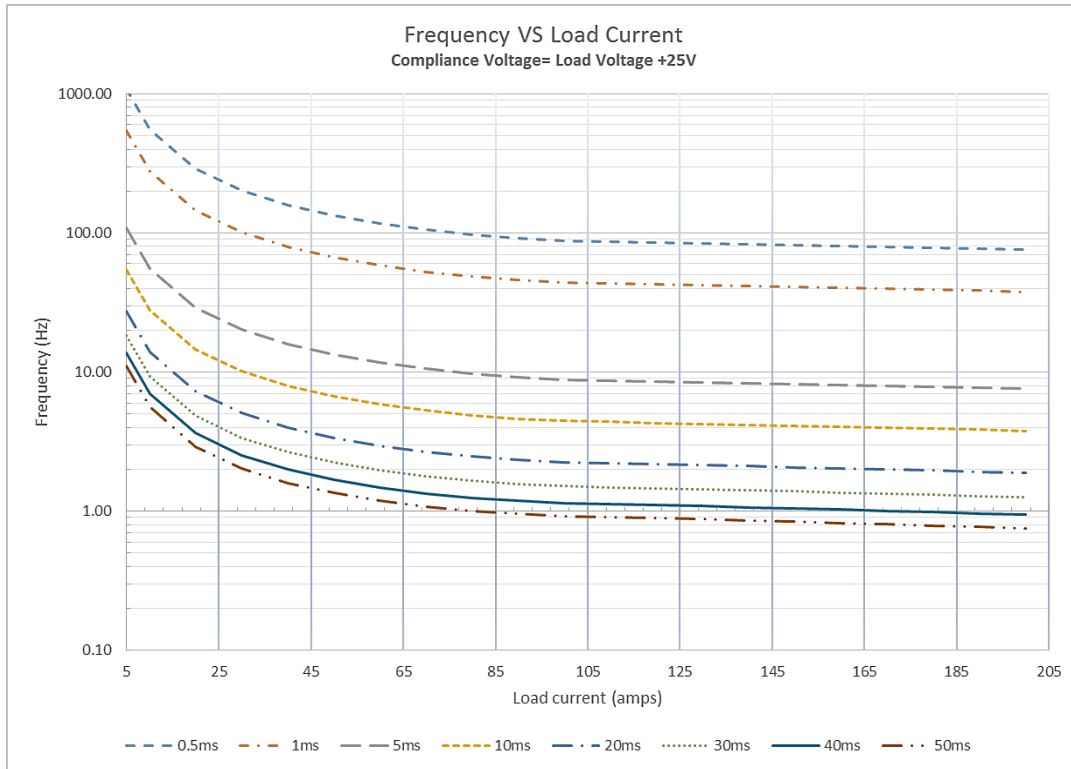


PCM-7700-48

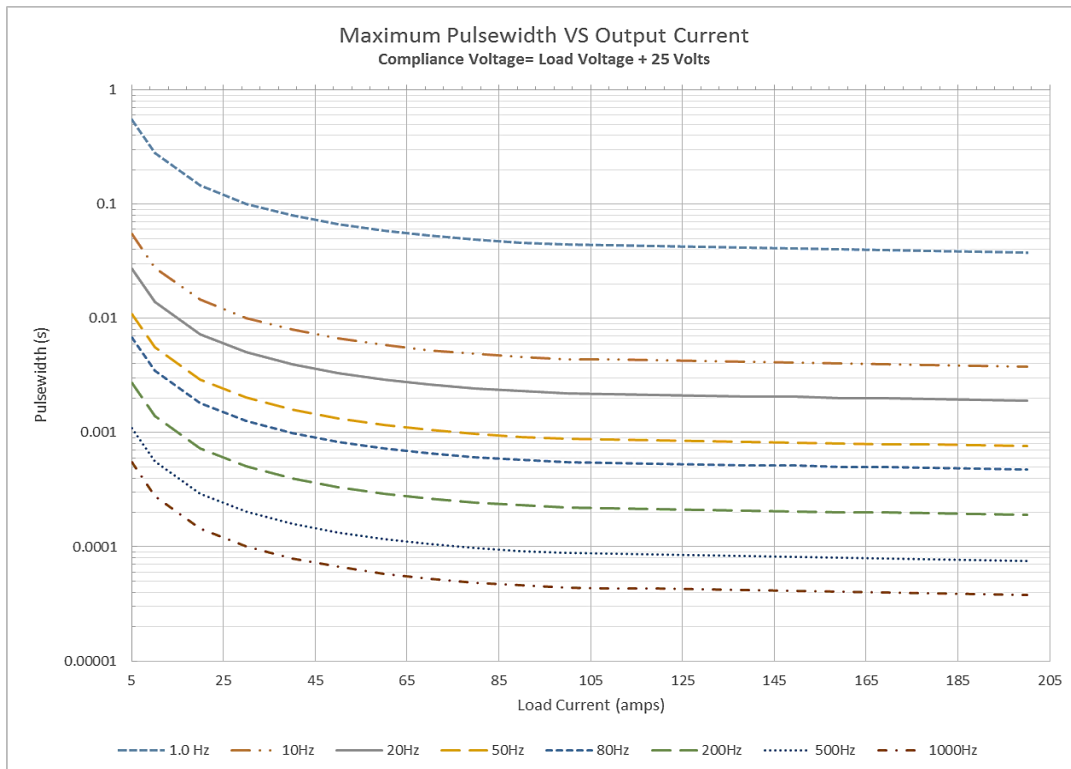
# PCM-7700 Pulsed Current Source — Datasheet



The Safe Operating Area is below the line of each graph. Only operate the instrument in this Safe Operating Area.



PCM-7700-EX

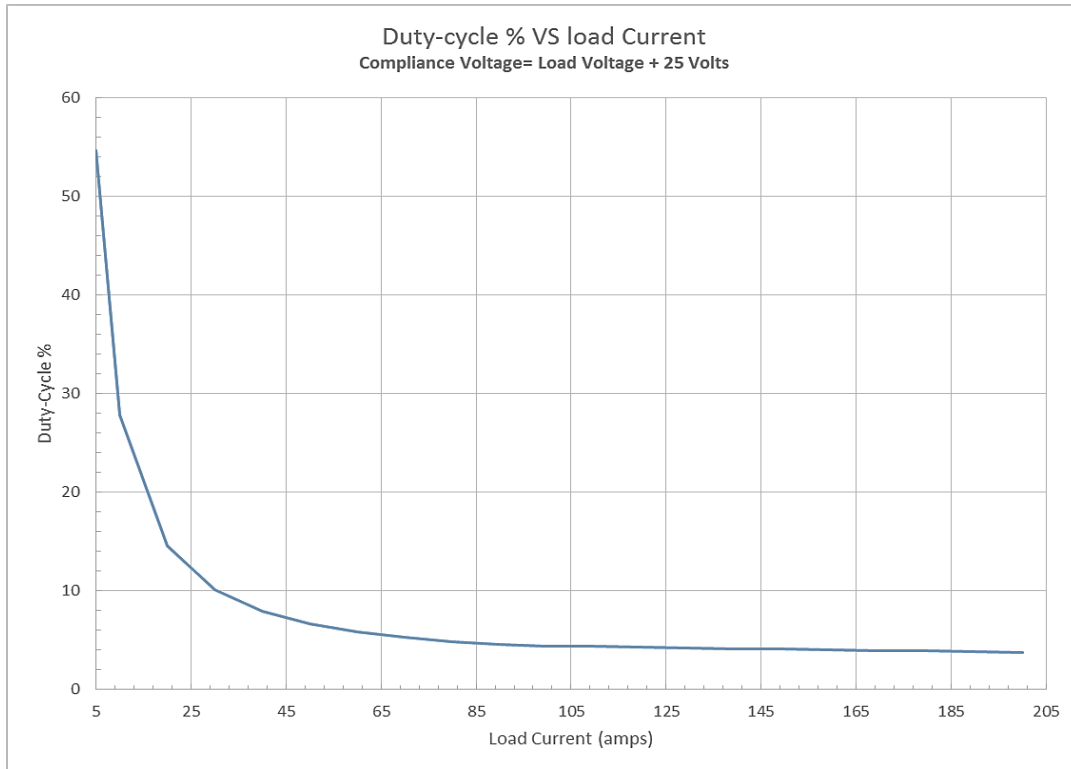


PCM-7700-EX

# PCM-7700 Pulsed Current Source — Datasheet



The Safe Operating Area is below the line of each graph. Only operate the instrument in this Safe Operating Area.



PCM-7700-EX