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PIM-Mini-50 Pulsed Current Source — Datasheet



Precision Pulse Control

The Mini-50 is a compact and lightweight pulsed current source designed to drive laser diodes, bars, arrays, or any low-impedance load. The key specifications are output current from 5 A to 50 A, rise and fall times below 8 μs at 50 A, pulse widths from 25 μs to 1000 μs , forward voltage from 0 V to 48 V, and pulse repetition rate from single shot to 1,000 Hz.

System Operation

The Mini-50 output current may be set with an internal potentiometer or an analog voltage. The pulse width is controlled with the input trigger signal.

The system requires two DC voltages for operation, 12 V and compliance voltage equal to 12 V above the laser diode's forward voltage.

Output Cable

The laser or load is connected to the Mini-50 with 22 AWG twisted pair cable (included) with a length of 15 cm (6 inches) or less.

What is included?

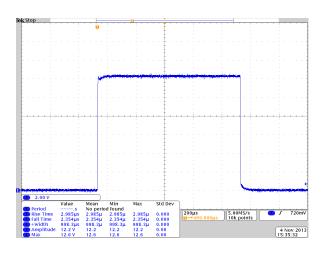
Mini-50 Mini-50 Pulser

DC Input Cable
Output Cable
Control Signal Cab

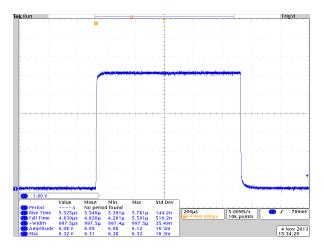
Control Signal Cable

Ordering Information

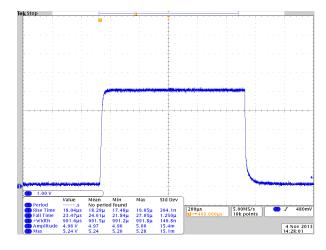
Mini-50



50 A, 24 V compliance, 20 Hz, 1000 µs pulse width



25 A, 18 V compliance, 20 Hz, 1000 µs pulse width



5 A, 17 V compliance, 20 Hz, 1000 µs pulse width

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Pulse Amplitude

Output Current Range 5 A to 50 A

Setpoint Accuracy ±1 % of full scale current

Current Overshoot < 0.1 %

Current Rise/Fall Time \leq 90 μ s : 1 A \leq current setpoint \leq 2 A

 \leq 55 μ s : 2 A \leq current setpoint \leq 3 A \leq 40 μ s : 3 A \leq current setpoint \leq 4 A \leq 35 μ s : 4 A \leq current setpoint \leq 5 A \leq 30 μ s : 5 A \leq current setpoint \leq 10 A \leq 20 μ s : 10 A \leq current setpoint \leq 20 A \leq 15 μ s : 20 A \leq current setpoint \leq 30 A \leq 10 μ s : 30 A \leq current setpoint \leq 40 A \leq 8 μ s : 40 A \leq current setpoint \leq 50 A

Polarity Positive Forward Voltage 0 V to 48 V

Trigger (J1-Pin 6)

Frequency Range ≤ 1,000 Hz * See SOA graphs on next page

Input Voltage Levels 0 V, output off

5 V, output on

Termination impedance 50 Ω

Trigger pulse width $25 \mu s$ to $1000 \mu s$

Delay (external to output) $\leq 1 \mu s$ (typical)

Current Setpoint Control (J1-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 $\leq 0.5 \ \mu s$

Analog Current Setpoint (J1-Pin 5)

Input Voltage Levels 0 V to 2.0 V

0.0 V = 0 A output2.0 V = 50 A output

Termination impedance $90,000 \Omega$ Response time on change $\leq 0.5 \mu s$

Current Monitor

Current monitor 0 V to 0.500 V

50 A output current = 0.500 V (typical)

Current monitor termination 50Ω Current monitorconnector SMB

Control Signal Connector (J1)

Connector Molex # 70553-0110

Pin 1: 12 V DC Pin 2: 12 V return Pin 3: 12 V return

Pin 4: Current setpoint control Pin 5: Analog current setpoint

Pin 6: Trigger

Output Connector (J6)

Connector Molex # 22-12-2024

Pin 1: Out + Pin 2: Out -

12 V Power Specifications (J1-Pin 1)

Voltage requirements 12 V DC ± 5% Current requirements 0.100 A

DC Input Connector (J2)

Connector Molex # 22-12-2024

Pin 1: DC + Pin 2: DC -

DC Input Power Specifications

Voltage requirements forward voltage + 12 V DC ± 5%^{*1}

Voltage Range 12 V DC to 60 V DC

Current requirements 5.0 A

*1 Operation of instrument outside of this voltage can cause permanent damage to the instrument and/or load.

General

Size (HxWxD) 11.3 cm x 12.65 cm x 5.4 cm

(4.425" x 4.975" x 2.125")

Weight 0.5 kg (16 oz)

Mounting hole diameter 4.5 mm

(0.180")

Mounting hole placement 3.49 cm x 11.6 cm

(1.375" x 4.575")

Operating Temperature 10°C to 40°C

Cooling Convection air cooled

Notes

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

The Mini-50 current source meets or exceeds these specifications.

All specifications are measured with 10 cm of 22 AWG twisted pair wire connecting the Mini-50 to a low impedance/inductance load (HPL-2400-1.00 and HPL-2400-0.250).

Specifications subject to change without notice.



