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

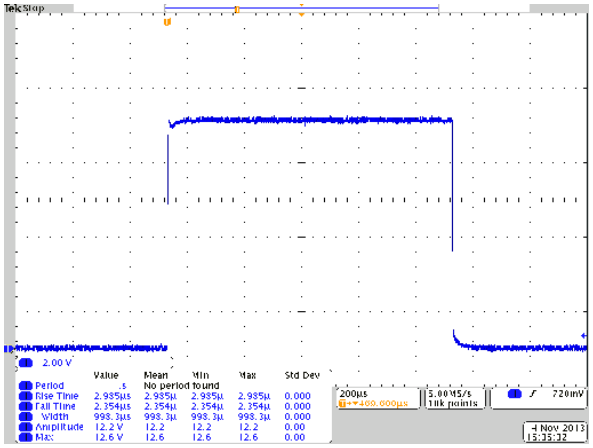
The laser or load is connected to the Mini-50 with 22 AWG twisted pair cable (included) with a length of 15 cm (6 inches) or less.

What is included?

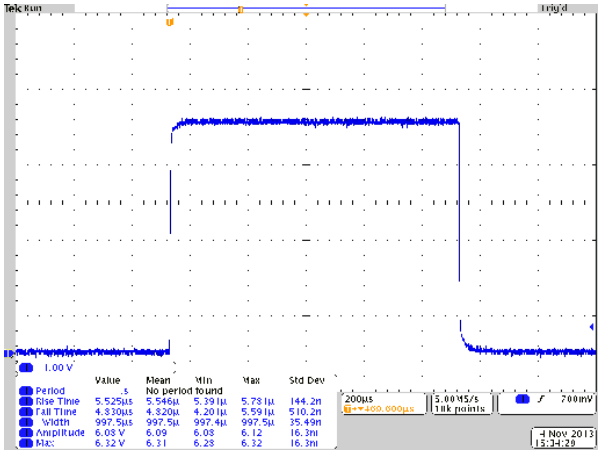
Mini-50	Mini-50 Pulser
	DC Input Cable
	Output Cable
	Control Signal Cable

Ordering Information

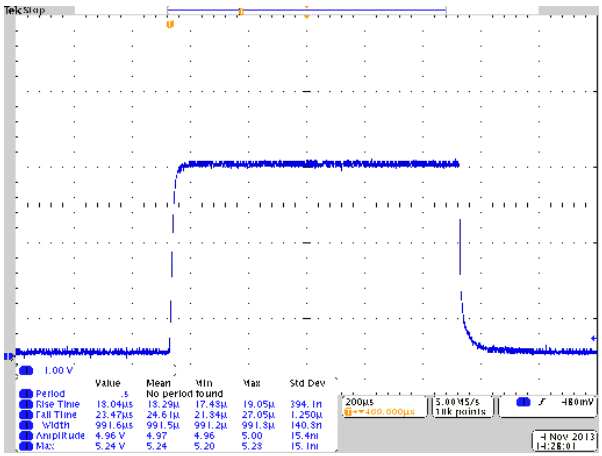
Mini-50



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

For more information: 970.493.1901 or sales@directedenergy.com

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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	≤ 90 µs : 1 A ≤ current setpoint ≤ 2 A ≤ 55 µs : 2 A ≤ current setpoint ≤ 3 A ≤ 40 µs : 3 A ≤ current setpoint ≤ 4 A ≤ 35 µs : 4 A ≤ current setpoint ≤ 5 A ≤ 30 µs : 5 A ≤ current setpoint ≤ 10 A ≤ 20 µs : 10 A ≤ current setpoint ≤ 20 A ≤ 15 µs : 20 A ≤ current setpoint ≤ 30 A ≤ 10 µs : 30 A ≤ current setpoint ≤ 40 A ≤ 8 µs : 40 A ≤ current setpoint ≤ 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 µs to 1000 µs
Delay (external to output)	≤ 1µs (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	≤ 0.5 µs

Analog Current Setpoint (J1-Pin 5)

Input Voltage Levels	0 V to 2.0 V 0.0 V = 0 A output 2.0 V = 50 A output
Termination impedance	90,000 Ω
Response time on change	≤ 0.5 µs

Current Monitor

Current monitor	0 V to 0.500 V 50 A output current = 0.500 V (typical)
Current monitor termination	50 Ω
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.

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